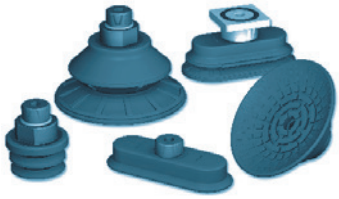
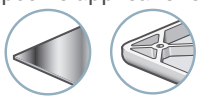
C
High-performance Suction Cups



The **C series** high-performance suction cup range has been designed to meet the requirements of the automotive sector. The improved characteristics of the **C series** range optimizes production tools in all branches of activity.

- A full range of shapes and diameters to meet every requirement.
- Non-slip cleats ensure optimum positioning of oily metal sheets.
- Textured suction cups for gripping thin sheets without deforming them.
- Ideal for automated applications.
- Specifically for use in the fields of stamping and welding.

Industry-specific applications



Types of use

Characteristics

- Extreme resistance to slipping.
- Gripping of thin metal sheets without deforming them, thanks to the central cleats.
- Elastomer and glass-fibre reinforced plastic design to avoid any risk of damaging costly equipment and to facilitate recycling.
- Double tightening: 2 wrenches of 22 mm and 1 hex key of 6 mm or 8 mm.
- Air-tight fittings using:
  - O-rings on 3/8G male cylindrical suction cups 32 square suction cups,- sealing on all oblong 3/8 male suction cups.
- Traceability.

Materials

The **C series** vacuum cups are made of a nitrile elastomer and the fittings (M38G/ F38G) are polyamide reinforced with fiberglass.
These materials guarantee the vacuum cups' long life, strong oil resistance and heat tolerance of up to 212°F.
This approach helps to avoid any risk of damaging costly equipment and facilitates recycling of vacuum cups.

Suction cups:	**NBR**	- Nitrile 55 Shore A (high resistance to oils), grey color.
Fitting:	**PA**	- Polyamide PA 6.6 ensuring reduced weight (3/8G / F38G Male or Female fitting).
	AL	- Aluminum (F38GA / C32 fitting).
O-ring:	**NBR**	- Nitrile blue

Other fittings available on request.

Range

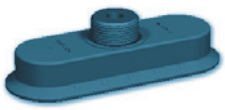
The **C Series** high performance vacuum cups are available in a full range of shapes, dimensions and connections in order to meet all your needs in the most appropriate way.

Models

CFC flat suction cup

CBC suction cup with 1.5 bellows

COFC flat oblong suction cup

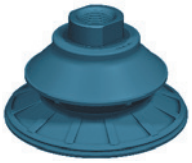


COBC oblong suction cup with 1.5 bellows

Fittings

M38G male fitting G3/8"

F38G female fitting G3/8"



F38GA aluminum female fitting G3/8"

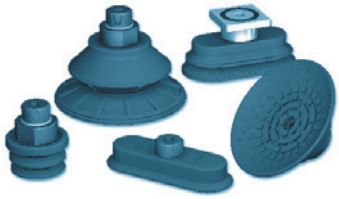
C32 square coupling 32 mm

Please specify the part n°. e.g. CBC85M38G
Refer to page 2/56

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (3/8G extensions, feeders and special couplings for 100% air-tight vacuum networks,) see chapters **4** and **12**.

High-performance Suction Cups

References - Suction Cups



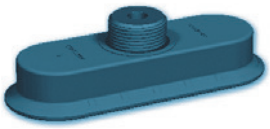
CFC Flat Suction Cup

	Fittings			
	M38G	F38G	F38GA	C32
CFC35	CFC35M38G	CFC35F38G	CFC35F38GA	CFC35C32
CFC50	CFC50M38G	CFC50F38G	CFC50F38GA	CFC50C32
CFC75	CFC75M38G	CFC75F38G	CFC75F38GA	CFC75C32
CFC100	CFC100M38G	CFC100F38G	CFC100F38GA	CFC100C32
CFC125	CFC125M38G	CFC125F38G	CFC125F38GA	CFC125C32

CBC Suction Cup with 1.5 Bellows

	Fittings			
	M38G	F38G	F38GA	C32
CBC22	CBC22M38G	CBC22F38G	CBC22F38GA	CBC22C32
CBC30 (1)	CBC30M38G	CBC30F38G	CBC30F38GA	CBC30C32
CBC45	CBC45M38G	CBC45F38G	CBC45F38GA	CBC45C32
CBC60	CBC60M38G	CBC60F38G	CBC60F38GA	CBC60C32
CBC85	CBC85M38G	CBC85F38G	CBC85F38GA	CBC85C32
CBC115	CBC115M38G	CBC115F38G	CBC115F38GA	CBC115C32

COFC Flat Oblong Suction Cup



	Fittings			
	M38G	F38G	F38GA	C32
COFC2565	COFC2565M38G	COFC2565F38G	COFC2565F38GA	COFC2565C32
COFC3080	COFC3080M38G	COFC3080F38G	COFC3080F38GA	COFC3080C32
COFC4080	COFC4080M38G	COFC4080F38G	COFC4080F38GA	COFC4080C32
COFC50100	COFC50100M38G	COFC50100F38G	COFC50100F38GA	COFC50100C32

COBC Oblong Suction Cup with 1.5 Bellows

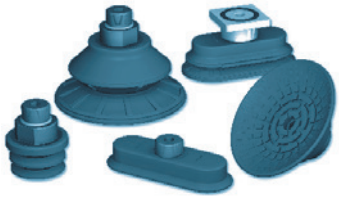
	Fittings			
	M38G	F38G	F38GA	C32
COBC3065	COBC3065M38G	COBC3065F38G	COBC3065F38GA	COBC3065C32
COBC4080	COBC4080M38G	COBC4080F38G	COBC4080F38GA	COBC4080C32
COBC55110	COBC55110M38G	COBC55110F38G	COBC55110F38GA	COBC55110C32
COBC70140	COBC70140M38G	COBC70140F38G	COBC70140F38GA	COBC70140C32

(1) CBC 30 M38G SP624

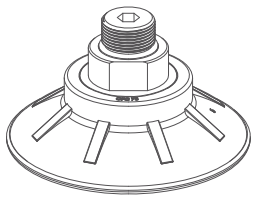
In order to meet the specific needs of end-of-arm tooling users in Stamping, COVAL has designed a Ø 30 mm suction cup, with an extra-large Ø 9.5 mm air-flow, thus removing pressure drops in the vacuum network of the gripper's power supply.

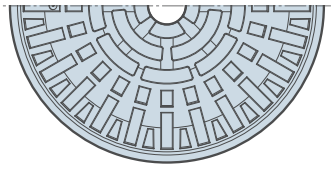
High-performance Suction Cups

Suction Cup Properties



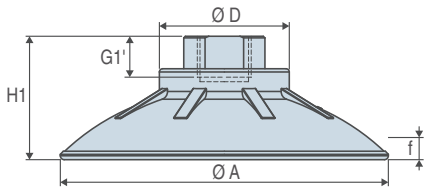
CFC Flat Suction Cup



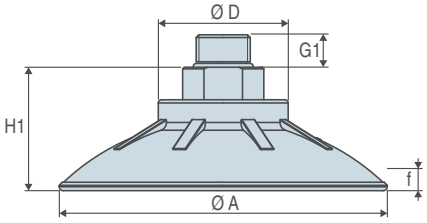


	ØA at rest	ØA gripping	(cm³)	(lbf) (1)	(lbf) (1)	Rmin	Rmin	Ø bore	tightening
CFC 35	37	38.5	2.46	11.24	11.24	58	50	6.3	w 22 + hk 6
CFC 50	51	54	8.37	22.48	22.48	66	52	6.3	w 22 + hk 6
CFC 75	76	80	25.03	44.96	38.22	100	58	6.3	w 22 + hk 6
CFC 100	101	105.7	57.61	78.68	60.70	120	90	6.3	w 22 + hk 6
CFC 125	127	132	119.7	123.64	107.90	160	115	6.3	w 22 + hk 8

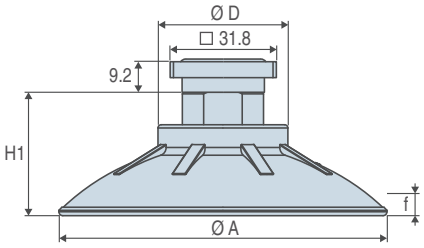
	H1	f (3)	G1	G1'	ØD	(g)			
						F38G	F38GA	M38G	C32
CFC 35	25	3	10	12.6	37	14	25.7	18	36.2
CFC 50	30	5.5	10	12.6	38	25	34.9	29	47.2
CFC 75	33	8	10	12.6	41	40	48.9	45	62.2
CFC 100	38	10	10	12.6	41	67	75.3	72	89.2
CFC 125	44	14	10	12.6	55	119	146	124	141.2



F38G/F38GA Female fitting G3/8"

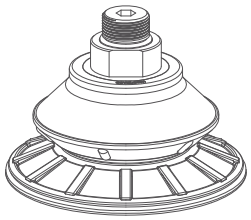


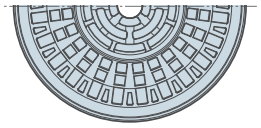
M38G Male fitting G3/8"



C32 Square coupling 32

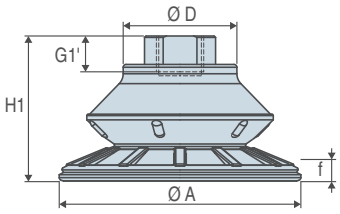
CBC Suction Cup with 1.5 Bellows



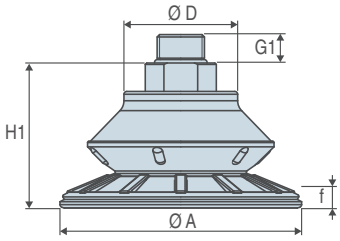


	ØA at rest	ØA gripping	(cm³)	(lbf) (1)	(lbf) (1)	Rmin	Rmin	Ø bore	tightening
CBC 22	21.5	22	1.6	3.82	3.82	25	30	6.3	w 22 + hk 6
CBC 30 (2)	32	34	5	8.99	8.99	30	32	6.3	w 22 + hk 6
CBC 45	47	48.7	11.47	15.74	20.23	36	45	6.3	w 22 + hk 6
CBC 60	62	64.5	25.31	31.47	29.22	44	62	6.3	w 22 + hk 6
CBC 85	85	88	66.54	51.70	53.95	65	115	6.3	w 22 + hk 6
CBC 115	115	119	141.47	94.42	87.67	84	140	6.3	w 22 + hk 8

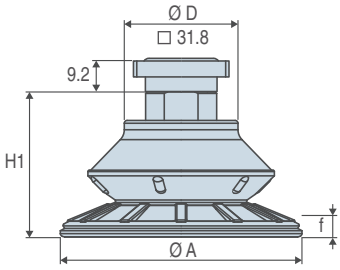
	H1	f (3)	G1	G1'	ØD	(g)			
						F38G	F38GA	M38G	C32
CBC 22	32	6	10	12.6	37	10	23	14	32.2
CBC 30 (2)	31	8	10	12.6	37	14	26.3	19	36.2
CBC 45	36	11	10	12.6	37	22	31.5	26	44.2
CBC 60	41	14	10	12.6	39	32	42	37	54.2
CBC 85	51	22	10	12.6	41	64	71.2	69	86.2
CBC 115	53	24	10	12.6	55	103	131.1	107	125.2



F38G/F38GA Female fitting G3/8"



M38G Male fitting G3/8"



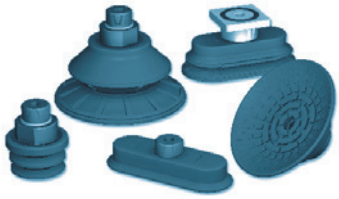
C32 Square coupling 32

(1) Force measured at 65% on dry, smooth, flat sheet metal, without safety factor.

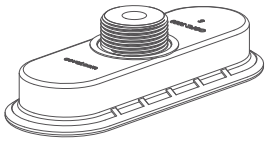
(2) A specific model of the CBC 30 is available with M 3/8G fitting and 9.5mm diameter bore: **CBC30 M38G SP624**. (3) f: deflection of the suction cup. Note: All dimensions are in mm.

High-performance Suction Cups

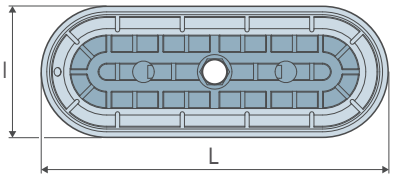
Suction Cup Properties



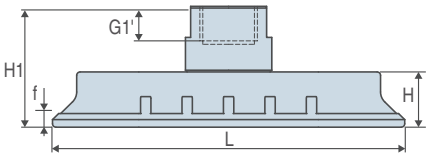
COFC Flat Oblong Suction Cup



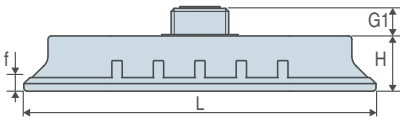
	l x L	l x L	(cm³)	(lbf) (1)	(lbf) (1)	Rmin	Rmin	Ø bore	tightening
COFC 2565	25x65	26.8x67	3.78	15.74	15.74	25	25	6	hk 6
COFC 3080	30x80	31.5x82	6.08	24.73	20.23	40	32	6	hk 6
COFC 4080	40x80	42x82	11.03	31.47	26.98	60	40	6	hk 6
COFC 50100	50x100	52.5x102.5	22.25	51.70	53.95	70	50	6	hk 6



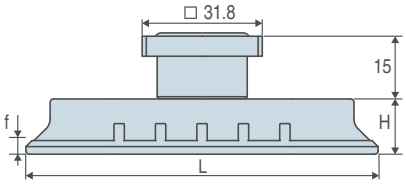
	H1	H	G1	G1'	f (2)	(g)			
						F38G	F38GA	M38G	C32
COFC 2565	31.5	12.5	8	10	3	24	35	17	35
COFC 3080	32	13	8	10	3	29	45	22	40
COFC 4080	34	15	8	10	4.5	30	45.5	23	41
COFC 50100	35	16	8	10	6	43	72.7	36	54



F38G/F38GA Female fitting G3/8"

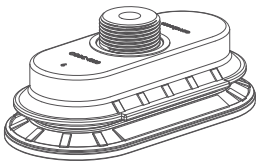


M38G Male fitting G3/8"

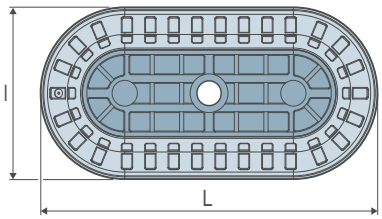


C32 Square coupling 32

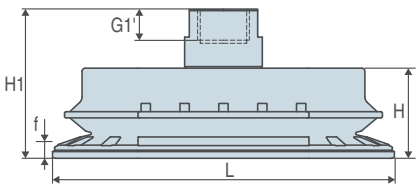
COBC Oblong Suction Cup with 1.5 Bellows



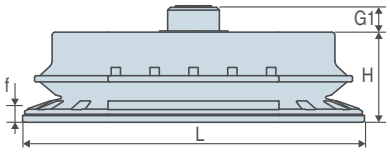
	l x L at rest	l x L gripping	(cm³)	(lbf) (1)	(lbf) (1)	Rmin	Rmin	Ø bore	tightening
COBC 3065	31x65	32.3x67	9.98	13.49	13.49	25	30	6	hk 6
COBC 4080	40x80	41.5x82	19.44	24.73	26.98	38	37	6	hk 6
COBC 55110	55x110	57x112.5	49.25	38.22	42.71	58	57	6	hk 6
COBC 70140	70x140	72x143	93.57	67.44	67.44	72	68	6	hk 6



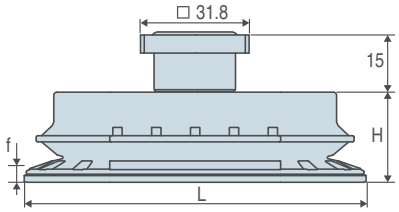
	H1	H	G1	G1'	f (2)	(g)			
						F38G	F38GA	M38G	C32
COBC 3065	39	20	8	10	7	31	45.5	25	43
COBC 4080	41	22	8	10	9	37	53.1	31	49
COBC 55110	48	29	8	10	13	68	95.1	62	80
COBC 70140	49	30	8	10	16	103	121.4	97	115



F38G/F38GA Female fitting G3/8"



M38G Male fitting G3/8"



C32 Square coupling 32

The values represent the average characteristics of our products.

(1) Force measured at 65% on dry, smooth, flat sheet metal without safety factor. (2) f = deflection of the suction cup.

Note: All dimensions are in mm.

MVS

Soft and Flexible Suction Cups for High Speed Applications

Industry-specific applications

Types of use

COVAL has designed a range of high performance cups in order to meet demanding industry requirements for gripping soft or flexible products at high speeds.

- Soft, thin sealing lip and optional cleats provide a perfect grip during high work rates for all types of flexible shapes and materials.
- Food-grade silicone meets FDA and CE standards.
- Available in 1.5 and 2.5 bellows.
- Available in Ø 20-40 mm.

Applications

This flexibility allows for high speed gripping of all types of materials and foods: FlowPack, DoyPack, thermoformed food trays, raw materials (sausage, fresh fish, cookies, chocolates)...Speeds of 120 or more grip and release cycles per minute.

Materials

SIB 35 Shore A white silicone
SIT5 50 Shore A Translucent silicone

Suction Cup Characteristics

	Ø (mm)	(cm³)	(lbf) (1)	SIB	SIT5	Fittings		
				Reference	Reference	G1/8"-M	G1/4"-M	G1/4"-F
MVS202.5	20	4	0.70	**MVS202.5SIB**	**MVS202.5SIT5**	IM18SP1251	-	-
MVS202.5...C	20	4	0.74	**MVS202.5SIBC**	**MVS202.5SIT5C**	IM18SP1251	-	-
MVS301.5	30	7	1.75	**MVS301.5SIB**	**MVS301.5SIT5**	-	IM51SP143	IF50SP143
MVS301.5...C	30	7	2.27	**MVS301.5SIBC**	**MVS301.5SIT5C**	-	IM51SP143	IF50SP143
MVS302.5	30	11.2	1.71	**MVS302.5SIB**	**MVS302.5SIT5**	-	IM51SP143	IF50SP143
MVS302.5...G	30	11.2	1.71	**MVS302.5SIBG**	**MVS302.5SIT5G**	-	IM51SP143	IF50SP143
MVS302.5...C	30	11.2	1.91	**MVS302.5SIBC**	**MVS302.5SIT5C**	-	IM51SP143	IF50SP143
MVS401.5...C	40	7.3	2.85	**MVS401.5SIBC**	**MVS401.5SIT5C**	-	IM51SP143	IF50SP143
MVS402.5...C	40	13	1.84	**MVS402.5SIBC**	**MVS402.5SIT5C**	-	IM51SP143	IF50SP143

(1) Actual holding force of the suction cup at a vacuum of 65% on flat and smooth surface and safety factor of 2 included.

MVS302.5

MVS302.5C

MVS302.5G

For applications requiring suction cups with a smaller diameter, we recommend the VSA series in the SIB version, see pages 2/25.

Specify the part number e.g.: MVS302.5SIBC
Please refer to the characteristics table above

Note: Nozzle fitting IM5MVS see page 4/9.

Accessories

To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

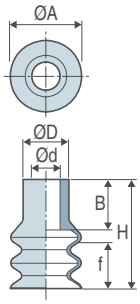
MVS

Soft and Flexible Suction Cups for High Speed Applications

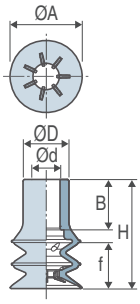
Dimensions

Suction Cups

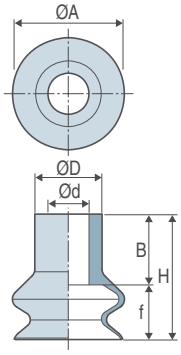
MVS202.5



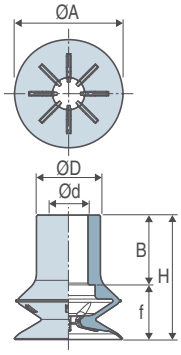
MVS202.5...C



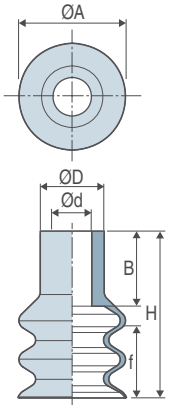
MVS301.5



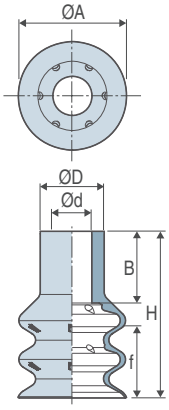
MVS301.5...C



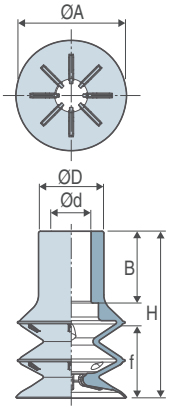
MVS302.5



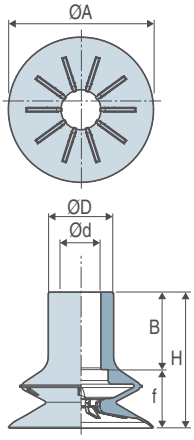
MVS302.5...G



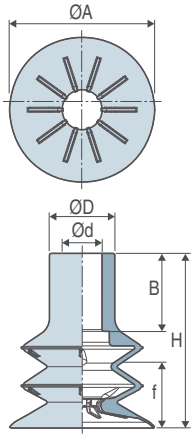
MVS302.5...C



MVS401.5...C



MVS402.5...C

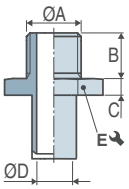


	Ø A	H	Ø d	Ø D	f (2)	B	(g)
MVS202.5	20	31	8	13	10	13	2.3
MVS202.5...C	20	31	8	13	10	13	3
MVS301.5	30	35	11	18	10	19.5	5.9
MVS301.5...C	30	35	11	18	9	19.5	6.5
MVS302.5	30	46	11	18	17.5	19.5	7.4
MVS302.5...G	30	46	11	18	17.5	19.5	6.8
MVS302.5...C	30	46	11	18	15.5	19.5	8.2
MVS401.5...C	40	37.5	11	18	7	21.5	8.7
MVS402.5...C	40	48	11	18	15.5	21.5	10.5

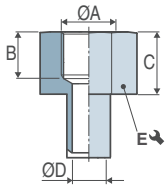
(2) f = Deflection of the suction cup.

Barbed Fittings

Male fittings



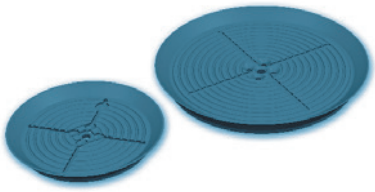
Female fittings



	ØA	B	C	ØD	E	Materials	(g)
IM 18 SP1251	G1/8"-M	8	5	4.8	14	POM-C	2.5
IM 51 SP143	G1/4"-M	11	6	8	21	Aluminum	10.5
IF 50 SP143	G1/4"-F	10	15	8	21	Aluminum	14.4

The values represent the average characteristics of our products.
Note: All dimensions are in mm

SPL
Heavy Load Suction Cups



SPL suction cups are used to handle heavy loads such as sheet metal or glass panels. They have internal cleats allowing them to handle thin sheet metal without distorting them and for vertical handling (non-slip).

SPL suction cups are delivered without holes for fittings or you can choose from our range of standard models or specific models on request.

Industry-specific applications

Types of use

Materials

NBR Nitrile
Si Silicone

Suction Cup Characteristics

	(cm³)	(lbf) (1)	(lbf) (1)	Ø A	H	Ø D	f (2)	NBR	Si	Fittings (3)	(kg)
SPL 240	510	292	146	240	28	200	14	**SPL240NBR**	**SPL240SI**	Steel	2.2
SPL 340	720	617	308	340	32	300	15	**SPL340NBR**	**SPL340SI**	Steel	5.5
SPL 400	850	812	406	400	46	300	25	**SPL400NBR**	**SPL400SI**	Steel	7.6
SPL 500	1050	1299	649	500	46	400	25	**SPL500NBR**	-	Steel	12
SPL 600	1300	1786	893	600	46	500	25	**SPL600NBR**	-	Steel	18

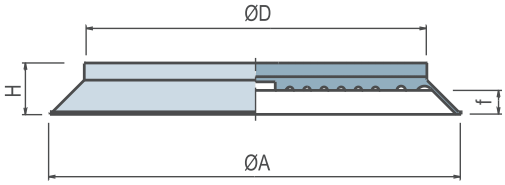
(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.
(2) f = Deflection of the suction cup.
(3) Thickness of the steel fitting: 8 mm

Standard internal threads

The threads given below are for mounting on the COVAL spring systems (not supplied with the suction cup).

RSC1: specify **G38 RS1** in the order number

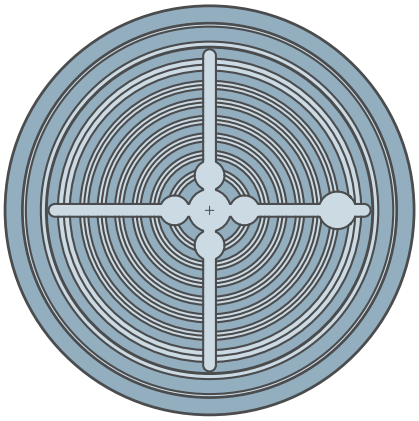
RSC2: specify **G38 RS2** in the order number

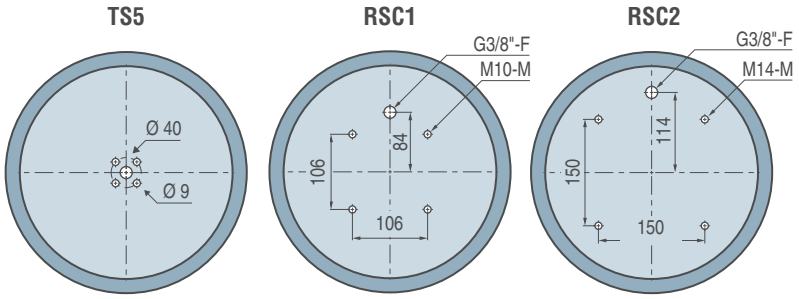


Internal Thread

	TS5 + IFA 12120	RSC1 (1)	RSC2 (1)
SPL 240	■	■	-
SPL 340	■	■	■
SPL 400	-	-	■

(1) A G3/8" internal thread is available for connection to the vacuum system.





The values represent the average characteristics of our products.
Note: All dimensions are in mm

For all orders, please specify the part number from characteristics table and any required threadings
E.g.: SPL240NBRG38RS1

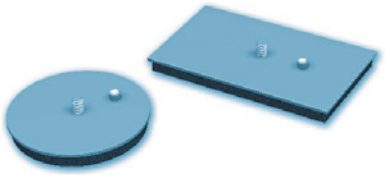
Accessories

Suction cups from the SPL series can be mounted on RSC series spring systems. SPL 240 suction cups can be mounted on the IFA 12 120 fitting and the TS560 spring system. See page 4/5.

Steel

Steel Suction Cups with Bonded Seal

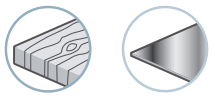
With Bonded Seal



For horizontal handling of heavy loads (very thick sheet metal) or objects with an uneven surface such as concrete slabs or wood,etc.

Advantage: wide selection of shapes and sizes.

Industry-specific applications



Types of use

Materials

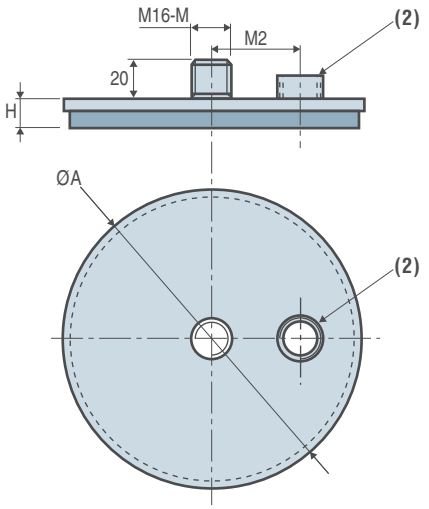
Body	Painted steel
Foam seal	Nitrile

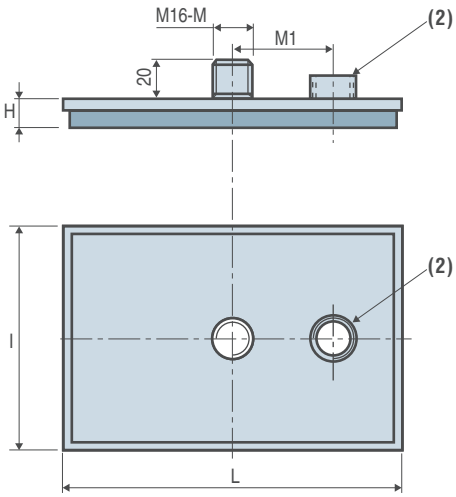
3

Suction Cup Characteristics

Round suction cups				Rectangular suction cups							
	Ø A	H	(lbf) (1)		L	l	H	M1/M2	Rac. (2)	(lbf) (1)	Type of seal
5020	150	25	70	**6020**	175	115	25	40	G1/4"-F	75	BM 2020 SPTR
5028	170	25	97	**6028**	215	115	25	45	G1/4"-F	96	BM 2020 SPTR
5035	190	25	128	**6035**	225	125	25	50	G1/4"-F	115	BM 2020 SPTR
5050	210	25	166	**6050**	250	150	25	60	G1/4"-F	169	BM 2020 SPTR
5085	260	25	278	**6085**	305	180	25	70	G1/4"-F	271	BM 2020 SPTR
5150	350	35	482	**6150**	410	250	35	80	G3/8"-F	485	BM 3030 SPTR
5240	420	35	744	**6240**	480	310	35	100	G3/8"-F	768	BM 3030 SPTR
5330	500	35	1111	**6330**	575	330	35	120	G3/8"-F	1016	BM 3030 SPTR
5500	580	35	1550	**6500**	705	385	35	140	G3/8"-F	1531	BM 3030 SPTR

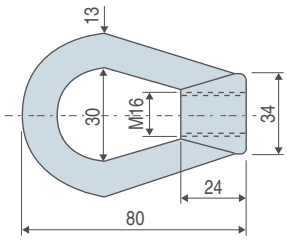
(1) Force measured at 65% vacuum including a factor of 2.



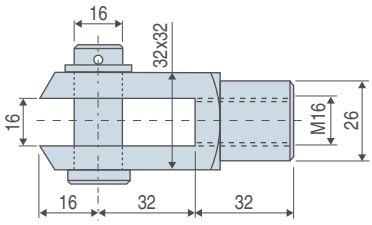


Fittings

■ **5000 An** ring fitting



■ **5000 Ch** cap fitting



The values represent the average characteristics of our products.
Note: All dimensions are in mm

For all orders, please specify:
Round suction cup: Model + Fitting model.
E.g.: 5050 5000 An

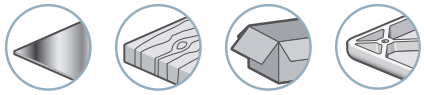
Option
Spring system mounting, see page 4/5.

VP
Flat Suction Cups Ø 8 to 75 mm

VP series flat suction cups are specially recommended for handling flat, rigid, smooth products.

- High tensile force
- High resistance to lateral forces enabling vertical handling.
- High degree of precision

Industry-specific applications



Types of use

Materials

NBR Nitrile
NR Natural rubber
SIT5 Translucent silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SIT5	NR	STN
VP 8	7.5	0.04	0.24	0.12	10	**VP8NBR**	**VP8SIT5**	-	**VP8STN**
VP 10	10	0.05	0.36	0.18	13	**VP10NBR**	**VP10SIT5**	-	-
VP 15	15	0.18	0.83	0.41	13	**VP15NBR**	**VP15SIT5**	-	**VP15STN**
VP 20	20	0.44	1.38	0.68	20	**VP20NBR**	**VP20SIT5**	-	**VP20STN**
VP 25	25	0.7	2.11	1.06	25	**VP25NBR**	**VP25SIT5**	-	**VP25STN**
VP 26	26	1.5	2.52	1.25	35	**VP26NBR**	**VP26SIT5**	-	-
VP 30	30	2.9	3.57	1.79	40	**VP30NBR**	**VP30SIT5**	-	**VP30STN**
VP 35	35	2.7	5.20	2.60	50	**VP35NBR**	**VP35SIT5**	-	-
VP 40	40	4	6.01	3.00	50	**VP40NBR**	**VP40SIT5**	**VP40NR**	**VP40STN**
VP 50	52	7	8.60	4.30	75	**VP50NBR**	**VP50SIT**	-	**VP50STN**
VP 60	60	7.3	12.99	6.49	100	**VP60NBR**	**VP60SIT5**	-	-
VP 75	75	16	22.73	11.36	130	**VP75NBR**	**VP75SIT5**	**VP75NR**	-

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	Group	M5-M	M6-M	M8-M	M10-M	G1/8"-F	G1/8"-M	10/32-M	G1/4"-F	G1/4"-M	G3/8"-M	G1/2"-M
8…25	**1**	■	■	-	-	■	■	□	-	-	-	-
26…60	**2**	□	□	□	□	■	■	-	■	■	-	-
75	**3**	-	-	-	□	-	■	-	■	■	□	□

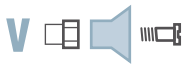
■ Standard available configurations (suction cup + fitting) refer to page 2/4
□ Additional mounting configurations see page 2/7
Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations.

Version C: Barbed fitting

Version S: Factory-crimped fitting



Version V: Removable fitting: (adapter and hollow screw)

Version E: Pressed fitting

Please specify the part n°. e.g. VP40STNIM14C
Refer to page 2/4

Accessories
To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (feelers, nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

VP

Flat Suction Cups Ø 8 to 75 mm

References "Suction Cup + Fitting"

Group 1 — C

Ø 8 - 25 mm	THREAD	M5-M	M6-M	G1/8"-M	G1/8"-F
	VP8NBR	VP8NBRIMM5C	VP8NBRIMM6C	VP8NBRIM18C	VP8NBRIF18C
	VP8SIT5	VP8SIT5IMM5C	VP8SIT5IMM6C	VP8SIT5IM18C	VP8SIT5IF18C
	VP8STN	VP8STNIMM5C	VP8STNIMM6C	VP8STNIM18C	VP8STNIF18C
	VP10NBR	VP10NBRIMM5C	VP10NBRIMM6C	VP10NBRIM18C	VP10NBRIF18C
	VP10SIT5	VP10SIT5IMM5C	VP10SIT5IMM6C	VP10SIT5IM18C	VP10SIT5IF18C
	VP15NBR	VP15NBRIMM5C	VP15NBRIMM6C	VP15NBRIM18C	VP15NBRIF18C
	VP15SIT5	VP15SIT5IMM5C	VP15SIT5IMM6C	VP15SIT5IM18C	VP15SIT5IF18C
	VP15STN	VP15STNIMM5C	VP15STNIMM6C	VP15STNIM18C	VP15STNIF18C
	VP20NBR	VP20NBRIMM5C	VP20NBRIMM6C	VP20NBRIM18C	VP20NBRIF18C
	VP20SIT5	VP20SIT5IMM5C	VP20SIT5IMM6C	VP20SIT5IM18C	VP20SIT5IF18C
	VP20STN	VP20STNIMM5C	VP20STNIMM6C	VP20STNIM18C	VP20STNIF18C
	VP25NBR	VP25NBRIMM5C	VP25NBRIMM6C	VP25NBRIM18C	VP25NBRIF18C
	VP25SIT5	VP25SIT5IMM5C	VP25SIT5IMM6C	VP25SIT5IM18C	VP25SIT5IF18C
	VP25STN	VP25STNIMM5C	VP25STNIMM6C	VP25STNIM18C	VP25STNIF18C
	VP25SIT5	VP25SIT5IMM5C	VP25SIT5IMM6C	VP25SIT5IM18C	VP25SIT5IF18C
	VP25STN	VP25STNIMM5C	VP25STNIMM6C	VP25STNIM18C	VP25STNIF18C

Group 2 — C / E / V

Ø 26 - 60 mm	THREAD	G1/4"-M	G1/4"-F	G1/4"-M	G1/4"-F	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F
	VP26NBR	VP26NBRIM14C	VP26NBRIF14C	VP26NBRIM14	VP26NBRIF14	VP26NBRIM18V	VP26NBRIF18V	VP26NBRIM14V	VP26NBRIF14V
	VP26SIT5	VP26SIT5IM14C	VP26SIT5IF14C	VP26SIT5IM14	VP26SIT5IF14	VP26SIT5IM18V	VP26SIT5IF18V	VP26SIT5IM14V	VP26SIT5IF14V
	VP30NBR	VP30NBRIM14C	VP30NBRIF14C	VP30NBRIM14	VP30NBRIF14	VP30NBRIM18V	VP30NBRIF18V	VP30NBRIM14V	VP30NBRIF14V
	VP30SIT5	VP30SIT5IM14C	VP30SIT5IF14C	VP30SIT5IM14	VP30SIT5IF14	VP30SIT5IM18V	VP30SIT5IF18V	VP30SIT5IM14V	VP30SIT5IF14V
	VP30STN	VP30STNIM14C	VP30STNIF14C	VP30STNIM14	VP30STNIF14	VP30STNIM18V	VP30STNIF18V	VP30STNIM14V	VP30STNIF14V
	VP35NBR	VP35NBRIM14C	VP35NBRIF14C	VP35NBRIM14	VP35NBRIF14	VP35NBRIM18V	VP35NBRIF18V	VP35NBRIM14V	VP35NBRIF14V
	VP35SIT5	VP35SIT5IM14C	VP35SIT5IF14C	VP35SIT5IM14	VP35SIT5IF14	VP35SIT5IM18V	VP35SIT5IF18V	VP35SIT5IM14V	VP35SIT5IF14V
	VP40NBR	VP40NBRIM14C	VP40NBRIF14C	VP40NBRIM14	VP40NBRIF14	VP40NBRIM18V	VP40NBRIF18V	VP40NBRIM14V	VP40NBRIF14V
	VP40NR	VP40NRIM14C	VP40NRIF14C	VP40NRIM14	VP40NRIF14	VP40NRIM18V	VP40NRIF18V	VP40NRIM14V	VP40NRIF14V
	VP40SIT5	VP40SIT5IM14C	VP40SIT5IF14C	VP40SIT5IM14	VP40SIT5IF14	VP40SIT5IM18V	VP40SIT5IF18V	VP40SIT5IM14V	VP40SIT5IF14V
	VP40STN	VP40STNIM14C	VP40STNIF14C	VP40STNIM14	VP40STNIF14	VP40STNIM18V	VP40STNIF18V	VP40STNIM14V	VP40STNIF14V
	VP50NBR	VP50NBRIM14C	VP50NBRIF14C	VP50NBRIM14	VP50NBRIF14	VP50NBRIM18V	VP50NBRIF18V	VP50NBRIM14V	VP50NBRIF14V
	VP50SIT5	VP50SIT5IM14C	VP50SIT5IF14C	VP50SIT5IM14	VP50SIT5IF14	VP50SIT5IM18V	VP50SIT5IF18V	VP50SIT5IM14V	VP50SIT5IF14V
	VP50STN	VP50STNIM14C	VP50STNIF14C	VP50STNIM14	VP50STNIF14	VP50STNIM18V	VP50STNIF18V	VP50STNIM14V	VP50STNIF14V
	VP60NBR	VP60NBRIM14C	VP60NBRIF14C	VP60NBRIM14	VP60NBRIF14	VP60NBRIM18V	VP60NBRIF18V	VP60NBRIM14V	VP60NBRIF14V
	VP60SIT5	VP60SIT5IM14C	VP60SIT5IF14C	VP60SIT5IM14	VP60SIT5IF14	VP60SIT5IM18V	VP60SIT5IF18V	VP60SIT5IM14V	VP60SIT5IF14V
	VP60SIT5	VP60SIT5IM14C	VP60SIT5IF14C	VP60SIT5IM14	VP60SIT5IF14	VP60SIT5IM18V	VP60SIT5IF18V	VP60SIT5IM14V	VP60SIT5IF14V

Group 3 — V / S

Ø 75 mm	THREAD	G1/8"-M	G1/4"-M	G1/4"-F	G1/4"-M	G1/4"-F
	VP75NBR	VP75NBRIM18V	VP75NBRIM14V	VP75NBRIF14V	VP75NBRIM14	VP75NBRIF14
	VP75NR	VP75NRIM18V	VP75NRIM14V	VP75NRIF14V	VP75NRIM14	VP75NRIF14
	VP75SIT5	VP75SIT5IM18V	VP75SIT5IM14V	VP75SIT5IF14V	VP75SIT5IM14	VP75SIT5IF14

Additional mounting configurations are available (see page 2/7).
For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

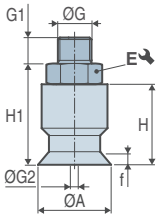
VP

Flat Suction Cups Ø 8 to 75 mm

Dimensions "Suction Cup + Fitting"

VP 8 - 10 | Group 1

1



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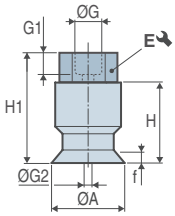
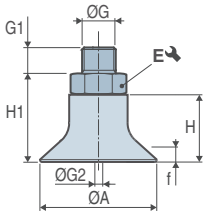


VP 15 - 25 | Group 1

3



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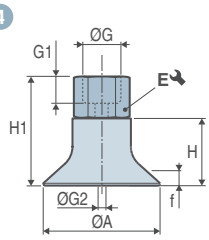
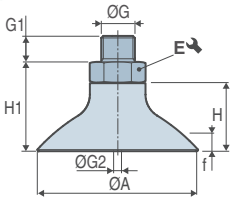


VP 26 - 60 | Group 2

5



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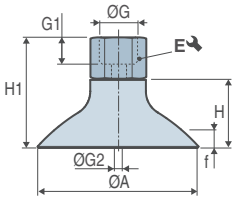
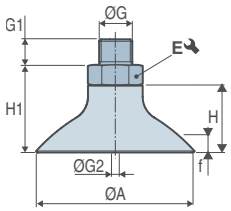


VP 75 | Group 3

7



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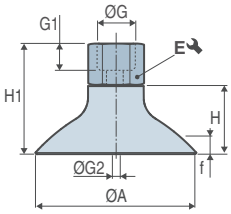

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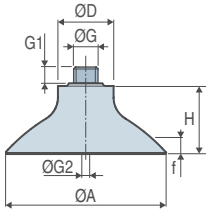


Group 1		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 8 - 25 mm	VP8---IMM5C	1	7.5	-	1.3	10	15	M5-M	4.5	2.5	7	3.5
	VP8---IMM6C	1	7.5	-	1.3	10	15	M6-M	5	3.5	7	3.1
	VP8---IM18C	1	7.5	-	1.3	10	16	G1/8"-M	7.5	3.5	14	4.5
	VP8---IF18C	2	7.5	-	1.3	10	22	G1/8"-F	8	3.5	14	4.4
	VP10---IMM5C	1	10	-	1.5	10.5	15.5	M5-M	4.5	2.5	7	3.6
	VP10---IMM6C	1	10	-	1.5	10.5	15.5	M6-M	5	3.5	7	3.2
	VP10---IM18C	1	10	-	1.5	10.5	16.5	G1/8"-M	7.5	3.5	14	4.6
	VP10---IF18C	2	10	-	1.5	10.5	22.5	G1/8"-F	8	3.5	14	4.5
	VP15---IMM5C	3	15	-	2.25	11	16	M5-M	4.5	2.5	7	3.8
	VP15---IMM6C	3	15	-	2.25	11	16	M6-M	5	3.5	7	3.4
	VP15---IM18C	3	15	-	2.25	11	17	G1/8"-M	7.5	3.5	14	4.8
	VP15---IF18C	4	15	-	2.25	11	23	G1/8"-F	8	3.5	14	4.7
	VP20---IMM5C	3	20	-	3	11.5	17.5	M5-M	4.5	2.5	7	4.2
	VP20---IMM6C	3	20	-	3	11.5	23.5	M6-M	5	3.5	7	3.8
	VP20---IM18C	3	20	-	3	11.5	16.5	G1/8"-M	7.5	3.5	14	5.2
	VP20---IF18C	4	20	-	3	11.5	16.5	G1/8"-F	8	3.5	14	5.1
	VP25---IMM5C	3	25	-	3	12	17	M5-M	4.5	2.5	7	4.6
	VP25---IMM6C	3	25	-	3	12	17	M6-M	5	3.5	7	4.2
	VP25---IM18C	3	25	-	3	12	18	G1/8"-M	7.5	3.5	14	5.6
	VP25---IF18C	4	25	-	3	12	24	G1/8"-F	8	3.5	14	5.5

Note: All dimensions are in mm

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VP

Flat Suction Cups Ø 8 to 75 mm

Dimensions "Suction Cup + Fitting"

Group 2		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 26 - 60 mm	VP26---IM18V	5	26	-	3	19.5	24	G1/8"-M	6	3.5	13	17.9
	VP26---IF18V	6	26	-	3	19.5	32.5	G1/8"-F	7.5	3.5	13	21.2
	VP26---IM14	5	26	-	3	19.5	23.5	G1/4"-M	11	4.4	17	11.6
	VP26---IM14C	5	26	-	3	19.5	27.5	G1/4"-M	10	7	17	12.5
	VP26---IM14V	5	26	-	3	19.5	24.5	G1/4"-M	8	3.5	17	27.2
	VP26---IF14	6	26	-	3	19.5	34.5	G1/4"-F	10	4.4	17	12.2
	VP26---IF14C	6	26	-	3	19.5	34.5	G1/4"-F	12	6.9	17	11.8
	VP26---IF14V	6	26	-	3	19.5	35.5	G1/4"-F	11	3.5	17	31.8
	VP30---IM18V	5	30	-	2.5	19	23.5	G1/8"-M	6	3.5	13	17.3
	VP30---IF18V	6	30	-	2.5	19	32	G1/8"-F	7.5	3.5	13	21.6
	VP30---IM14	5	30	-	2.5	19	23	G1/4"-M	11	4.4	17	12.0
	VP30---IM14C	5	30	-	2.5	19	27	G1/4"-M	10	7	17	12.9
	VP30---IM14V	5	30	-	2.5	19	24	G1/4"-M	8	3.5	17	27.6
	VP30---IF14	6	30	-	2.5	19	34	G1/4"-F	10	4.4	17	12.6
	VP30---IF14C	6	30	-	2.5	19	34	G1/4"-F	12	6.9	17	12.2
	VP30---IF14V	6	30	-	2.5	19	35	G1/4"-F	11	3.5	17	32.2
	VP35---IM18V	5	35	-	3	20	24.5	G1/8"-M	6	3.5	13	20.1
	VP35---IF18V	6	35	-	3	20	33	G1/8"-F	7.5	3.5	13	23.4
	VP35---IM14	5	35	-	3	20	24	G1/4"-M	11	4.4	17	13.8
	VP35---IM14C	5	35	-	3	20	28	G1/4"-M	10	7	17	14.7
	VP35---IM14V	5	35	-	3	20	25	G1/4"-M	8	3.5	17	29.4
	VP35---IF14	6	35	-	3	20	35	G1/4"-F	10	4.4	17	14.4
	VP35---IF14C	6	35	-	3	20	35	G1/4"-F	12	6.9	17	14.0
	VP35---IF14V	6	35	-	3	20	36	G1/4"-F	11	3.5	17	34.0
	VP40---IM18V	5	40	-	3	20	24.5	G1/8"-M	6	3.5	13	20.6
	VP40---IF18V	6	40	-	3	20	33	G1/8"-F	7.5	3.5	13	23.9
	VP40---IM14	5	40	-	3	20	24	G1/4"-M	11	4.4	17	14.3
	VP40---IM14C	5	40	-	3	20	28	G1/4"-M	10	7	17	15.2
	VP40---IM14V	5	40	-	3	20	25	G1/4"-M	8	3.5	17	29.9
	VP40---IF14	6	40	-	3	20	35	G1/4"-F	10	4.4	17	14.9
	VP40---IF14C	6	40	-	3	20	35	G1/4"-F	12	6.9	17	14.5
	VP40---IF14V	6	40	-	3	20	36	G1/4"-F	11	3.5	17	34.5
	VP50---IM18V	5	52	-	4.5	22	26.5	G1/8"-M	6	3.5	13	26.4
	VP50---IF18V	6	52	-	4.5	22	35	G1/8"-F	7.5	3.5	13	29.7
	VP50---IM14	5	52	-	4.5	22	26	G1/4"-M	11	4.4	17	20.1
	VP50---IM14C	5	52	-	4.5	22	30	G1/4"-M	10	7	17	21.0
	VP50---IM14V	5	52	-	4.5	22	27	G1/4"-M	8	3.5	17	35.7
	VP50---IF14	6	52	-	4.5	22	37	G1/4"-F	10	4.4	17	20.7
	VP50---IF14C	6	52	-	4.5	22	37	G1/4"-F	12	6.9	17	20.3
	VP50---IF14V	6	52	-	4.5	22	38	G1/4"-F	11	3.5	17	40.3
	VP60---IM18V	5	60	-	4.5	22	26.5	G1/8"-M	6	3.5	13	30.1
	VP60---IF18V	6	60	-	4.5	22	35	G1/8"-F	7.5	3.5	13	33.4
	VP60---IM14	5	60	-	4.5	22	26	G1/4"-M	11	4.4	17	23.8
	VP60---IM14C	5	60	-	4.5	22	30	G1/4"-M	10	7	17	24.7
	VP60---IM14V	5	60	-	4.5	22	27	G1/4"-M	8	3.5	17	39.4
	VP60---IF14	6	60	-	4.5	22	37	G1/4"-F	10	4.4	17	24.4
	VP60---IF14C	6	60	-	4.5	22	37	G1/4"-F	12	6.9	17	24.0
	VP60---IF14V	6	60	-	4.5	22	38	G1/4"-F	11	3.5	17	44.0

Group 3

Ø 75 mm	VP75---IM18V	9	75	23	4.5	32	-	G1/8"-M	8	6	-	58.3
	VP75---IM14	7	75	-	4.5	32	38	G1/4"-M	11	8	21	46.4
	VP75---IM14V	7	75	-	4.5	32	37	G1/4"-M	8	6	17	68.9
	VP75---IF14	8	75	-	4.5	32	47	G1/4"-F	10	8	21	50.3
	VP75---IF14V	8	75	-	4.5	32	51	G1/4"-F	9	6	17	78.5

Note: All dimensions are in mm

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VP

Flat Suction Cups Ø 8 to 75 mm

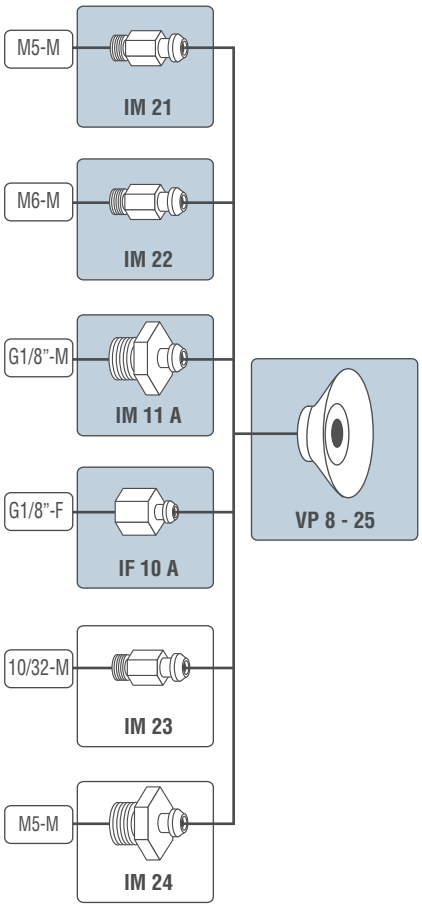
Assembly Diagrams

2

VP

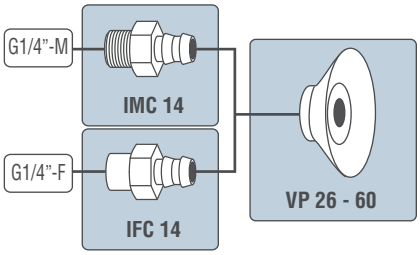
VP 8 - 25 | Group 1

Barbed fittings C

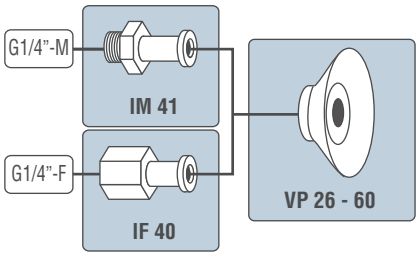


VP 26 - 60 | Group 2

Barbed fittings C

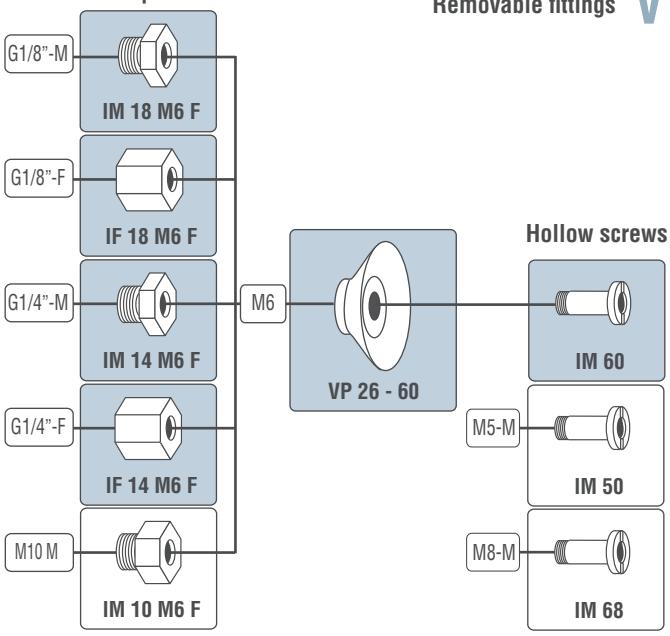


Pressed fittings E



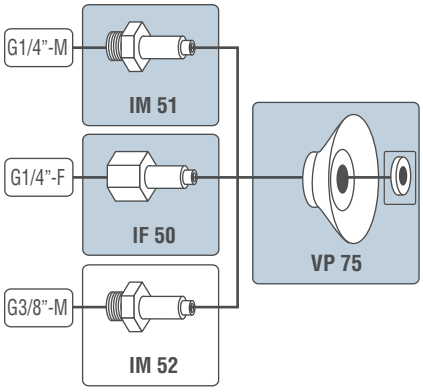
Adapters

Removable fittings V



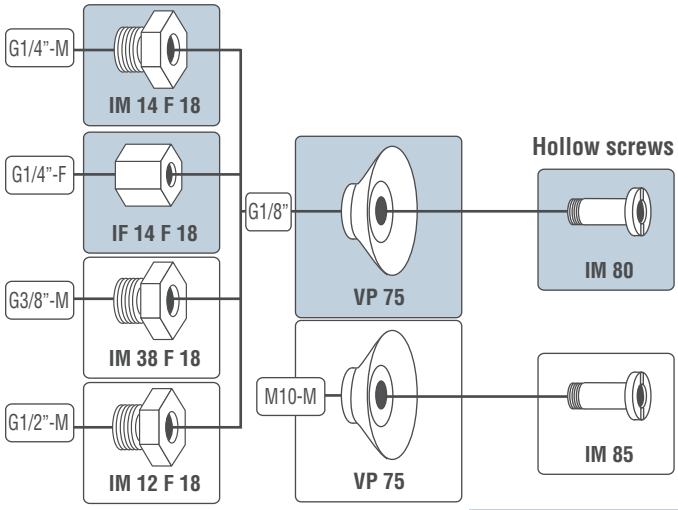
VP 75 | Group 3

Factory-crimped fittings S



Removable fittings V

Adapters



Configurations (suction cup + fitting) refer to page 2/4

Non-standard configurations must be ordered in seperate part numbers.

Fittings and suction cups dimensions: see page 2/8.

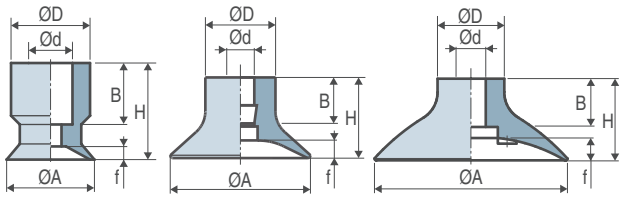
VP

Flat Suction Cups Ø 8 to 75 mm

Dimensions

Suction Cups

VP 8… 10 VP 15… 25 VP 26… 75

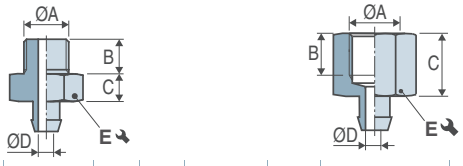


	ØA	H	Ød	ØD	f (1)	B	(g)
VP 8	7.5	10	5	9	1.3	7	0.4
VP 10	10	10.5	4.4	9	1.5	7	0.5
VP 15	15	11	4	9	2.25	7	0.7
VP 20	20	11.5	4	10	3	7	1.2
VP 25	25	12	4	10	3	7	1.4
VP 26	26	19.5	8	16	3	13	3.7
VP 30	30	19	8	16	2.5	13	4
VP 35	35	20	8	16	3	13	5.6
VP 40	40	20	8	16	3	13	9
VP 50	52	22	8	18	4.5	13	14
VP 60	60	22	8	18	4.5	13	16
VP 75	75	32	12	23	4.5	20	33

(1) f = Deflection of the suction cup.

Barbed Fittings

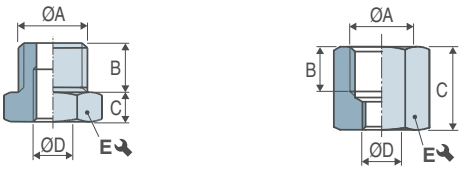
Male - IM Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 11 A	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IMC 14	G1/4"-M	10	8	7	17	Aluminum	8.7
IM 21 (2)	M5-M	4.5	5	2.5	7	Nickel-plated brass	3.1
IM 22 (2)	M6-M	5	5	3.5	7	Nickel-plated brass	2.7
IM 23	10/32-M	4.5	5	2.5	7	Brass	3
IM 24	M5-M	4.5	2.5	2.5	10	Nickel-plated brass	3.2
IF 10 A	G1/8"-F	8	12	3.5	14	Aluminum	4
IFC 14	G1/4"-F	12	15	6.9	17	Aluminum	8

Adapters for Hollow Screws

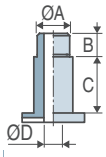
Male - IM Female- IF



	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Brass	5.9
IM 12 F18	G1/2"-M	14	6	G1/8"-F	22	Nickel-plated brass	46.8
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 14 F18	G1/4"-M	8	5	G1/8"-F	17	Nickel-plated brass	10.6
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IM 38 F18	G3/8"-M	9	5	G1/8"-F	19	Nickel-plated brass	18.8
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9
IF 14 F18	G1/4"-F	9	19	G1/8"-F	17	Nickel-plated brass	20.2

The values represent the average characteristics of our products.
Note: All dimensions are in mm.
(2) Flow restrictor version available: orifice calibrated to reduce leaks when used with a multi-cup gripper (see page 4/9).
(3) Available in stainless steel.

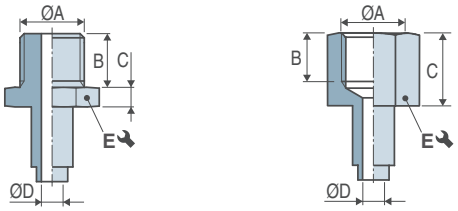
Hollow Screws



	ØA	B	C	ØD	Material	(g)
IM 50	M5-M	5	11	2.8	Brass	7.4
IM 60 (2) (3)	M6-M	7	11	3.5	Nickel-plated brass	7.5
IM 68	M8-M	8	11	5.2	Nickel-plated brass	6.4
IM 80	G1/8"-M	8	18	6	Nickel-plated brass	23.7
IM 85	M10x150-M	8	18	6	Nickel-plated brass	23.5

Factory-crimped Fittings

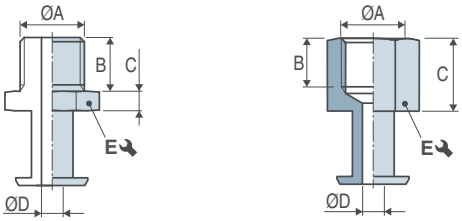
Male - IM Female- IF



	ØA	B	C	ØD	E	Material	(g)
IM 51	G1/4"-M	11	6	4.4	17	Aluminum	11.8
IF 50	G1/4"-F	10	15	8	21	Aluminum	15.7
IM 52	G3/8"-M	11	6	8	21	Aluminum	14

Pressed Fitting

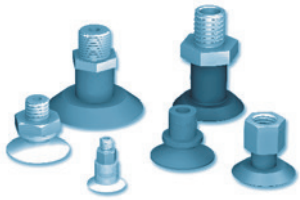
Male - IM Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 41	G1/4"-M	11	4	4.4	17	Aluminum	7.8
IF 40	G1/4"-F	10	15	4.4	17	Aluminum	8.4

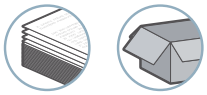
VPA

Suction Cups for Paper Applications



The VPA series is a range of suction cups with a very flexible lip used to handle highly flexible materials. These suction cups are specially designed for gripping in applications such as label placement, plastic films and printing. They are mainly produced in natural rubber(NR) to provide resistance to abrasion caused by paper and cardboard or in silicone(SIT5) for food compatibility.

Industry-specific applications



Types of use

Materials

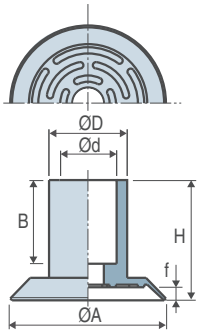
NBR	Nitrile	**NR**	Natural rubber
SIT5	Translucent silicone	**STN**	Siton®

Suction Cup Characteristics

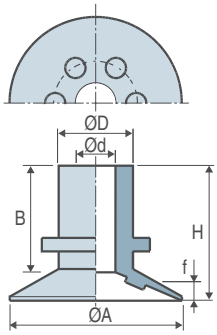
	Ø (mm)	(lbf) (1)	NBR	SIT5	NR	STN
VPA 15	15	0.65	-	**VPA15SIT5**	**VPA15NR**	-
VPA 20	20	0.97	-	**VPA20SIT5**	**VPA20NR**	-
VPA 25	25	1.46	-	**VPA25SIT5**	**VPA25NR**	**VPA25STN**
VPA 26	26	1.46	-	-	**VPA26NR**	**VPA26STN**
VPA 30	30	2.11	**VPA30NBR**	**VPA30SIT5**	**VPA30NR**	**VPA30STN**
VPA 35 A	35	2.76	-	-	**VPA35ANR**	-
VPA 40	40	4.71	-	**VPA40SIT5**	**VPA40NR**	-
VPA 25000	25.5	1.62	-	**VPA25000SIT5**	**VPA25000NR**	-
VPA 25001	25.5	1.62	-	**VPA25001SIT5**	**VPA25001NR**	-

(1) Actual force of the suction cup with 65% vacuum and a safety factor of 2 included.

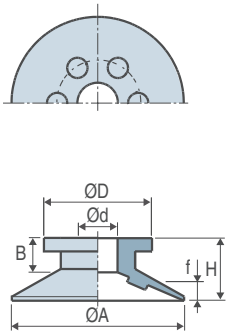
VPA 15…40



VPA 25000



VPA 25001



Suction Cup Dimensions

	ØA	H	Ød	ØD	f (2)	B
VPA 15	15	9.8	5	9	0.8	7
VPA 20	20	10.3	5	10	1.3	7
VPA 25	25	10.8	5	10	1.8	7
VPA 26	26	21.5	6	14	1.9	13.5
VPA 30	30	23	11	15	2.5	16
VPA 35 A	35	23	11	15	2.5	16
VPA 40	40	20	8	16	2	15
VPA 25000	25.5	20	5.8	11	3	15.8
VPA 25001	25.5	9.5	5.8	16	3	5.1

(2) f = Deflection of the suction cup.

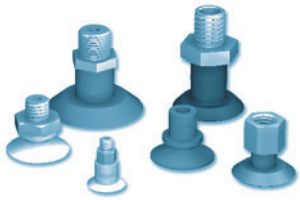
The values represent the average characteristics of our products.
Note: All dimensions are in mm

Specify the part number e.g.: VPA20NR
Please refer to the characteristics table above

Accessories

To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

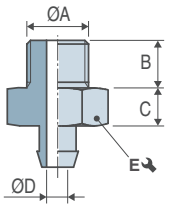
VPA
Suction Cups for Paper Applications



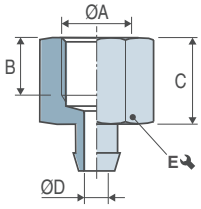
Choice of Fittings

	Male fittings				Female fittings	
	G1/8"-M	G1/4"-M	M5-M	M6-M	G1/8"-F	G1/4"-F
VPA 15	IM11A	-	IM21	IM22	IF10A	-
VPA 20	IM11A	-	IM21	IM22	IF10A	-
VPA 25	IM11A	-	IM21	IM22	IF10A	-
VPA 26	-	-	-	-	-	-
VPA 30	-	IM51SP143	IM5VPA30	-	-	IF50SP143
VPA 35 A	-	IM51SP143	IM5VPA30	-	-	IF50SP143
VPA 40	-	IM41SP477	-		-	IF40SP477
VPA 25000	-	-	-	-	-	-
VPA 25001	IM11ASP082	-	-	-	IF10ASP082	-

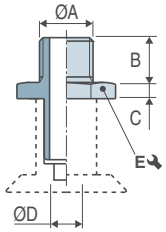
Male fittings
VPA 15…25



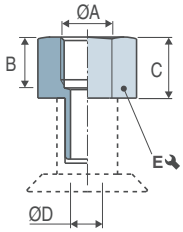
Female fittings
VPA 15…25



Male fittings
VPA 30…40



Female fittings
VPA 30…40



Barbed Fittings

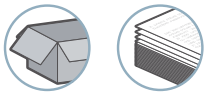
Model	ØA	B	C	ØD	E	Materials	(g)
IM 11 A	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IM 11 A SP082	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IM 21 (1)	M5-M	4.5	5	2.5	7	Nickel-plated brass	3.1
IM 22 (1)	M6-M	5	5	3.5	7	Nickel-plated brass	2.7
IM 51 SP143	G1/4"-M	11	6	8	21	Aluminum	10.5
IM 5 VPA30	M5-M	5	3	2.5	13	Aluminum	5.7
IF 10 A	G1/8"-F	8	12	3.5	14	Aluminum	4
IF 10 A SP082	G1/8"-F	8	12	3.5	14	Aluminum	4
IF 50 SP143	G1/4"-F	10	15	8	21	Aluminum	14.4
IF 40 SP477	G1/4"-F	10	15	4.4	17	Aluminum	8

(1) Flow control nozzle available: orifice calibrated to reduce the leakage in case of use of a multi-cup gripper (refer to page 4/9)

VPAG
Rounded Suction Cups

Thanks to very flexible lips, the VPAG range is suitable for gripping flexible materials such as labels or sheets of paper as well as textured objects. Their shape allows them to be used for unstacking.

Industry-specific applications



Types of use

Materials

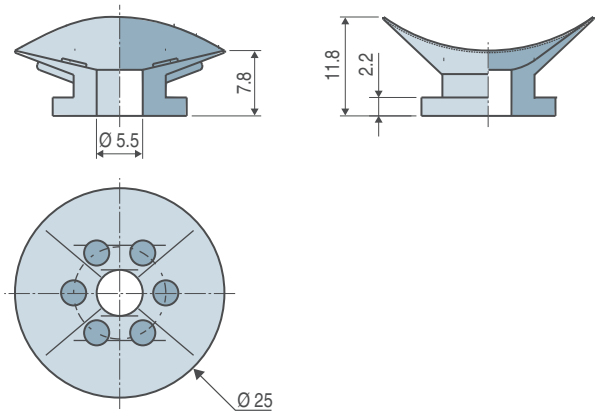
NR Natural rubber

Suction Cup Characteristics

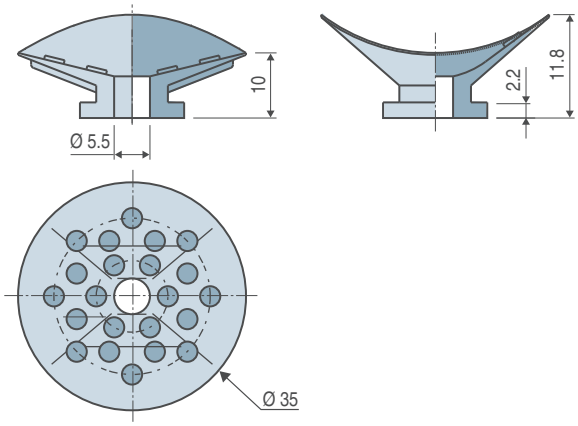
	NR	Fittings	
		G1/8"-M	G1/8"-F
VPAG 25	VPAG25NR	IM11ASP082	IF10ASP082
VPAG 3536	VPAG3536NR	-	-

Suction Cup Dimensions

VPAG 25

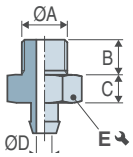


VPAG 3536

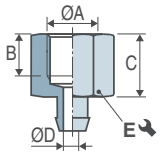


Barbed Fittings

Male - IM



Female - IF



	ØA	B	C	ØD	E	Materials	(g)
IM 11 A SP082	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IF 10 A SP082	G1/8"-F	8	12	3.5	14	Aluminum	4.0

The values represent the average characteristics of our products.
Note: All dimensions are in mm

Specify the part number e.g.: VPAG3536NR
Please refer to the characteristics table above.

Accessories

To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

VPF

Flat Suction Cups with Cleats Ø 15 to 50 mm

VPF series suction cups are suitable for gripping flat, smooth and rigid products. Cleats prevent the deformation of the product and provide excellent non-slip properties.

Industry-specific applications

Types of use

Materials

NBR Nitrile
SIT5 Translucent Silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VPF 15	15.7	0.37	0.81	0.41	13	**VPF15NBR**	**VPF15SI**	**VPF15STN**
VPF 20	22	1.00	1.62	0.81	18	**VPF20NBR**	**VPF20SI**	**VPF20STN**
VPF 25	26.8	1.10	2.11	1.06	22	**VPF25NBR**	**VPF25SI**	**VPF25STN**
VPF 30	32	2.00	2.60	1.30	25	**VPF30NBR**	**VPF30SI**	**VPF30STN**
VPF 40	42.5	1.80	4.06	2.03	52	**VPF40NBR**	**VPF40SI**	**VPF40STN**
VPF 50	53	10.00	7.79	3.90	55	**VPF50NBR**	**VPF50SI**	**VPF50STN**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-M	G1/8"-M	G1/4"-M
15	■	-	-
20 - 30	-	■	-
40 - 50	-	-	■

■ Standard available configurations (suction cup + fitting) refer to n° table above

Fittings: M = Male

Types of Assembly

C **Version C:** Barbed fitting

References "Suction Cup + Fitting"

		C
Ø 15 mm	THREAD	**M5-M**
	VPF5NBR	VPF15NBRIMM5C
	VPF5SI	VPF15SIIMM5C
	VPF15STN	VPF15STNIMM5C

		C
Ø 20 - 30 mm	THREAD	**G1/8"-M**
	VPF20NBR	VPF20NBRIM18C
	VPF20SI	VPF20SIIM18C
	VPF20STN	VPF20STNIM18C
	VPF25NBR	VPF25NBRIM18C
	VPF25SI	VPF25SIIM18C
	VPF25STN	VPF25STNIM18C
	VPF30NBR	VPF30NBRIM18C
	VPF30SI	VPF30SIIM18C
	VPF30STN	VPF30STNIM18C

		C
Ø 40 - 50 mm	THREAD	**G1/4"-M**
	VPF40NBR	VPF40NBRIM14C
	VPF40SI	VPF40SIIM14C
	VPF40STN	VPF40STNIM14C
	VPF50NBR	VPF50NBRIM14C
	VPF50SI	VPF50SIIM14C
	VPF50STN	VPF50STNIM14C

Please specify the part n°. e.g. VPF20NBRIM18C
See part n° table above

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring extensions, and feeder systems, etc.)
see chapters **4** and **12**.

VPF

Flat Suction Cups with Cleats Ø 15 to 50 mm

Assembly Diagrams

Suction Cup + Fitting

VPF 15 (1) — VPF 20…30 (2) — VPF 40…50 (3)

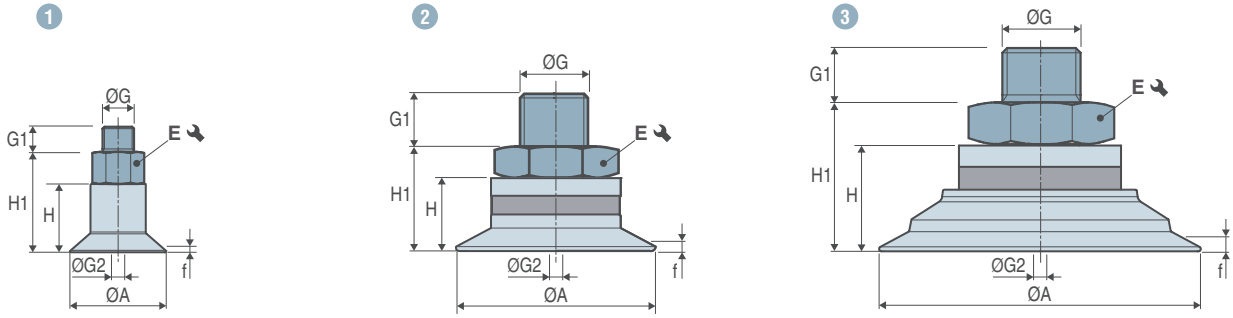
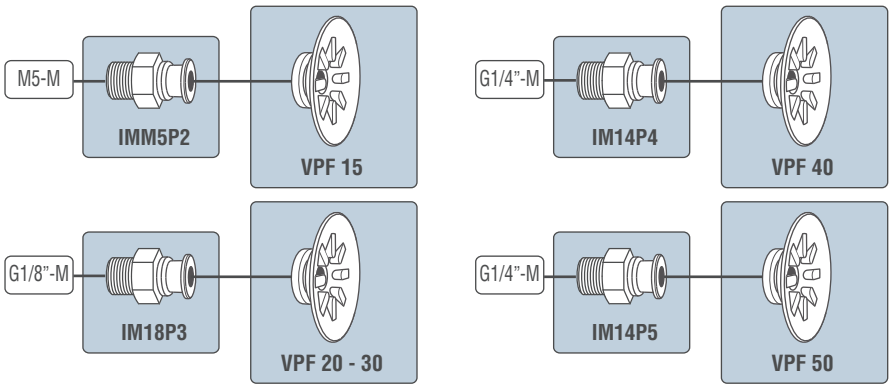


	Diagram	ØA	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
VPF15---IMM5C	1	15.7	1	11	15.5	M5-M	4	2.7	7	1.5
VPF20---IM18C	2	22	1	8	11.5	G1/8"-M	7	4	14	4.2
VPF25---IM18C	2	26.8	1.3	9	12.5	G1/8"-M	7	4	14	4.7
VPF30---IM18C	2	32	1.8	10	13.5	G1/8"-M	7	4	14	5.2
VPF40---IM14C	3	42.5	1.9	13	19	G1/4"-M	9	5	17	11.9
VPF50---IM14C	3	53	2.4	17.5	23.5	G1/4"-M	9	5	21	22.7

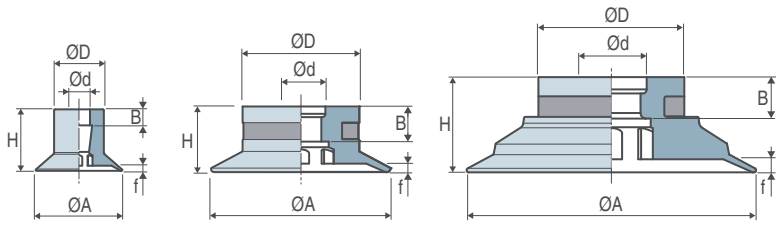
Note: All dimensions are in mm. (1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

Assembly Diagrams



Suction Cups

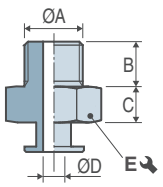
VPF 15 — VPF 20…30 — VPF 40…50



	Ø A	H	Ø d	Ø D	f (1)	B	(g)
VPF 15	15.7	11	4	9	1	3	0.7
VPF 20	22	8	5	14.3	1	4.5	1.2
VPF 25	26.8	9	5	14.3	1.3	4.5	1.7
VPF 30	32	10	5	14.3	1.8	4.5	2.2
VPF 40	42.5	13	7	20	1.9	6	5.6
VPF 50	53	17.5	10.5	27	2.4	7.5	12.7

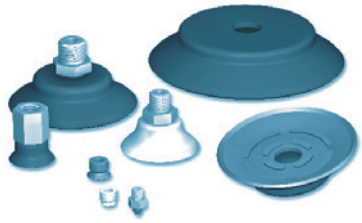
Note: All dimensions are in mm. (1) f = Deflection of the suction cup.
The values represent the average characteristics of our products.

Barbed Male Fitting



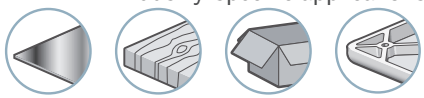
	ØA	B	C	ØD	E	Material	(g)
IMM5P2	M5-M	4	4.5	2.7	7	Aluminum	0.8
IM18P3	G1/8"-M	7	3.5	4	14	Aluminum	3
IM14P4	G1/4"-M	9	6	5	17	Aluminum	6.3
IM14P5	G1/4"-M	9	6	5	21	Aluminum	10

VPG
Extra-flat Suction Cups Ø 2 to 200 mm



The profile of the VPG series extra-flat suction cups provides for accuracy in load gripping and speeds up throughput rates. These suction cups are used for flat surfaces only.

Industry-specific applications



Types of use

Materials

NBR Nitrile
SI Silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VPG 2	2	0.00073	0.02	0.01	2	**VPG2NBR**	**VPG2SI**	-
VPG 3.5	3.5	0.0022	0.06	0.03	8	**VPG3.5NBR**	**VPG3.5SI**	-
VPG 5	5	0.005	0.11	0.06	8	**VPG5NBR**	**VPG5SI**	**VPG5STN**
VPG 6	6	0.008	0.16	0.08	8	**VPG6NBR**	**VPG6SI**	**VPG6STN**
VPG 8	8	0.03	0.28	0.14	10	**VPG8NBR**	**VPG8SI**	**VPG8STN**
VPG 10	10	0.07	0.45	0.23	13	**VPG10NBR**	**VPG10SI**	**VPG10STN**
VPG 15	15	0.2	1.06	0.54	13	**VPG15NBR**	**VPG15SI**	**VPG15STN**
VPG 20	20	0.5	1.98	0.99	20	**VPG20NBR**	**VPG20SI**	**VPG20STN**
VPG 25	25	1.1	2.71	1.36	25	**VPG25NBR**	**VPG25SI**	**VPG25STN**
VPG 30	30	1.4	3.69	1.85	40	**VPG30NBR**	**VPG30SI**	**VPG30STN**
VPG 35	35	2.9	5.36	2.68	50	**VPG35NBR**	**VPG35SI**	**VPG35STN**
VPG 40	40	3.8	7.79	3.90	50	**VPG40NBR**	**VPG40SI**	**VPG40STN**
VPG 50	50	5.3	12.18	6.09	75	**VPG50NBR**	**VPG50SI**	**VPG50STN**
VPG 60	60	12	19.97	9.98	100	**VPG60NBR**	**VPG60SI**	**VPG60STN**
VPG 60S	60	12	19.97	9.98	100	**VPG60SNBR**	**VPG60SSI**	**VPG60SSTN**
VPG 80	80	26.9	32.15	16.07	150	**VPG80NBR**	**VPG80SI**	**VPG80STN**
VPG 80S	80	26.9	32.15	16.07	150	**VPG80SNBR**	**VPG80SSI**	**VPG80SSTN**
VPG 95	95	41	45.46	22.73	200	**VPG95NBR**	**VPG95SI**	**VPG95STN**
VPG 95S	95	41	45.46	22.73	200	**VPG95SNBR**	**VPG95SSI**	**VPG95SSTN**
VPG 120	120	141	59.26	29.63	365	**VPG120NBR**	**VPG120SI**	**VPG120STN**
VPG 150	150	230	95.79	47.89	380	**VPG150NBR**	**VPG150SI**	**VPG150STN**
VPG 200	200	384	170.47	85.24	430	**VPG200NBR**	**VPG200SI**	**VPG200STN**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

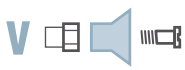
(Ø)	M3-M	M5-M	M5-F	M6-M	M8-M	M10-M	M10x125-F	G1/8"-F	G1/8"-M	G1/4"-F	G1/4"-M	G1/2"-F
2, 3.5	■	■	-	-	-	-	-	-	-	-	-	-
5… 10	-	■	■	-	-	-	-	■	■	-	-	-
15, 20	-	■	-	-	-	-	-	■	■	-	-	-
25… 50	-	-	-	■	□	□	-	■	■	■	■	-
60… 95	-	-	-	-	-	-	■	-	-	■	■	-
60S… 95S	-	-	-	-	-	-	-	-	-	■	-	-
120… 200	-	-	-	-	-	-	-	-	-	-	-	■

■ Standard available configurations (suction cup + fitting) see page reference 2/10
□ Additional mounting configurations See pages 2/13 - 2/14
Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations.

Version C: Barbed fitting



Version V: Removable fitting: (adapter and hollow screw)

Accessories

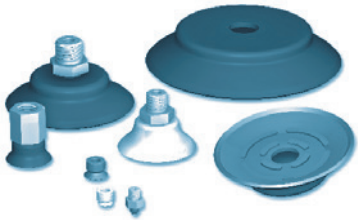
To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings,spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

Please specify the part n°. e.g. VPG25STNIF18C
Refer to page 2/10

VPG

Extra-flat Suction Cups Ø 2 to 200 mm

References "Suction Cup + Fitting"



Ø 2 - 10 mm

THREAD	C M3-M	C M5-M	C M5-F	C G1/8"-M	C G1/8"-F
VPG2NBR	VPG2NBRIMM3C	VPG2NBRIMM5C	-	-	-
VPG2SI	VPG2SIIMM3C	VPG2SIIMM5C	-	-	-
VPG3.5NBR	VPG3.5NBRIMM3C	VPG3.5NBRIMM5C	-	-	-
VPG3.5SI	VPG3.5SIIMM3C	VPG3.5SIIMM5C	-	-	-
VPG5NBR	-	VPG5NBRIMM5C	VPG5NBRIFM5C	VPG5NBRIM18C	VPG5NBRIF18C
VPG5SI	-	VPG5SIIMM5C	VPG5SIIFM5C	VPG5SIIM18C	VPG5SIIF18C
VPG5STN	-	VPG5STNIMM5C	VPG5STNIFM5C	VPG5STNIM18C	VPG5STNIF18C
VPG6NBR	-	VPG6NBRIMM5C	VPG6NBRIFM5C	VPG6NBRIM18C	VPG6NBRIF18C
VPG6SI	-	VPG6SIIMM5C	VPG6SIIFM5C	VPG6SIIM18C	VPG6SIIF18C
VPG6STN	-	VPG6STNIMM5C	VPG6STNIFM5C	VPG6STNIM18C	VPG6STNIF18C
VPG8NBR	-	VPG8NBRIMM5C	VPG8NBRIFM5C	VPG8NBRIM18C	VPG8NBRIF18C
VPG8SI	-	VPG8SIIMM5C	VPG8SIIFM5C	VPG8SIIM18C	VPG8SIIF18C
VPG8STN	-	VPG8STNIMM5C	VPG8STNIFM5C	VPG8STNIM18C	VPG8STNIF18C
VPG10NBR	-	VPG10NBRIMM5C	VPG10NBRIFM5C	VPG10NBRIM18C	VPG10NBRIF18C
VPG10SI	-	VPG10SIIMM5C	VPG10SIIFM5C	VPG10SIIM18C	VPG10SIIF18C
VPG10STN	-	VPG10STNIMM5C	VPG10STNIFM5C	VPG10STNIM18C	VPG10STNIF18C

Ø 15 - 20 mm

THREAD	C G1/8"-M	C G1/8"-F	V M5-M	V G1/8"-M	V G1/8"-F
VPG15NBR	VPG15NBRIM18C	VPG15NBRIF18C	VPG15NBRIMM5V	VPG15NBRIM18V	VPG15NBRIF18V
VPG15SI	VPG15SIIM18C	VPG15SIIF18C	VPG15SIIMM5V	VPG15SIIM18V	VPG15SIIF18V
VPG15STN	VPG15STNIM18C	VPG15STNIF18C	VPG15STNIMM5V	VPG15STNIM18V	VPG15STNIF18V
VPG20NBR	VPG20NBRIM18C	VPG20NBRIF18C	VPG20NBRIMM5V	VPG20NBRIM18V	VPG20NBRIF18V
VPG20SI	VPG20SIIM18C	VPG20SIIF18C	VPG20SIIMM5V	VPG20SIIM18V	VPG20SIIF18V
VPG20STN	VPG20STNIM18C	VPG20STNIF18C	VPG20STNIMM5V	VPG20STNIM18V	VPG20STNIF18V

Ø 25 - 50 mm

THREAD	C G1/8"-M	C G1/8"-F	V M6-M	V G1/8"-M	V G1/8"-F	V G1/4"-M	V G1/4"F
VPG25NBR	VPG25NBRIM18C	VPG25NBRIF18C	VPG25NBRIMM6V	VPG25NBRIM18V	VPG25NBRIF18V	VPG25NBRIM14V	VPG25NBRIF14V
VPG25SI	VPG25SIIM18C	VPG25SIIF18C	VPG25SIIMM6V	VPG25SIIM18V	VPG25SIIF18V	VPG25SIIM14V	VPG25SIIF14V
VPG25STN	VPG25STNIM18C	VPG25STNIF18C	VPG25STNIMM6V	VPG25STNIM18V	VPG25STNIF18V	VPG25STNIM14V	VPG25STNIF14V
VPG30NBR	VPG30NBRIM18C	VPG30NBRIF18C	VPG30NBRIMM6V	VPG30NBRIM18V	VPG30NBRIF18V	VPG30NBRIM14V	VPG30NBRIF14V
VPG30SI	VPG30SIIM18C	VPG30SIIF18C	VPG30SIIMM6V	VPG30SIIM18V	VPG30SIIF18V	VPG30SIIM14V	VPG30SIIF14V
VPG30STN	VPG30STNIM18C	VPG30STNIF18C	VPG30STNIMM6V	VPG30STNIM18V	VPG30STNIF18V	VPG30STNIM14V	VPG30STNIF14V
VPG35NBR	VPG35NBRIM18C	VPG35NBRIF18C	VPG35NBRIMM6V	VPG35NBRIM18V	VPG35NBRIF18V	VPG35NBRIM14V	VPG35NBRIF14V
VPG35SI	VPG35SIIM18C	VPG35SIIF18C	VPG35SIIMM6V	VPG35SIIM18V	VPG35SIIF18V	VPG35SIIM14V	VPG35SIIF14V
VPG35STN	VPG35STNIM18C	VPG35STNIF18C	VPG35STNIMM6V	VPG35STNIM18V	VPG35STNIF18V	VPG35STNIM14V	VPG35STNIF14V
VPG40NBR	VPG40NBRIM18C	VPG40NBRIF18C	VPG40NBRIMM6V	VPG40NBRIM18V	VPG40NBRIF18V	VPG40NBRIM14V	VPG40NBRIF14V
VPG40SI	VPG40SIIM18C	VPG40SIIF18C	VPG40SIIMM6V	VPG40SIIM18V	VPG40SIIF18V	VPG40SIIM14V	VPG40SIIF14V
VPG40STN	VPG40STNIM18C	VPG40STNIF18C	VPG40STNIMM6V	VPG40STNIM18V	VPG40STNIF18V	VPG40STNIM14V	VPG40STNIF14V
VPG50NBR	VPG50NBRIM18C	VPG50NBRIF18C	VPG50NBRIMM6V	VPG50NBRIM18V	VPG50NBRIF18V	VPG50NBRIM14V	VPG50NBRIF14V
VPG50SI	VPG50SIIM18C	VPG50SIIF18C	VPG50SIIMM6V	VPG50SIIM18V	VPG50SIIF18V	VPG50SIIM14V	VPG50SIIF14V
VPG50STN	VPG50STNIM18C	VPG50STNIF18C	VPG50STNIMM6V	VPG50STNIM18V	VPG50STNIF18V	VPG50STNIM14V	VPG50STNIF14V

Ø 60 - 95 mm

THREAD	V M10x125-F	V G1/4"-F	V G1/4"-M	V G1/4"-F
VPG60NBR	VPG60NBR	-	VPG60NBRIM14V	VPG60NBRIF14V
VPG60SNBR	-	VPG60SNBR	-	-
VPG60SI	VPG60SI	-	VPG60SIIM14V	VPG60SIIF14V
VPG60SSI	-	VPG60SSI	-	-
VPG60STN	VPG60STN	-	VPG60STNIM14V	VPG60STNIF14V
VPG60SSTN	-	VPG60SSTN	-	-
VPG80NBR	VPG80NBR	-	VPG80NBRIM14V	VPG80NBRIF14V
VPG80SNBR	-	VPG80SNBR	-	-
VPG80SI	VPG80SI	-	VPG80SIIM14V	VPG80SIIF14V
VPG80SSI	-	VPG80SSI	-	-
VPG80STN	VPG80STN	-	VPG80STNIM14V	VPG80STNIF14V
VPG80SSTN	-	VPG80SSTN	-	-
VPG95NBR	VPG95NBR	-	VPG95NBRIM14V	VPG95NBRIF14V
VPG95SNBR	-	VPG95SNBR	-	-
VPG95SI	VPG95SI	-	VPG95SIIM14V	VPG95SIIF14V
VPG95SSI	-	VPG95SSI	-	-
VPG95STN	VPG95STN	-	VPG95STNIM14V	VPG95STNIF14V
VPG95SSTN	-	VPG95SSTN	-	-

Ø 120 - 200 mm

THREAD	V G1/2"-F *	V G1/2"-F **
VPG120NBR	VPG120NBRIFS12V	VPG120NBRIF12V
VPG120SI	VPG120SIIFS12V	VPG120SIIF12V
VPG120STN	VPG120STNIFS12V	VPG120STNIF12V
VPG150NBR	VPG150NBRIFS12V	VPG150NBRIF12V
VPG150SI	VPG150SIIFS12V	VPG150SIIF12V
VPG150STN	VPG150STNIFS12V	VPG150STNIF12V
VPG200NBR	VPG200NBRIFS12V	VPG200NBRIF12V
VPG200SI	VPG200SIIFS12V	VPG200SIIF12V
VPG200STN	VPG200STNIFS12V	VPG200STNIF12V

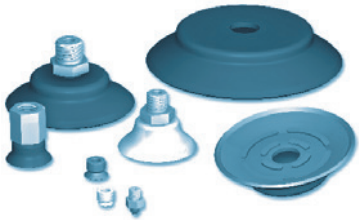
*Configured using fitting n° IFS12120
** Configured using fitting n° IF12120

Non-standard configurations are available (see page 2/13 and 2/14). For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

VPG

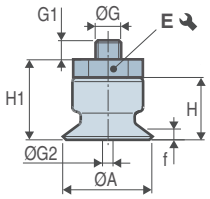
Extra-flat Suction Cups Ø 2 to 200 mm

Dimensions "Suction Cup + Fitting"



VPG 2 - 10

1



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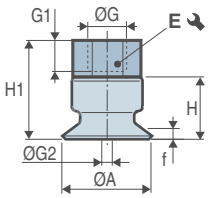
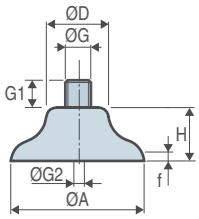


VPG 15 - 50

3



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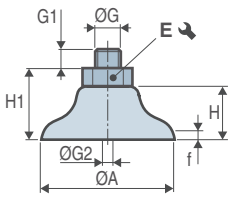

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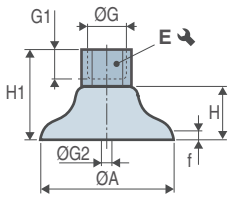
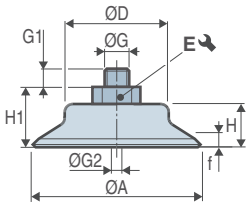


VPG 60 - 95

6



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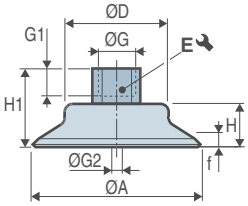

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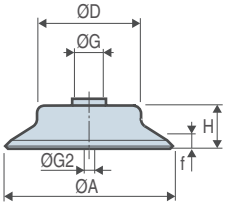
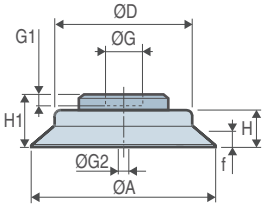


VPG 120 - 200

9



10

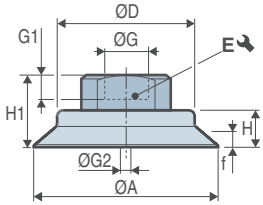


		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 2 - 10 mm	VPG2---IMM3C	1	2	-	0.5	4	6	M3-M	3	1	5	0.21
	VPG2---IMM5C	1	2	-	0.5	4	7.5	M5-M	4.5	1	7	0.91
	VPG3.5---IMM3C	1	3.5	-	0.5	4	6	M3-M	3	1	5	0.22
	VGP3.5---IMM5C	1	3.5	-	0.5	4	7.5	M5-M	4.5	1	7	0.65
	VPG5---IMM5C	1	5	-	0.8	6.5	10	M5-M	4.5	2.2	7	0.86
	VPG5---IFM5C	2	5	-	0.8	6.5	15.5	M5-F	6	2.2	14	1.3
	VPG5---IM18C	1	5	-	0.8	6.5	11.5	G1/8"-M	8	2.2	14	4.1
	VPG5---IF18C	2	5	-	0.8	6.5	21.5	G1/8"-F	9	2.2	14	5.3
	VPG6---IMM5C	1	6	-	0.8	6.5	10	M5-M	4.5	2.2	7	0.9
	VPG6---IFM5C	2	6	-	0.8	6.5	15.5	M5-F	6	2.2	14	1.3
	VPG6---IM18C	1	6	-	0.8	6.5	11.5	G1/8"-M	8	2.2	14	4.1
	VPG6---IF18C	2	6	-	0.8	6.5	21.5	G1/8"-F	9	2.2	14	5.3
	VPG8---IMM5C	1	8	-	1.2	7	10.5	M5-M	4.5	2.2	7	0.9
	VPG8---IFM5C	2	8	-	1.2	7	16	M5-F	6	2.2	14	1.4
	VPG8---IM18C	1	8	-	1.2	7	12	G1/8"-M	8	2.2	14	4.1
	VPG8---IF18C	2	8	-	1.2	7	22	G1/8"-F	9	2.2	14	5.33
	VPG10---IMM5C	1	10	-	1.5	7.5	11	M5-M	4.5	2.2	7	1
	VPG10---IFM5C	2	10	-	1.5	7.5	16.5	M5-F	6	2.2	14	1.5
	VPG10---IM18C	1	10	-	1.5	7.5	12.5	G1/8"-M	8	2.2	14	4.2
	VPG10---IF18C	2	10	-	1.5	7.5	21.5	G1/8"-F	9	2.2	14	5.4
Ø 15 - 20 mm	VPG15---IM18C	4	15	-	1.9	8	13	G1/8"-M	8	2.2	14	4.7
	VPG15---IF18C	5	15	-	1.9	8	23	G1/8"-F	9	2.5	14	5.9
	VPG15---IMM5V	3	15	-	1.9	8	-	M5-M	5	2.5	-	2
	VPG15---IM18V	4	15	-	1.9	8	12.5	G1/8"-M	6	2.5	13	9.3
	VPG15---IF18V	5	15	-	1.9	8	21	G1/8"-F	7.5	2.5	13	12.5
	VPG20---IM18C	4	20	-	2.3	10	15	G1/8"-M	8	3	14	5.6
	VPG20---IF18C	5	20	-	2.3	10	25	G1/8"-F	9	3	14	6.9
	VPG20---IMM5V	3	20	-	2.3	10	-	M5-M	5	2.5	-	3.7
	VPG20---IM18V	4	20	-	2.3	10	14.5	G1/8"-M	6	2.5	13	11
	VPG20---IF18V	5	20	-	2.3	10	23	G1/8"-F	7.5	2.5	13	14.2

Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VPG

Extra-flat Suction Cups Ø 2 to 200 mm

Dimensions "Suction Cup + Fitting"

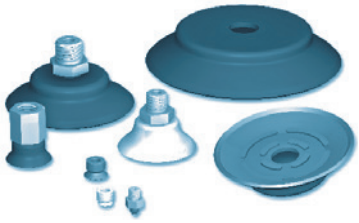


		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 25 - 50 mm	VPG25---IM18C	4	25	-	3	14	19	G1/8"-M	8	4	14	6.9
	VPG25---IF18C	5	25	-	3	14	29	G1/8"-F	9	4	14	7.9
	VPG25---IMM6V	3	25	-	3	14	-	M6-M	6	3.5	-	5.5
	VPG25---IM18V	4	25	-	3	14	18.5	G1/8"-M	6	3.5	13	12.1
	VPG25---IF18V	5	25	-	3	14	27	G1/8"-F	7.5	3.5	13	15.4
	VPG25---IM14V	4	25	-	3	14	19	G1/4"-M	8	3.5	17	21.4
	VPG25---IF14V	5	25	-	3	14	30	G1/4"-F	11	3.5	17	26
	VPG30---IM18C	4	30	-	2	12	17	G1/8"-M	8	4	14	7.4
	VPG30---IF18C	5	30	-	2	12	27	G1/8"-F	9	4	14	8.4
	VPG30---IMM6V	3	30	-	2	12	-	M6-M	6	3.5	-	6
	VPG30---IM18V	4	30	-	2	12	16.5	G1/8"-M	6	3.5	13	12.6
	VPG30---IF18V	5	30	-	2	12	25	G1/8"-F	7.5	3.5	13	15.9
	VPG30---IM14V	4	30	-	2	12	17	G1/4"-M	8	3.5	17	21.9
	VPG30---IF14V	5	30	-	2	12	28	G1/4"-F	11	3.5	17	26.5
	VPG35---IM18C	4	35	-	3	14	19	G1/8"-M	8	4	14	9.9
	VPG35---IF18C	5	35	-	3	14	29	G1/8"-F	9	4	14	10.9
	VPG35---IMM6V	3	35	-	3	14	-	M6-M	6	3.5	-	8.5
	VPG35---IM18V	4	35	-	3	14	18.5	G1/8"-M	6	3.5	13	15.1
	VPG35---IF18V	5	35	-	3	14	27	G1/8"-F	7.5	3.5	13	18.4
	VPG35---IM14V	4	35	-	3	14	19	G1/4"-M	8	3.5	17	24.4
	VPG35---IF14V	5	35	-	3	14	30	G1/4"-F	11	3.5	17	29
	VPG40---IM18C	4	40	-	3.5	14	19	G1/8"-M	8	4	14	11.4
	VPG40---IF18C	5	40	-	3.5	14	29	G1/8"-F	9	4	14	12.4
	VPG40---IMM6V	3	40	-	3.5	14	-	M6-M	6	3.5	-	10
	VPG40---IM18V	4	40	-	3.5	14	18.5	G1/8"-M	6	3.5	13	16.6
	VPG40---IF18V	5	40	-	3.5	14	27	G1/8"-F	7.5	3.5	13	19.9
	VPG40---IM14V	4	40	-	3.5	14	19	G1/4"-M	8	3.5	17	25.9
	VPG40---IF14V	5	40	-	3.5	14	30	G1/4"-F	11	3.5	17	30.5
	VPG50---IM18C	4	50	-	4	15	20	G1/8"-M	8	4	14	16
	VPG50---IF18C	5	50	-	4	15	30	G1/8"-F	9	4	14	17.4
	VPG50---IMM6V	3	50	-	4	15	-	M6-M	6	3.5	-	18.6
	VPG50---IM18V	4	50	-	4	15	19.5	G1/8"-M	6	3.5	13	25.2
	VPG50---IF18V	5	50	-	4	15	28	G1/8"-F	7.5	3.5	13	28.5
	VPG50---IM14V	4	50	-	4	15	20	G1/4"-M	8	3.5	17	34.5
	VPG50---IF14V	5	50	-	4	15	31	G1/4"-F	11	3.5	17	39.1
Ø 60 - 95 mm	VPG60---	8	60	38	5	16	-	M10x125-F	-	-	-	25.4
	VPG60---IM14V	6	60	38	5	16	21	G1/4"-M	10	5	17	32.4
	VPG60---IF14V	7	60	38	5	16	33	G1/4"-F	10	5	17	33.7
	VPG60S---	8	60	38	5	16	-	G1/4"-F	-	-	-	25.4
	VPG80---	8	80	53	6	18	-	M10x125-F	-	-	-	53
	VPG80---IM14V	6	80	53	6	18	23	G1/4"-M	10	5	17	60
	VPG80---IF14V	7	80	53	6	18	35	G1/4"-F	10	5	17	61.3
	VPG80S---	8	80	53	6	18	-	G1/4"-F	-	-	-	53
	VPG95---	8	95	68	6	19	-	M10x125-F	-	-	-	93.2
	VPG95---IM14V	6	95	68	6	19	24	G1/4"-M	10	5	17	100.2
	VPG95---IF14V	7	95	68	6	19	36	G1/4"-F	10	5	17	101.5
	VPG95S---	8	95	68	6	19	-	G1/4"-F	-	-	-	93.2
Ø 120 - 200 mm	VPG120---IF12V	10	120	89.5	6	24.5	54.5	G1/2"-F	24	19	48	454.8
	VPG120---IFS12V	9	120	89.5	6	24.5	37.5	G1/2"-F	13	-	-	373.5
	VPG150---IF12V	10	150	105	9	30.5	60.5	G1/2"-F	24	19	48	624.8
	VPG150---IFS12V	9	150	105	9	30.5	43.5	G1/2"-F	13	-	-	543.5
	VPG200---IF12V	10	200	143	12.5	35.5	65.5	G1/2"-F	24	19	48	914.8
	VPG200---IFS12V	9	200	143	12.5	35.5	48.5	G1/2"-F	13	-	-	833.5

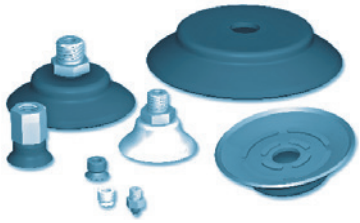
Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VPG

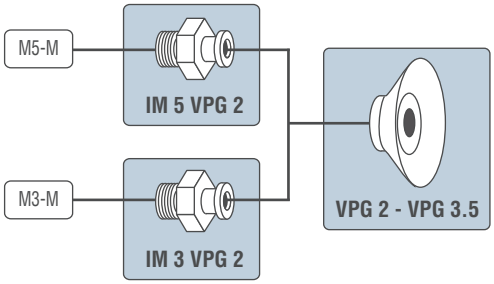
Extra-flat Suction Cups Ø 2 to 200 mm

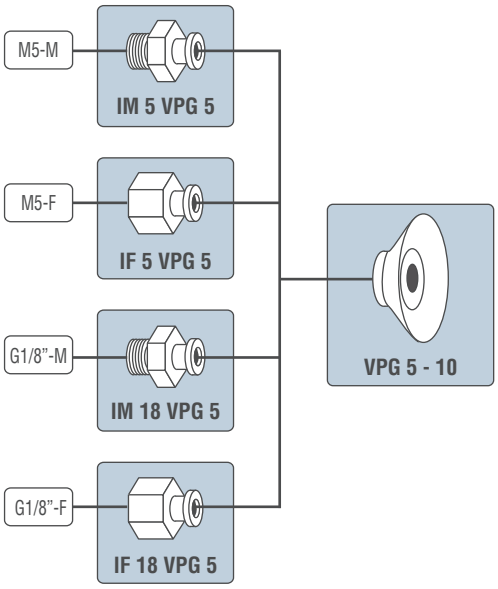
Assembly Diagrams



VPG 2 - 10

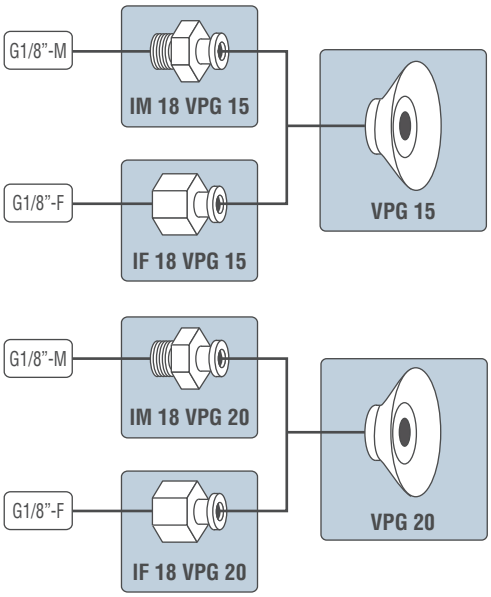
Barbed fittings C



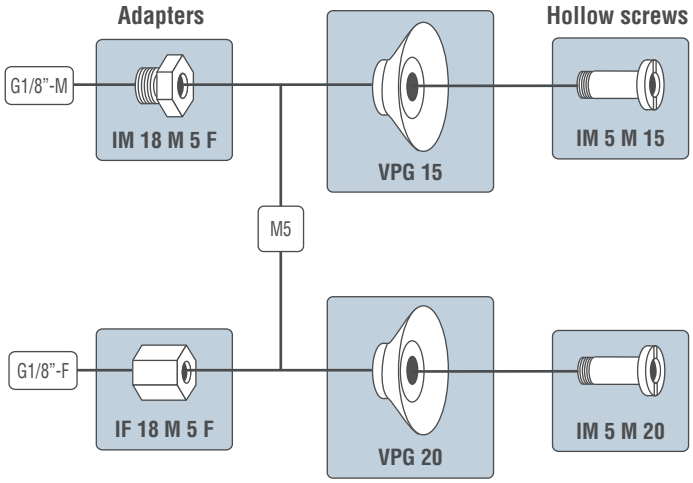


VPG 15 - 20

Barbed fittings C



Removable fittings V



Configurations (suction cup + fitting) refer to page 2/10

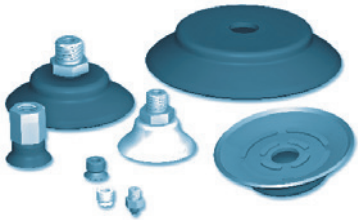
Fittings and suction cups dimensions: see page 2/15 and 2/16.

COVAL
vacuum managers

VPG

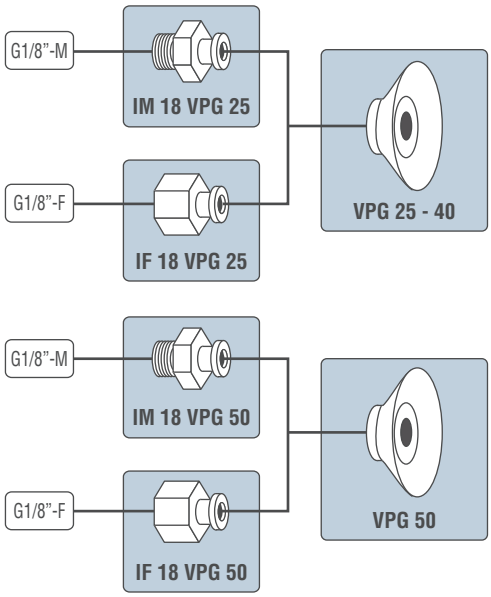
Extra-flat Suction Cups Ø 2 to 200 mm

Assembly Diagrams

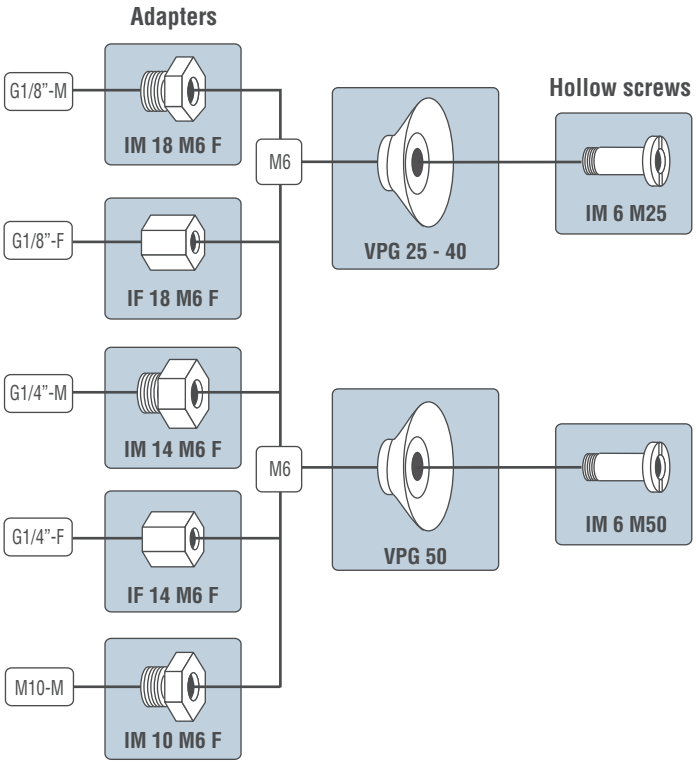


VPG 25 - 50

Barbed fittings C

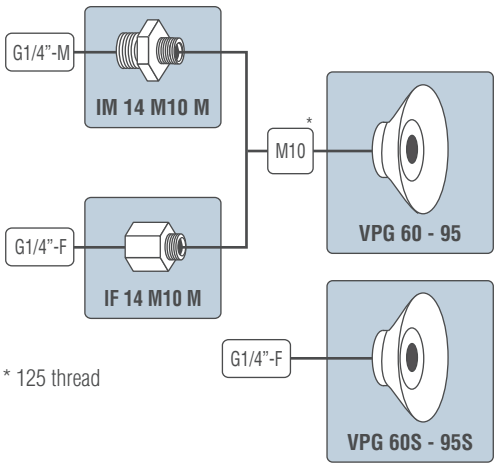


Removable fittings V



VPG 60 - 95

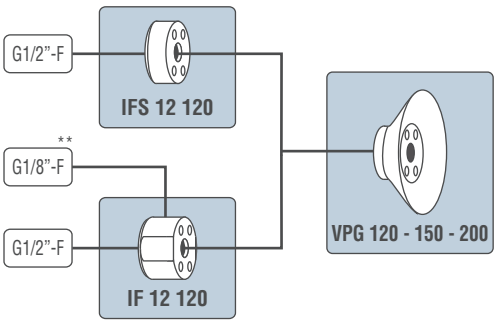
Removable fittings V



* 125 thread

VPG 120 - 200

Removable fittings V



** Female auxiliary radial output

Configurations (suction cup + fitting) refer to page 2/10.

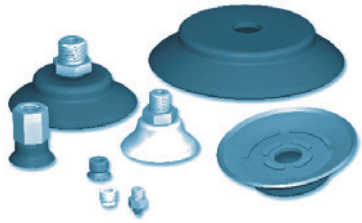
Non-standard configurations must be ordered in seperate part numbers.

Fittings and suction cups dimensions: see page 2/15 and 2/16.

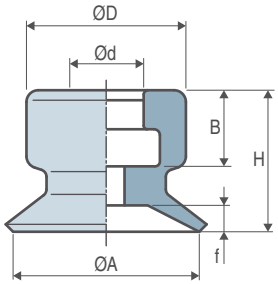
VPG

Extra-flat Suction Cups Ø 2 to 200 mm

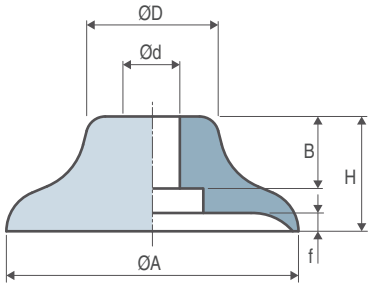
Dimensions - Suction Cups



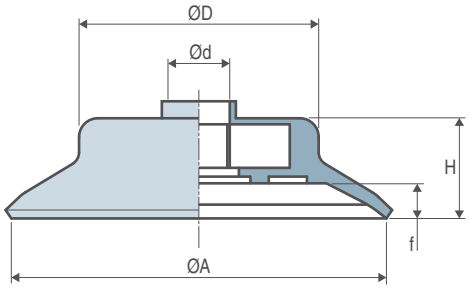
VPG 2 - 10



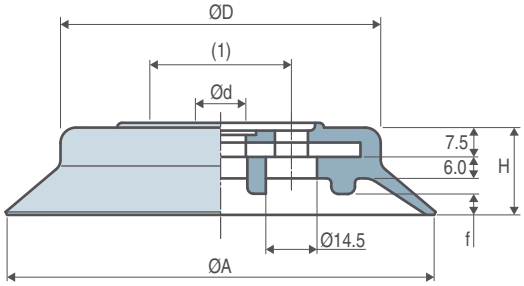
VPG 15 - 50



VPG 60 - 95



VPG 120 - 200



(1) 4 holes Ø 9 on Ø 40

(Ø)	ØA	H	Ød	ØD	f (1)	B	(g)
VPG 2	2	4	2	4	0.5	2.5	0.03
VPG 3.5	3.5	4	2	4	0.5	2.5	0.04
VPG 5	5	6.5	4	7.5	0.8	4	0.16
VPG 6	6	6.5	4	7.5	0.8	4	0.17
VPG 8	8	7	4	8	1.2	4	0.23
VPG 10	10	7.5	4	8.7	1.5	4	0.3
VPG 15	15	8	4.5	12	1.9	2.5	0.7
VPG 20	20	10	4.5	15	2.3	4.5	1.5
VPG 25	25	14	6	16	3	7	2.8
VPG 30	30	12	6	15	2	7	3.3
VPG 35	35	14	6	20.5	3	7	5.8
VPG 40	40	14	6	23.5	3.5	7	7.3
VPG 50	50	15	8	29	4	7	11.1
VPG 60	60	16	M10x125-F	38	5	-	25.4
VPG 60S	60	16	G1/4"-F	38	5	-	25.4
VPG 80	80	18	M10x125-F	53	6	-	53
VPG 80S	80	18	G1/4"-F	53	6	-	53
VPG 95	95	19	M10x125-F	68	6	-	93.2
VPG 95S	95	19	G1/4"-F	68	6	-	93.2
VPG 120	120	24.5	14.5	89.5	6	-	230
VPG 150	150	30.5	13	105	9	-	400
VPG 200	200	35.5	13	143	12.5	-	690

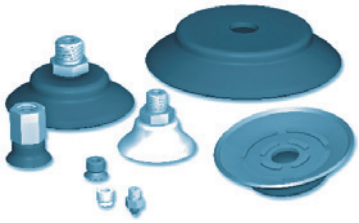
The values represent the average characteristics of our products.
Note: All dimensions are in mm.

(1) f = Deflection of the suction cup.

VPG

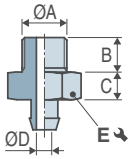
Extra-flat Suction Cups Ø 2 to 200 mm

Dimensions - Fittings

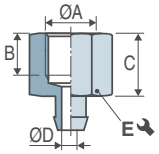


Barbed Fittings

Male - IM

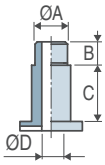


Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 3 VPG2	M3-M	3	2	1	5	Aluminum	0.18
IM 5 VPG2	M5-M	4.5	3.5	1	7	Aluminum	0.61
IM 5 VPG5	M5-M	4.5	3.5	2.2	7	Aluminum	0.7
IM 18 VPG5	G1/8"-M	8	5	2.2	14	Aluminum	3.9
IM 18 VPG15	G1/8"-M	8	5	2.2	14	Aluminum	4
IM 18 VPG20	G1/8"-M	8	5	3	14	Aluminum	4.06
IM 18 VPG25	G1/8"-M	8	5	4	14	Aluminum	4.08
IM 18 VPG50	G1/8"-M	8	5	4	14	Aluminum	4.9
IF 5 VPG5	M5-F	6	9	2.2	14	Aluminum	1.2
IF 18 VPG5	G1/8"-F	9	15	2.2	14	Aluminum	5.1
IF 18 VPG15	G1/8"-F	9	15	2.5	14	Aluminum	5.2
IF 18 VPG20	G1/8"-F	9	15	3	14	Aluminum	5.4
IF 18 VPG25	G1/8"-F	9	15	4	14	Aluminum	5.5
IF 18 VPG50	G1/8"-F	9	15	4	14	Aluminum	6.3

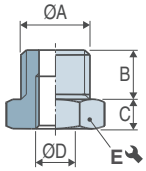
Hollow Screws



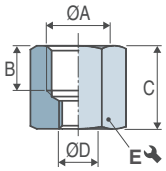
	ØA	B	C	ØD	Material	(g)
IM 5 M15	M5-M	5	2	2.5	Nickel-plated brass	1.3
IM 5 M20	M5-M	5	4	2.5	Nickel-plated brass	2.2
IM 6 M25	M6-M	6	6	3.5	Nickel-plated brass	2.7
IM 6 M50	M6-M	6	6	3.5	Nickel-plated brass	7.5

Adapters for Hollow Screws

Male - IM



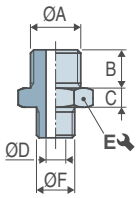
Female - IF



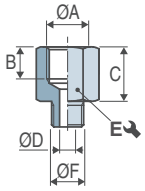
	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Nickel-plated brass	5.9
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 18 M5F	G1/8"-M	6	4.5	M5-F	13	Nickel-plated brass	7.3
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M5F	G1/8"-F	7.5	13	M5-F	13	Nickel-plated brass	10.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9

Screwed

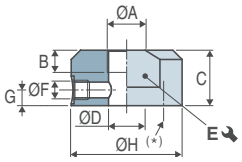
Male - IM



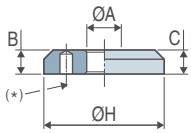
Female - IF



Female - IF 12120



Female - IFS 12120

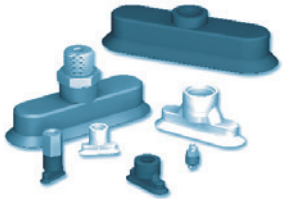


(*) 4 M8 holes at 90°on Ø40 (screws provided)

	ØA	B	C	ØD	E	ØF	G	H	Material	(g)
IM 14 M10M	G1/4"-M	10	5	5	17	M10x125-M	-	-	Aluminum	7
IF 14 M10M	G1/4"-F	10	17	5	17	M10x125-M	-	-	Aluminum	8.3
IF 12120	G1/2"-F	24	30	19	48	G1/8"-F	8.7	60	Aluminum	224.8
IFS 12120	G1/2"-F	13	13	-	-	-	-	65	Aluminum	143.5

Note: All dimensions are in mm.

VPO
Oblong Flat Suction Cups



The VPO series of flat suction cups is used for handling oblong products,such as pens, tubes and bottles, and flat or cylindrical objects.

Types of use | Industry-specific applications

Materials

NBR Nitrile **STN** Siton® **SI** Silicone

Suction Cup Properties

	l x L (mm)	(cm³)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VPO 24	2x4	0.004	0.05	1	**VPO24NBR**	**VPO24SI**	**VPO24STN**
VPO 357	3.5x7	0.019	0.12	3	**VPO357NBR**	**VPO357SI**	**VPO357STN**
VPO 515	5x15	0.036	0.38	4	**VPO515NBR**	**VPO515SI**	**VPO515STN**
VPO 618	6x18	0.058	0.55	4	**VPO618NBR**	**VPO618SI**	**VPO618STN**
VPO 824	8x24	0.138	0.97	8	**VPO824NBR**	**VPO824SI**	**VPO824STN**
VPO 1030	10x30	0.28	1.49	8	**VPO1030NBR**	**VPO1030SI**	**VPO1030STN**
VPO 1545	15x45	0.98	3.43	10	**VPO1545NBR**	**VPO1545SI**	**VPO1545STN**
VPO 2060	20x60	2.3	6.10	20	**VPO2060NBR**	**VPO2060SI**	**VPO2060STN**
VPO 2575	25x75	4.7	9.53	30	**VPO2575NBR**	**VPO2575SI**	**VPO2575STN**
VPO 3090	30x90	8.5	13.72	35	**VPO3090NBR**	**VPO3090SI**	**VPO3090STN**

(1) Actual force of the suction cup with 65% vacuum and a safety factor of 2 included.

Choice of Fittings

(Ø)	M3-M	M5-M	M5-F	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F
24, 357	■	- -	- -	- -	- -	- -	- -
515, 618	- -	■	■	- -	- -	- -	- -
824, 1030	- -	- -	- -	■	■	- -	- -
1545… 3090	- -	- -	- -	- -	- -	■	■

Collar must be used from 8 x 24 upwards to prevent unintentional rotation when in use.

■ Standard available configurations (suction cup + fitting): refer to n° table above Fitting: M = male F = female

Type of Assembly

C

Version C: Barbed fitting

References - "Suction Cup + Fitting"

2x4, 3.5x7

THREAD	C M3-M
VPO24NBR	VPO24NBRIMM3C
VPO24SI	VPO24SIIMM3C
VPO24STN	VPO24STNIMM3C
VPO357NBR	VPO357NBRIMM3C
VPO357SI	VPO357SIIMM3C
VPO357STN	VPO357STNIMM3C

5x15 - 6x18

THREAD	C M5-M	M5-F
VPO515NBR	VPO515NBRIMM5C	VPO515NBRIFM5C
VPO515SI	VPO515SIIMM5C	VPO515SIIFM5C
VPO515STN	VPO515STNIMM5C	VPO515STNIFM5C
VPO618NBR	VPO618NBRIMM5C	VPO618NBRIFM5C
VPO618SI	VPO618SIIMM5C	VPO618SIIFM5C
VPO618STN	VPO618STNIMM5C	VPO618STNIFM5C

8x24 - 10x30

THREAD	C G1/8"-M	G1/8"-F
VPO824NBR	VPO824NBRIM18C	VPO824NBRIF18C
VPO824SI	VPO824SIIM18C	VPO824SIIF18C
VPO824STN	VPO824STNIM18C	VPO824STNIF18C
VPO1030NBR	VPO1030NBRIM18C	VPO1030NBRIF18C
VPO1030SI	VPO1030SIIM18C	VPO1030SIIF18C
VPO1030STN	VPO1030STNIM18C	VPO1030STNIF18C

15x45 - 30x90

THREAD	C G1/4"-M	G1/4"-F
VPO1545NBR	VPO1545NBRIM14C	VPO1545NBRIF14C
VPO1545SI	VPO1545SIIM14C	VPO1545SIIF14C
VPO1545STN	VPO1545STNIM14C	VPO1545STNIF14C
VPO2060NBR	VPO2060NBRIM14C	VPO2060NBRIF14C
VPO2060SI	VPO2060SIIM14C	VPO2060SIIF14C
VPO2060STN	VPO2060STNIM14C	VPO2060STNIF14C
VPO2575NBR	VPO2575NBRIM14C	VPO2575NBRIF14C
VPO2575SI	VPO2575SIIM14C	VPO2575SIIF14C
VPO2575STN	VPO2575STNIM14C	VPO2575STNIF14C
VPO3090NBR	VPO3090NBRIM14C	VPO3090NBRIF14C
VPO3090SI	VPO3090SIIM14C	VPO3090SIIF14C
VPO3090STN	VPO3090STNIM14C	VPO3090STNIF14C

Accessories
Anti-rotation spring system, see page 4/6

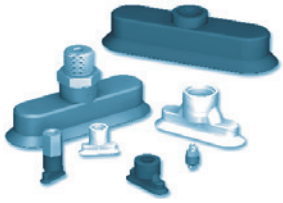
Please specify the part n°. e.g. VPO618NBRIFM5C
See part n° table above

COVAL vacuum managers

VPO

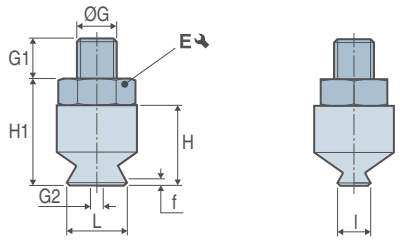
Oblong Flat Suction Cups

Dimensions - "Suction Cup + Fitting"



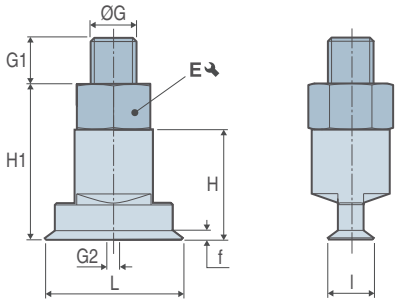
VPO 2x4 - 3.5x7

1



VPO 5x15 - 6x18

2



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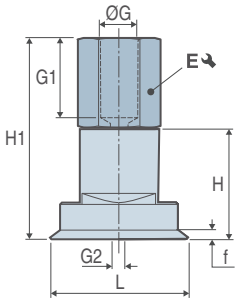
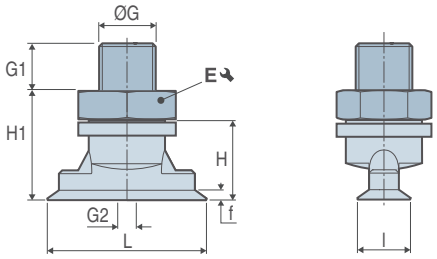


VPO 8x24 - 10x30

4



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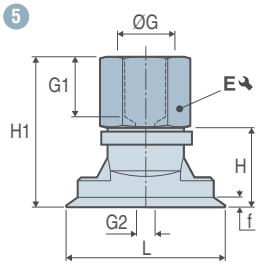
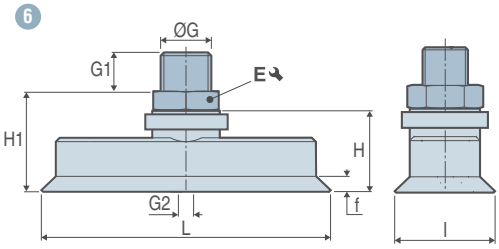


VPO 15x45 - 20x60 - 25x75 - 30x90

6



7

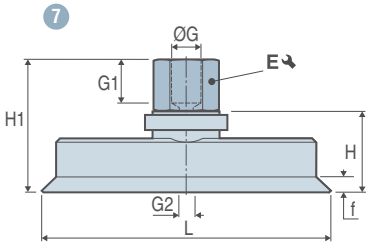


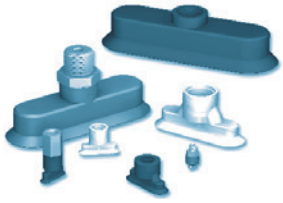
	Diagram	L	l	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
VPO24---IMM3C	1	4	2	0.5	6	8	M3-M	3	1	5	0.4
VPO357---IMM3C	1	7	3.5	0.8	6	8	M3-M	3	1	5	0.3
VPO515---IMM5C	2	15	5	0.7	12	17	M5-M	5	2	8	1.8
VPO515---IFM5C	3	15	5	0.7	12	22	M5-F	8.5	2	8	1.8
VPO618---IMM5C	2	18	6	0.8	12	17	M5-M	5	2	8	1.8
VPO618---IFM5C	3	18	6	0.8	12	22	M5-F	8.5	2	8	1.8
VPO824---IM18C	4	24	8	1	12	17	G1/8"-M	8	3.5	14	6.6
VPO824---IF18C	5	24	8	1	12	25	G1/8"-F	9	3.5	14	7.3
VPO1030---IM18C	4	30	10	1.5	12	17	G1/8"-M	8	3.5	14	6.8
VPO1030---IF18C	5	30	10	1.5	12	25	G1/8"-F	9	3.5	14	7.5
VPO1545---IM14C	6	45	15	2	21	26	G1/4"-M	10	3.5	17	16.5
VPO1545---IF14C	7	45	15	2	21	36	G1/4"-F	12	3.5	17	16.5
VPO2060---IM14C	6	60	20	2.5	21	26	G1/4"-M	10	3.5	17	19.7
VPO2060---IF14C	7	60	20	2.5	21	36	G1/4"-F	12	3.5	17	19.7
VPO2575---IM14C	6	75	25	2.8	21	26	G1/4"-M	10	3.5	17	27.9
VPO2575---IF14C	7	75	25	2.8	21	36	G1/4"-F	12	3.5	17	27.9
VPO3090---IM14C	6	90	30	3.5	21	26	G1/4"-M	10	3.5	17	36.3
VPO3090---IF14C	7	90	30	3.5	21	36	G1/4"-F	12	3.5	17	36.3

Note: All dimensions are in mm.

(1) f = Deflection of the suction cup.

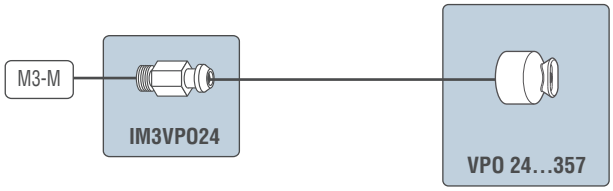
(2) Ø G2 = Ø internal orifice of the fitting.

VPO
Oblong Flat Suction Cups
Assembly Diagrams



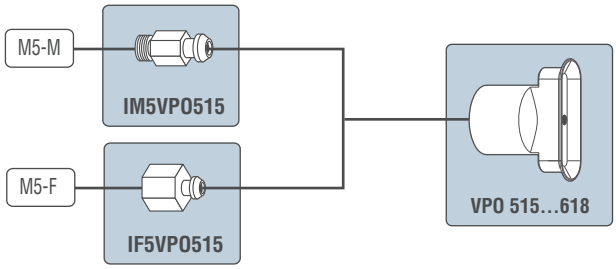
VPO 24 - 357

Barbed fittings C



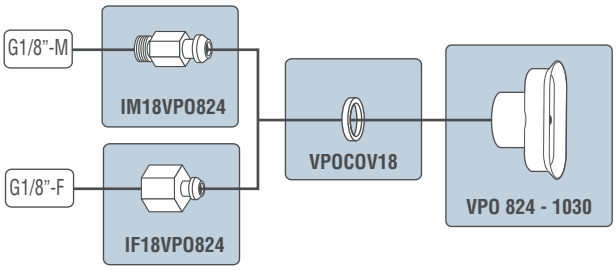
VPO 515 - 618

Barbed fittings C



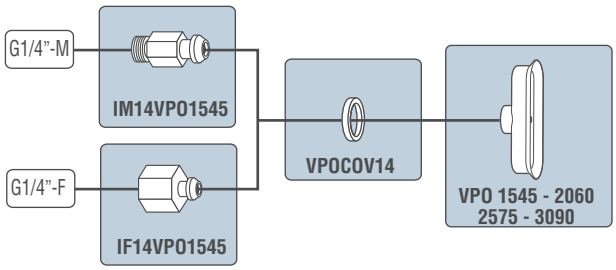
VPO 824 - 1030

Barbed fittings C

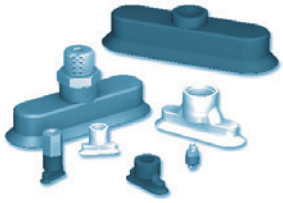


VPO 1545 - 2060 - 2575 - 3090

Barbed fittings C

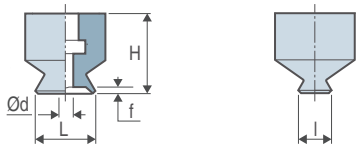


VPO
Oblong Flat Suction Cups
Dimensions

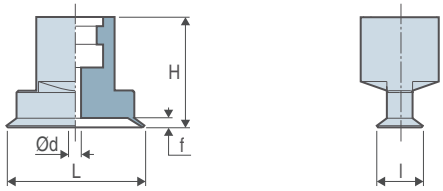


Dimensions Suction Cups

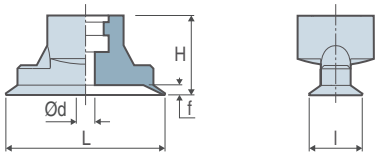
VPO 24 - 357



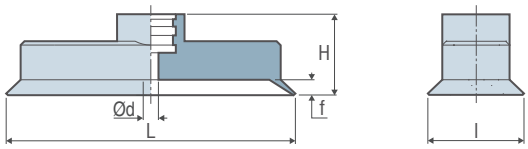
VPO 515 - 618



VPO 824 - 1030



VPO 1545 - 2060 - 2575 - 3090



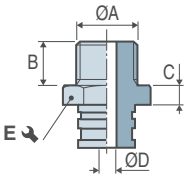
Suction Cups

	L	l	Ø d	H	f (1)	(g)
VPO24	4	2	0.7	6	0.5	0.12
VPO357	7	3.5	1	6	0.8	0.15
VPO515	15	5	1.2	12	0.7	0.51
VPO618	18	6	1.5	12	0.8	0.53
VPO824	24	8	1.5	12	1	1.1
VPO1030	30	10	2.5	12	1.5	1.3
VPO1545	45	15	3	21	2	4.1
VPO2060	60	20	4	21	2.5	7.3
VPO2575	75	25	4	21	2.8	15.5
VPO3090	90	30	4	21	3.5	23.9

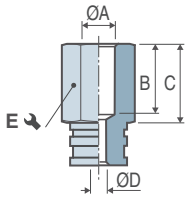
(1) f = Deflection of the suction cup.

Barbed Fitting

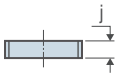
Male - IM



Female - IF



Collar

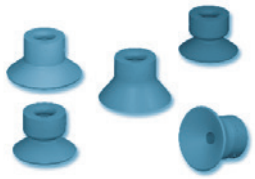


	ØA	B	C	ØD	E	j	Matierial	(g)
IM3VPO24	M3-M	3	2	1	5	-	Aluminum	0.2
IM5VPO515	M5-M	5	5	2	8	-	Aluminum	1.3
IM18VPO824	G1/8"-M	8	5	3.5	14	-	Aluminum	3.9
IM14VPO1545	G1/4"-M	10	5	3.5	17	-	Aluminum	9.7
IF5VPO515	M5-F	8.5	10	2	8	-	Aluminum	1.3
IF18VPO824	G1/8"-F	9	13	3.5	14	-	Aluminum	4.6
IF14VPO1545	G1/4"-F	12	15	3.5	17	-	Aluminum	9.7
VPO COV18	-	-	-	-	-	4	Aluminum	1.6
VPO COV14	-	-	-	-	-	4	Aluminum	2.7

The values represent the average characteristics of our products.
Note: All dimensions are in mm.

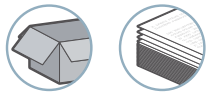
(1) f = Deflection of the suction cup.

VPR
Suction Cups for Mailing Applications



The COVAL range of mailing application suction cups is designed to meet the requirements of the mailing industry. The improved characteristics mean you can optimize production equipment in your branch, such as:
- Envelope stuffing
- Film wrapping
- Envelope insertion
- Mailing (picking).

Industry-specific applications



Types of use

Material
NR Natural rubber

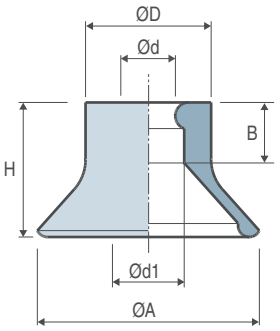
Advantages

- Longer life expectancy
- Optimized for high throughput rates
- Excellent resistance to abrasion and slipping
- 100% compatible with machines currently on the market

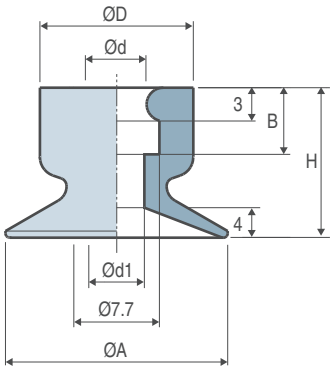
Suction Cup Characteristics

	ØA	H	Ød	Ød1	ØD	B	Color	NR
VPR 001	24.4	15	5.9	7.8	13.8	8	green	**VPR001NR**
VPR 002	25.7	14.5	5.9	7.8	14	9	brown	**VPR002NR**
VPR 003	20	14.2	5.7	4	13.8	6	red	**VPR003NR**
VPR 004	20	14.2	5.7	5	14.8	6	black	**VPR004NR**

VPR 001 - 002



VPR 003 - 004

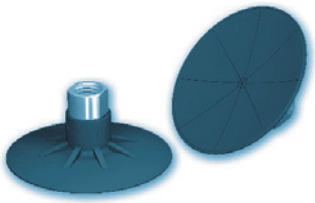


The values represent the average characteristics of our products.
Note: All dimensions are in mm

Specify the part number e.g.: VPR003NR
Please refer to the characteristics table above

VPSC

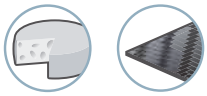
Ultra-Flat, Non-Marking Suction Cups



Developed through partnerships with the composite material industry, the VPSC suction cup is dedicated to the handling of raw composite. Its ultra-flat profle and innovative system of vacuum distribution across the surface of the cup provide optimized gripping with no mark and no deformation. The extra thin sealing lip contours to the product shape without restriction.

The specific characteristics of this suction cup enable its use in other fields such as cheese handling or other fragile, easily deformed products.

Industry-specific applications



Types of use

The VPSC cup is available in two materials to meet all the applications:

- Polyurethane (PU), high resistance to hydrocarbons and high durability.
- Silicone (SIBL5), food compliance. FDA and CE standards.

The VPSC suction cups are equipped with a G1/4" female pressed aluminum fitting.

Materials

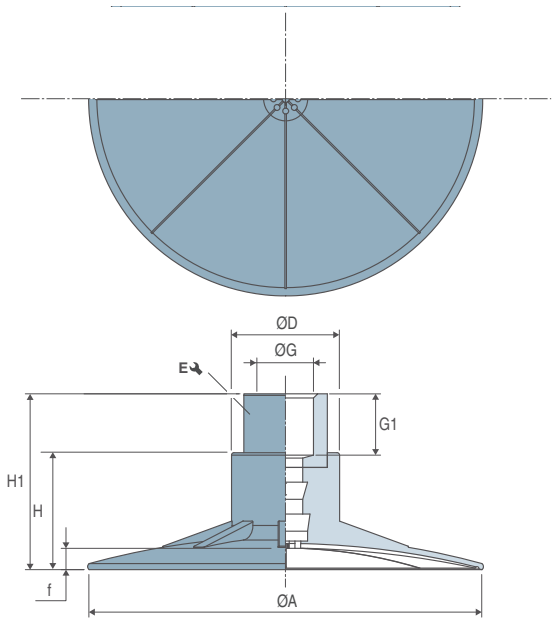
PU Polyurethane 60 Shore A
SIBL5 Blue Silicone 50 Shore A

Suction Cup Characteristics

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	PU	SIBL5
VPSC	80	11.2	6.52	3.37	**VPSC80PUIF14**	**VPSC80SIBL5IF14**

(1) Force measured at 65% vacuum, for handling without deformation, without safety factor.

Suction Cup Dimensions



	Ø A	Ø D	f (2)	H	H1	Ø G	E	(g)
VPSC	80	22	4	35.8	23.8	G1/4"-F	17	26

(2) f = Deflection of the suction cup.

Specify the part number e.g.: VPSC80PUIF14
Please refer to the characteristics table above

The values represent the average characteristics of our products.
Note: All dimensions are in mm

VPU
Flat Suction Cups Ø 6 to 50 mm

VPU series suction cups are suitable for gripping flat, smooth and rigid products.

Industry-specific applications

Types of use

Materials

NBR Nitrile
SI Translucent Silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VPU 6	7	0.05	0.21	0.10	5	**VPU6NBR**	**VPU6SI**	**VPU6STN**
VPU 8	9	0.1	0.32	0.16	6	**VPU8NBR**	**VPU8SI**	**VPU8STN**
VPU 10	11	0.018	0.57	0.28	8	**VPU10NBR**	**VPU10SI**	**VPU10STN**
VPU 15	16.5	0.5	0.97	0.49	8	**VPU15NBR**	**VPU15SI**	**VPU15STN**
VPU 20	22	1	1.46	0.73	13	**VPU20NBR**	**VPU20SI**	**VPU20STN**
VPU 30	32	2	2.92	1.46	20	**VPU30NBR**	**VPU30SI**	**VPU30STN**
VPU 40	41	5.5	4.22	2.11	30	**VPU40NBR**	**VPU40SI**	**VPU40STN**
VPU 50	51.4	12	7.47	3.73	35	**VPU50NBR**	**VPU50SI**	**VPU50STN**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-M	G1/8"-M	G1/4"-M
6…15	■	-	-
20…30		■	
40…50	-	-	■

■ Standard available configurations (suction cup + fitting) Fittings: M = Male
See part n° schedule as below

Type of Assembly

C **Version C:** Barbed fitting

References - "Section Cup + Fitting"

	THREAD	C M5-M
Ø 6 - 15 mm	**VPU6NBR**	VPU6NBRIMM5C
	VPU6SI	VPU6SIIMM5C
	VPU6STN	VPU6STNIMM5C
	VPU8NBR	VPU8NBRIMM5C
	VPU8SI	VPU8SIIMM5C
	VPU8STN	VPU8STNIMM5C
	VPU10NBR	VPU10NBRIMM5C
	VPU10SI	VPU10SIIMM5C
	VPU10STN	VPU10STNIMM5C
	VPU15NBR	VPU15NBRIMM5C
	VPU15SI	VPU15SIIMM5C
	VPU15STN	VPU15STNIMM5C

	THREAD	C G1/8"-M
Ø 20 - 30 mm	**VPU20NBR**	VPU20NBRIM18C
	VPU20SI	VPU20SIIM18C
	VPU20STN	VPU20STNIM18C
	VPU30NBR	VPU30NBRIM18C
	VPU30SI	VPU30SIIM18C
	VPU30STN	VPU30STNIM18C

	THREAD	C G1/4"-M
Ø 40 - 50 mm	**VPU40NBR**	VPU40NBRIM14C
	VPU40SI	VPU40SIIM14C
	VPU40STN	VPU40STNIM14C
	VPU50NBR	VPU50NBRIM14C
	VPU50SI	VPU50SIIM14C
	VPU50STN	VPU50STNIM14C

Please specify the part n°. e.g. VPU20NBRIM18C
See part n° table above

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring extensions, and feeder systems, etc.)
see chapters **4** and **12**.

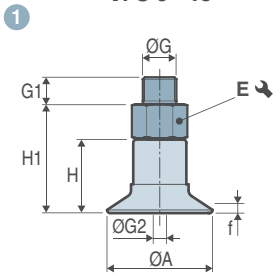
VPU

Flat Suction Cups Ø 6 to 50 mm

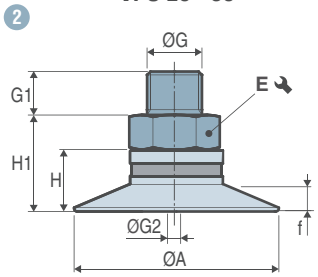
Assembly Diagrams

Suction Cups + Fittings

VPU 6 - 15



VPU 20 - 30



VPU 40 - 50

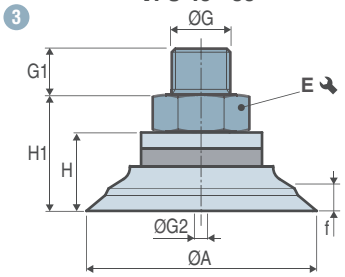
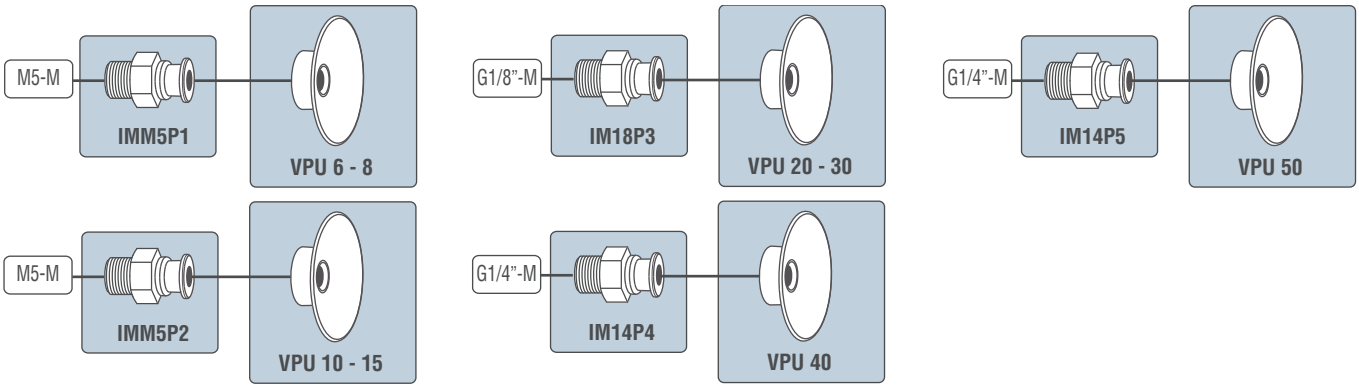


	Diagram	ØA	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
VPU6---IMM5C	1	7	0.3	6.5	10	M5-M	4	1.5	7	1.8
VPU8---IMM5C	1	9	0.5	7	10.5	M5-M	4	1.5	7	1.9
VPU10---IMM5C	1	11	0.5	10.5	15	M5-M	4	2.7	7	1.3
VPU15---IMM5C	1	16.5	1.5	11.5	16	M5-M	4	2.7	7	1.6
VPU20---IM18C	2	22	2.5	8	11.5	G1/8"-M	7	4	14	4.2
VPU30---IM18C	2	32	3.5	9.5	13	G1/8"-M	7	4	14	4.9
VPU40---IM14C	3	41	4.5	13	19	G1/4"-M	9	5	17	11.3
VPU50---IM14C	3	51.4	6	17.5	23.5	G1/4"-M	9	5	21	22

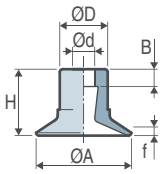
Note: All dimensions are in mm. (1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

Assembly Diagrams

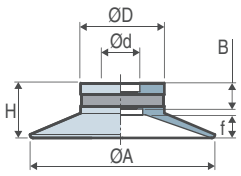


Suction Cups

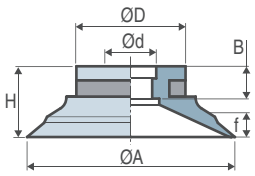
VPU 6 - 15



VPU 20 - 30



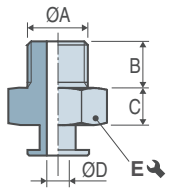
VPU 40 - 50



	ØA	H	Ød	ØD	f (1)	B	(g)
VPU 6	7	6.5	2	5	0.3	3.5	0.12
VPU 8	9	7	2	5	0.5	3.5	0.15
VPU 10	11	10.5	3.8	9	0.5	3	0.51
VPU 15	16.5	11.5	3.8	8.3	1.5	3	0.75
VPU 20	22	8	5	14.5	2.5	4.5	1.2
VPU 30	32	9.5	5	14.5	3.5	4.5	1.9
VPU 40	41	13	6.5	20	4.5	6	5
VPU 50	51.4	17.5	10.5	27	6	8	12

Note: All dimensions are in mm. (1) f = Deflection of the suction cup.
The values represent the average characteristics of our products.

Barbed Fittings



	ØA	B	C	ØD	E	Material	(g)
IMM5P1	M5-M	4	3.5	1.5	7	Brass	1.7
IMM5P2	M5-M	4	4.5	2.7	7	Aluminum	0.8
IM18P3	G1/8"-M	7	3.5	4	14	Aluminum	3
IM14P4	G1/4"-M	9	6	5	17	Aluminum	6.3
IM14P5	G1/4"-M	9	6	5	21	Aluminum	10

VPYR
Radial Ball-joint Suction Cups

VPYR series ball-joints are recommended for gripping rounded or rotating products. They are also recommended for gripping requiring high mechanical resistance and force.

Industry-specific applications

Types of use

Materials

Suction cups
NBR Nitrile
Si Silicone

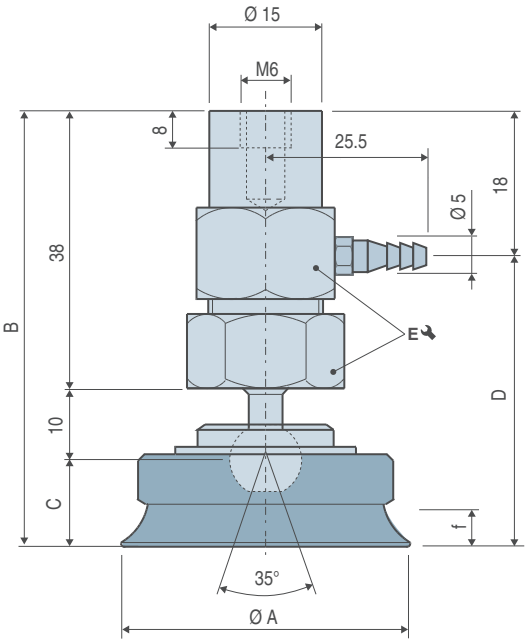
Ball-joint
Nickel-plated brass and zinc-plated steel

Suction Cup Characteristics

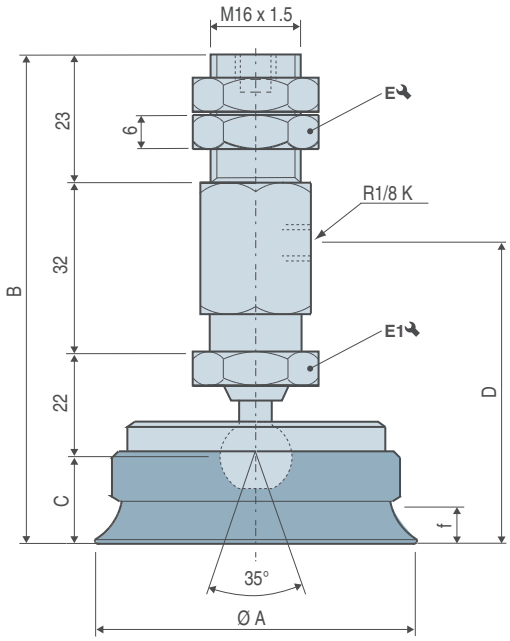
	(lbf) (1)	Rmin	Ø A	B	C	D	E	E1	f (2)	NBR	Si	(g)
VPYR 50	14.61	41	50	60	12	42	19	-	4	**VPYR50NBR**	**VPYR50SI**	117
VPYR 60	21.06	70	60	93	16	58	21	19	5	**VPYR60NBR**	**VPYR60SI**	352
VPYR 80	37.34	100	80	95	18	60	21	19	6	**VPYR80NBR**	**VPYR80SI**	444
VPYR 100	58.45	150	100	95	18	60	21	19	6	**VPYR100NBR**	**VPYR100SI**	568

(1) Actual force of the suction cup with 65% vacuum and a safety factor of 2 included.
(2) f = Deflection of the suction cup.

VPYR 50



VPYR 60...100



Replacement suction cup

If the suction cup becomes worn, the VPR suction cup can be ordered alone, specifying the diameter (Ø A) and material of the suction cup.

Example VPR 50 NBR.

The values represent the average characteristics of our products.
Note: All dimensions are in mm

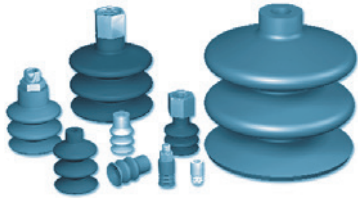
Specify the part number e.g.: VPYR50NBR
Please refer to the characteristics table above.

Accessories

Possibility of telescopic spring-mounting on request.

VS

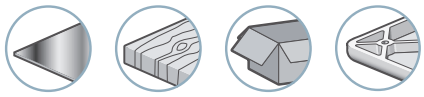
Suction Cups with 2.5 Bellows Ø 5 to 88 mm



VS series suction cups with bellows are recommended for gripping products on different planes (wide deflection) where they can replace spring systems, and for gripping spherical or cylindrical objects gripped at an angle (ball-joint effect).

- Large deflection (stroke)
- Flexibility

Industry-specific applications



Types of use

Materials

NBR Nitrile
NR Natural rubber

SIT5 Translucent silicone
STN Siton® 60 ShoreA
STN5 Siton® 50 ShoreA (on request)

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	R_{min} (mm)	NBR	SIT5	NR	STN (2)
VS 5	5	0.04	0.11	8	VS5NBR	VS5SIT5	-	VS5STN
VS 6	6	0.04	0.11	8	VS6NBR	VS6SIT5	-	-
VS 7	7	0.0425	0.21	8	VS7NBR	VS7SIT5	-	VS7STN
VS 9	9	0.15	0.24	10	VS9NBR	VS9SIT5	VS9NR	VS9STN
VS 12	12	0.54	0.63	13	VS12NBR	VS12SIT5	VS12NR	VS12STN
VS 14	14	0.975	0.67	15	VS14NBR	VS14SIT5	VS14NR	VS14STN
VS 18	17.5	1.35	0.99	20	VS18NBR	VS18SIT5	VS18NR	VS18STN
VS 20	20	2	1.04	30	VS20NBR	VS20SIT5	VS20NR	VS20STN
VS 25	25	5.4	1.46	30	VS25NBR	VS25SIT5	VS25NR	VS25STN
VS 26	25	6.1	2.44	30	VS26NBR	VS26SIT5	VS26NR	VS26STN
VS 32	32	10	2.73	35	VS32NBR	VS32SIT5	VS32NR	VS32STN
VS 42	42	19.5	4.71	75	VS42NBR	VS42SIT5	VS42NR	VS42STN
VS 52	52	36	6.49	75	VS52NBR	VS52SIT5	VS52NR	VS52STN
VS 62	62	72.5	9.25	75	VS62NBR	VS62SIT5	VS62NR	VS62STN
VS 88	88	165	29.87	100	VS88NBR	VS88SIT5	VS88NR	-

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.
(2) On request, some models are available in STN5 (Siton® 50 ShoreA)

Choice of Fittings

(Ø)	Group	M3-M	M5-M	M6-M	M8-M	M10-M	G1/8"-F	G1/8"-M	10/32-M	G1/4"-F	G1/4"-M	G3/8"-M	G1/2"-M
5 - 6	1	■	-	-	-	-	-	-	-	-	-	-	-
7 - 25	1	-	■	■	-	-	■	■	□	-	-	-	-
26 - 62	2	-	□	□	□	□	■	■	-	■	■	-	-
88	3	-	-	-	-	□	-	■	-	■	■	□	□

■ Standard available configurations (suction cup + fitting) refer to page 2/44
□ Additional mounting configurations see page 2/47

Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations.

C **Version C** Barbed fitting

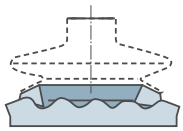
S **Version S** Factory-crimped fitting

V **Version V** Removable fitting: (adapter and hollow screw)

E **Version E** Pressed fitting

Textured Surfaces

For handling objects with a granular or textured gripping surface, use VS suction cups with the VSBM foam strip option (see page 2/59).



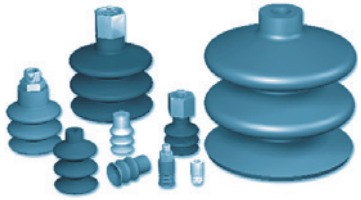
Please specify the part n°. e.g. VS32SIT5IF14
Refer to page 2/44

Accessories
To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

VS

Suction Cups with 2.5 Bellows Ø 5 to 88 mm

References - "Suction Cup + Fitting"



Group 1 — C

Ø 5 -25 mm	THREAD	M3M	M5M	M6M	G1/8"-M	G1/8"-F
	VS5NBR	VS5NBRIMM3C	-	-	-	-
	VS5SIT5	VS5SIT5IMM3C	-	-	-	-
	VS5STN	VS5STNIMM3C	-	-	-	-
	VS6NBR	VS6NBRIMM3C	-	-	-	-
	VS6SIT5	VS6SIT5IMM3C	-	-	-	-
	VS7NBR	-	VS7NBRIMM5C	VS7NBRIMM6C	VS7NBRIM18C	VS7NBRIF18C
	VS7SIT5	-	VS7SIT5IMM5C	VS7SIT5IMM6C	VS7SIT5IM18C	VS7SIT5IF18C
	VS7STN	-	VS7STNIMM5C	VS7STNIMM6C	VS7STNIM18C	VS7STNIF18C
	VS9NBR	-	VS9NBRIMM5C	VS9NBRIMM6C	VS9NBRIM18C	VS9NBRIF18C
	VS9SIT5	-	VS9SIT5IMM5C	VS9SIT5IMM6C	VS9SIT5IM18C	VS9SIT5IF18C
	VS9NR	-	VS9NRIMM5C	VS9NRIMM6C	VS9NRIM18C	VS9NRIF18C
	VS9STN	-	VS9STNIMM5C	VS9STNIMM6C	VS9STNIM18C	VS9STNIF18C
	VS12NBR	-	VS12NBRIMM5C	VS12NBRIMM6C	VS12NBRIM18C	VS12NBRIF18C
	VS12SIT5	-	VS12SIT5IMM5C	VS12SIT5IMM6C	VS12SIT5IM18C	VS12SIT5IF18C
	VS12NR	-	VS12NRIMM5C	VS12NRIMM6C	VS12NRIM18C	VS12NRIF18C
	VS12STN	-	VS12STNIMM5C	VS12STNIMM6C	VS12STNIM18C	VS12STNIF18C
	VS14NBR	-	VS14NBRIMM5C	VS14NBRIMM6C	VS14NBRIM18C	VS14NBRIF18C
	VS14SIT5	-	VS14SIT5IMM5C	VS14SIT5IMM6C	VS14SIT5IM18C	VS14SIT5IF18C
	VS14NR	-	VS14NRIMM5C	VS14NRIMM6C	VS14NRIM18C	VS14NRIF18C
	VS14STN	-	VS14STNIMM5C	VS14STNIMM6C	VS14STNIM18C	VS14STNIF18C
	VS18NBR	-	VS18NBRIMM5C	VS18NBRIMM6C	VS18NBRIM18C	VS18NBRIF18C
	VS18SIT5	-	VS18SIT5IMM5C	VS18SIT5IMM6C	VS18SIT5IM18C	VS18SIT5IF18C
	VS18NR	-	VS18NRIMM5C	VS18NRIMM6C	VS18NRIM18C	VS18NRIF18C
	VS18STN	-	VS18STNIMM5C	VS18STNIMM6C	VS18STNIM18C	VS18STNIF18C
	VS20NBR	-	VS20NBRIMM5C	VS20NBRIMM6C	VS20NBRIM18C	VS20NBRIF18C
	VS20SIT5	-	VS20SIT5IMM5C	VS20SIT5IMM6C	VS20SIT5IM18C	VS20SIT5IF18C
	VS20NR	-	VS20NRIMM5C	VS20NRIMM6C	VS20NRIM18C	VS20NRIF18C
	VS20STN	-	VS20STNIMM5C	VS20STNIMM6C	VS20STNIM18C	VS20STNIF18C
	VS25NBR	-	VS25NBRIMM5C	VS25NBRIMM6C	VS25NBRIM18C	VS25NBRIF18C
	VS25SIT5	-	VS25SIT5IMM5C	VS25SIT5IMM6C	VS25SIT5IM18C	VS25SIT5IF18C
	VS25NR	-	VS25NRIMM5C	VS25NRIMM6C	VS25NRIM18C	VS25NRIF18C
	VS25STN	-	VS25STNIMM5C	VS25STNIMM6C	VS25STNIM18C	VS25STNIF18C

Group 2 — C / E / V

Ø 26 - 62 mm	THREAD	C G1/4"-M	C G1/4"-F	E G1/4"-M	E G1/4"-F	V G1/8"-M	V G1/8"-F	V G1/4"-M	V G1/4"-F
	VS26NBR	VS26NBRIM14C	VS26NBRIF14C	VS26NBRIM14	VS26NBRIF14	VS26NBRIM18V	VS26NBRIF18V	VS26NBRIM14V	VS26NBRIF14V
	VS26SIT5	VS26SIT5IM14C	VS26SIT5IF14C	VS26SIT5IM14	VS26SIT5IF14	VS26SIT5IM18V	VS26SIT5IF18V	VS26SIT5IM14V	VS26SIT5IF14V
	VS26NR	VS26NRIM14C	VS26NRIF14C	VS26NRIM14	VS26NRIF14	VS26NRIM18V	VS26NRIF18V	VS26NRIM14V	VS26NRIF14V
	VS26STN	VS26STNIM14C	VS26STNIF14C	VS26STNIM14	VS26STNIF14	VS26STNIM18V	VS26STNIF18V	VS26STNIM14V	VS26STNIF14V
	VS32NBR	VS32NBRIM14C	VS32NBRIF14C	VS32NBRIM14	VS32NBRIF14	VS32NBRIM18V	VS32NBRIF18V	VS32NBRIM14V	VS32NBRIF14V
	VS32SIT5	VS32SIT5IM14C	VS32SIT5IF14C	VS32SIT5IM14	VS32SIT5IF14	VS32SIT5IM18V	VS32SIT5IF18V	VS32SIT5IM14V	VS32SIT5IF14V
	VS32NR	VS32NRIM14C	VS32NRIF14C	VS32NRIM14	VS32NRIF14	VS32NRIM18V	VS32NRIF18V	VS32NRIM14V	VS32NRIF14V
	VS32STN	VS32STNIM14C	VS32STNIF14C	VS32STNIM14	VS32STNIF14	VS32STNIM18V	VS32STNIF18V	VS32STNIM14V	VS32STNIF14V
	VS42NBR	VS42NBRIM14C	VS42NBRIF14C	VS42NBRIM14	VS42NBRIF14	VS42NBRIM18V	VS42NBRIF18V	VS42NBRIM14V	VS42NBRIF14V
	VS42SIT5	VS42SIT5IM14C	VS42SIT5IF14C	VS42SIT5IM14	VS42SIT5IF14	VS42SIT5IM18V	VS42SIT5IF18V	VS42SIT5IM14V	VS42SIT5IF14V
	VS42NR	VS42NRIM14C	VS42NRIF14C	VS42NRIM14	VS42NRIF14	VS42NRIM18V	VS42NRIF18V	VS42NRIM14V	VS42NRIF14V
	VS42STN	VS42STNIM14C	VS42STNIF14C	VS42STNIM14	VS42STNIF14	VS42STNIM18V	VS42STNIF18V	VS42STNIM14V	VS42STNIF14V
	VS52NBR	VS52NBRIM14C	VS52NBRIF14C	VS52NBRIM14	VS52NBRIF14	VS52NBRIM18V	VS52NBRIF18V	VS52NBRIM14V	VS52NBRIF14V
	VS52SIT5	VS52SIT5IM14C	VS52SIT5IF14C	VS52SIT5IM14	VS52SIT5IF14	VS52SIT5IM18V	VS52SIT5IF18V	VS52SIT5IM14V	VS52SIT5IF14V
	VS52NR	VS52NRIM14C	VS52NRIF14C	VS52NRIM14	VS52NRIF14	VS52NRIM18V	VS52NRIF18V	VS52NRIM14V	VS52NRIF14V
	VS52STN	VS52STNIM14C	VS52STNIF14C	VS52STNIM14	VS52STNIF14	VS52STNIM18V	VS52STNIF18V	VS52STNIM14V	VS52STNIF14V
	VS62NBR	VS62NBRIM14C	VS62NBRIF14C	VS62NBRIM14	VS62NBRIF14	VS62NBRIM18V	VS62NBRIF18V	VS62NBRIM14V	VS62NBRIF14V
	VS62SIT5	VS62SIT5IM14C	VS62SIT5IF14C	VS62SIT5IM14	VS62SIT5IF14	VS62SIT5IM18V	VS62SIT5IF18V	VS62SIT5IM14V	VS62SIT5IF14V
	VS62NR	VS62NRIM14C	VS62NRIF14C	VS62NRIM14	VS62NRIF14	VS62NRIM18V	VS62NRIF18V	VS62NRIM14V	VS62NRIF14V
	VS62STN	VS62STNIM14C	VS62STNIF14C	VS62STNIM14	VS62STNIF14	VS62STNIM18V	VS62STNIF18V	VS62STNIM14V	VS62STNIF14V

Group 3 — V / S

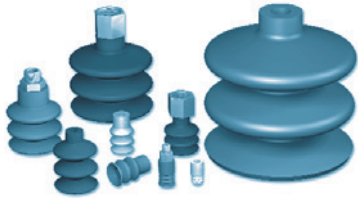
Ø 88 mm	THREAD	V G1/8"-M	V G1/4"-M	V G1/4"-F	S G1/4"-M	S G1/4"-F
	VS88NBR	VS88NBRIM18V	VS88NBRIM14V	VS88NBRIF14V	VS88NBRIM14	VS88NBRIF14
	VS88SIT5	VS88SIT5IM18V	VS88SIT5IM14V	VS88SIT5IF14V	VS88SIT5IM14	VS88SIT5IF14
	VS88NR	VS88NRIM18V	VS88NRIM14V	VS88NRIF14V	VS88NRIM14	VS88NRIF14

Additional mounting configurations are available (see page 2/47).
For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

VS

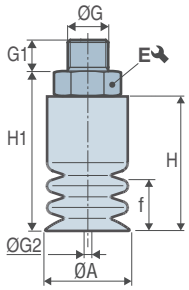
Suction Cups with 2.5 Bellows Ø 5 to 88 mm

Dimensions - "Suction Cup + Fitting"

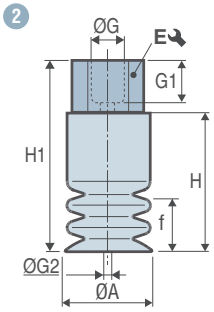


VS 5 - 9 | Group 1

1

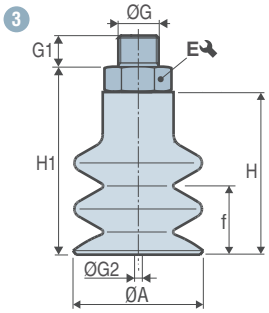


2



VS 12 - 25 | Group 1

3



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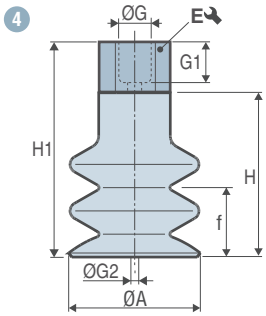
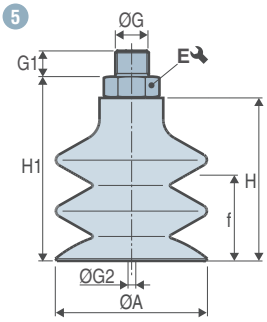


VS 26 - 62 | Group 2

5



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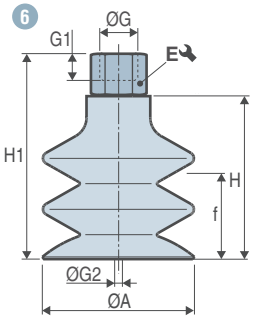
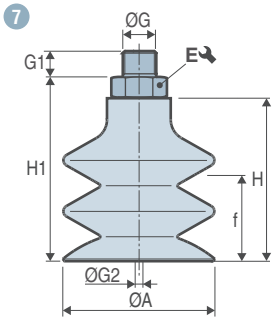


VS 88 | Group 3

7



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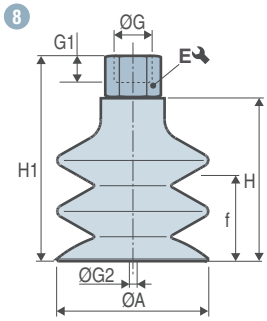

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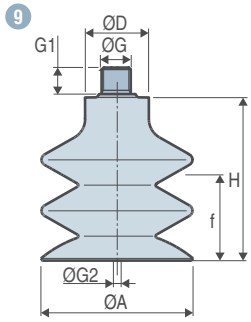


Group 1		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 5 - 25 mm	VS5---IMM3C	1	5	-	3	13.5	15.5	M3-M	3	1.4	5	0.7
	VS6---IMM3C	1	6	-	3	13.2	15.2	M3-M	3	1.4	5	0.7
	VS7---IMM5C	1	7	-	3	13.5	18.5	M5-M	4.5	2.5	7	3.5
	VS7---IMM6C	1	7	-	3	13.5	18.5	M6-M	5	3.5	7	3.1
	VS7---IM18C	1	7	-	3	13.5	19.5	G1/8"-M	7.5	3.5	14	4.5
	VS7---IF18C	2	7	-	3	13.5	25.5	G1/8"-F	8	3.5	14	4.4
	VS9---IMM5C	1	9	-	3	15	20	M5-M	4.5	2.5	7	3.7
	VS9---IMM6C	1	9	-	3	15	20	M6-M	5	3.5	7	3.3
	VS9---IM18C	1	9	-	3	15	21	G1/8"-M	7.5	3.5	14	4.8
	VS9---IF18C	2	9	-	3	15	27	G1/8"-F	8	3.5	14	4.6
	VS12---IMM5C	3	12	-	7	21	26	M5-M	4.5	2.5	7	3.2
	VS12---IMM6C	3	12	-	7	21	26	M6-M	5	3.5	7	3.8
	VS12---IM18C	3	12	-	7	21	27	G1/8"-M	7.5	3.5	14	5.2
	VS12---IF18C	4	12	-	7	21	33	G1/8"-F	8	3.5	14	5.1
	VS14---IMM5C	3	14	-	10	23	28	M5-M	4.5	2.5	7	4.6
	VS14---IMM6C	3	14	-	10	23	28	M6-M	5	3.5	7	4.2
	VS14---IM18C	3	14	-	10	23	29	G1/8"-M	7.5	3.5	14	5.6
	VS14---IF18C	4	14	-	10	23	35	G1/8"-F	8	3.5	14	5.5
	VS18---IMM5C	3	17.5	-	10	23	28	M5-M	4.5	2.5	7	5.1
	VS18---IMM6C	3	17.5	-	10	23	28	M6-M	5	3.5	7	4.7
	VS18---IM18C	3	17.5	-	10	23	29	G1/8"-M	7.5	3.5	14	6.1
	VS18---IF18C	4	17.5	-	10	23	35	G1/8"-F	8	3.5	14	6
	VS20---IMM5C	3	20	-	10	23	28	M5-M	4.5	2.5	7	5.5
	VS20---IMM6C	3	20	-	10	23	28	M6-M	5	3.5	7	5.1
	VS20---IM18C	3	20	-	10	23	29	G1/8"-M	7.5	3.5	14	6.5
	VS20---IF18C	4	20	-	10	23	35	G1/8"-F	8	3.5	14	6.4
	VS25---IMM5C	3	25	-	20	34	39	M5-M	4.5	2.5	7	7.4
	VS25---IMM6C	3	25	-	20	34	39	M6-M	5	3.5	7	7
	VS25---IM18C	3	25	-	20	34	40	G1/8"-M	7.5	3.5	14	8.4
	VS25---IF18C	4	25	-	20	34	46	G1/8"-F	8	3.5	14	8.3

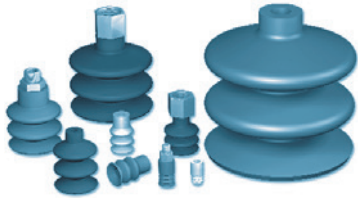
Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VS

Suction Cups with 2.5 Bellows Ø 5 to 88 mm

Dimensions - "Suction Cup + Fitting"



Group 2		Diagram	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 26 - 62 mm	VS26---IM18V	5	25	-	11	31	35.5	G1/8"-M	6	3.5	13	20.2
	VS26---IF18V	6	25	-	11	31	44	G1/8"-F	7.5	3.5	13	23.5
	VS26---IM14	5	25	-	11	31	35	G1/4"-M	11	4.4	17	14.1
	VS26---IM14C	5	25	-	11	31	39	G1/4"-M	10	7	17	15
	VS26---IM14V	5	25	-	11	31	36	G1/4"-M	8	3.5	17	29.5
	VS26---IF14	6	25	-	11	31	46	G1/4"-F	10	4.4	17	14.7
	VS26---IF14C	6	25	-	11	31	46	G1/4"-F	12	6.9	17	14.3
	VS26---IF14V	6	25	-	11	31	47	G1/4"-F	11	3.5	17	34.1
	VS32---IM18V	5	32	-	14.5	37.5	42	G1/8"-M	6	3.5	13	22.9
	VS32---IF18V	6	32	-	14.5	37.5	50.5	G1/8"-F	7.5	3.5	13	26.2
	VS32---IM14	5	32	-	14.5	37.5	41.5	G1/4"-M	11	4.4	17	16.8
	VS32---IM14C	5	32	-	14.5	37.5	45.5	G1/4"-M	10	7	17	17.7
	VS32---IM14V	5	32	-	14.5	37.5	42.5	G1/4"-M	8	3.5	17	32.2
	VS32---IF14	6	32	-	14.5	37.5	52.5	G1/4"-F	10	4.4	17	17.4
	VS32---IF14C	6	32	-	14.5	37.5	52.5	G1/4"-F	12	6.9	17	17
	VS32---IF14V	6	32	-	14.5	37.5	53.5	G1/4"-F	11	3.5	17	36.8
	VS42---IM18V	5	42	-	22	46	50.5	G1/8"-M	6	3.5	13	32.1
	VS42---IF18V	6	42	-	22	46	59	G1/8"-F	7.5	3.5	13	35.4
	VS42---IM14	5	42	-	22	46	50	G1/4"-M	11	4.4	17	26
	VS42---IM14C	5	42	-	22	46	54	G1/4"-M	10	7	17	26.2
	VS42---IM14V	5	42	-	22	46	51	G1/4"-M	8	3.5	17	41.4
	VS42---IF14	6	42	-	22	46	61	G1/4"-F	10	4.4	17	26.6
	VS42---IF14C	6	42	-	22	46	61	G1/4"-F	12	6.9	17	26.2
	VS42---IF14V	6	42	-	22	46	62	G1/4"-F	11	3.5	17	46
	VS52---IM18V	5	52	-	27	49	53.5	G1/8"-M	6	3.5	13	38.1
	VS52---IF18V	6	52	-	27	49	62	G1/8"-F	7.5	3.5	13	41.4
	VS52---IM14	5	52	-	27	49	53	G1/4"-M	11	4.4	17	32
	VS52---IM14C	5	52	-	27	49	57	G1/4"-M	10	7	17	32.9
	VS52---IM14V	5	52	-	27	49	54	G1/4"-M	8	3.5	17	47.4
	VS52---IF14	6	52	-	27	49	64	G1/4"-F	10	4.4	17	32.6
	VS52---IF14C	6	52	-	27	49	64	G1/4"-F	12	6.9	17	32.2
	VS52---IF14V	6	52	-	27	49	65	G1/4"-F	11	3.5	17	52
	VS62---IM18V	5	62	-	31	55	59.5	G1/8"-M	6	3.5	13	51
	VS62---IF18V	6	62	-	31	55	68	G1/8"-F	7.5	3.5	13	54.3
	VS62---IM14	5	62	-	31	55	59	G1/4"-M	11	4.4	17	44.9
	VS62---IM14C	5	62	-	31	55	63	G1/4"-M	10	7	17	45.8
	VS62---IM14V	5	62	-	31	55	60	G1/4"-M	8	3.5	17	60.3
	VS62---IF14	6	62	-	31	55	70	G1/4"-F	10	4.4	17	45.5
	VS62---IF14C	6	62	-	31	55	70	G1/4"-F	12	6.9	17	45.1
	VS62---IF14V	6	62	-	31	55	71	G1/4"-F	11	3.5	17	65

Group 3

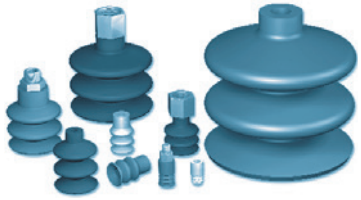
Ø 88 mm	VS88---IM18V	9	88	25	48.5	87.5	-	G1/8"-M	8	6	-	142.8
	VS88---IM14	7	88	-	48.5	87.5	93.5	G1/4"-M	11	8	21	153.4
	VS88---IM14V	7	88	-	48.5	87.5	92.5	G1/4"-M	8	6	17	163
	VS88---IF14	8	88	-	48.5	87.5	102.5	G1/4"-F	10	8	21	130.8
	VS88---IF14V	8	88	-	48.5	87.5	106.5	G1/4"-F	9	6	17	134.7

Note: All dimensions are in mm. (1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VS

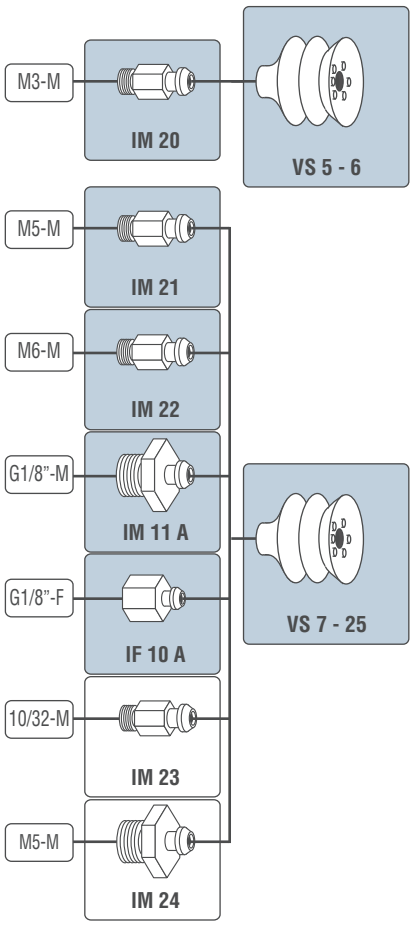
Suction Cups with 2.5 Bellows Ø 5 to 88 mm

Assembly Diagrams



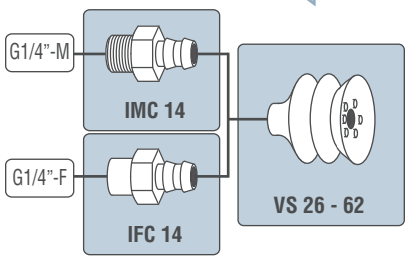
VS 5 - 25 | Group 1

Barbed fittings C

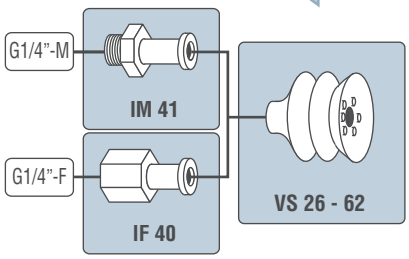


VS 26 - 62 | Group 2

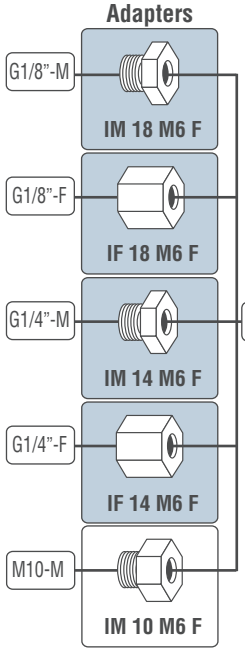
Barbed fittings C



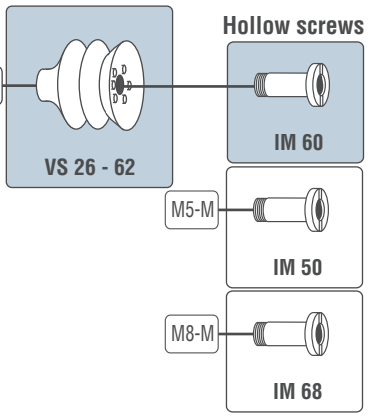
Pressed fittings E



Adapters

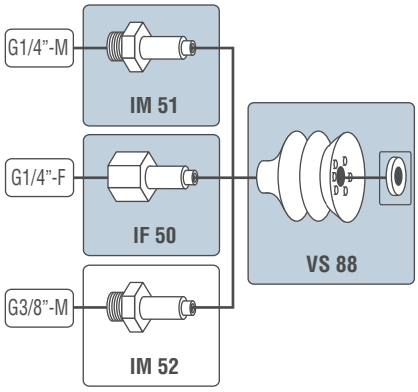


Removable fittings V



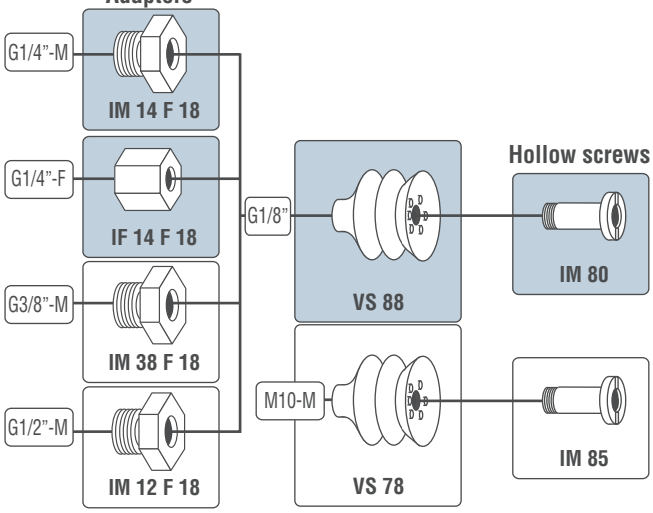
VS 88 | Group 3

Factory-crimped fittings S



Removable fittings V

Adapters



Configurations (suction cup + fitting) refer to page 2/44

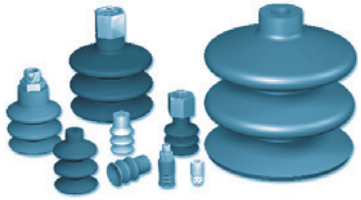
Non-standard configurations must be ordered in seperate part numbers.

Fittings and suction cups dimension: see page 2/48.

VS

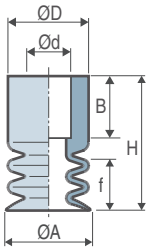
Suction Cups with 2.5 Bellows Ø 5 to 88 mm

Dimensions

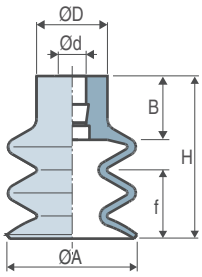


Suction Cups

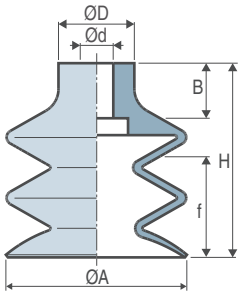
VS 5 - 25



VS 26 - 62



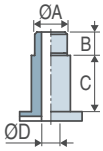
VS 88



(1) f = Deflection of the suction cup.

	ØA	H	Ød	ØD	f (1)	B	(g)
VS 5	5	13.5	4	7	3	8	0.3
VS 6	6	13.2	4	7	3	7	0.31
VS 7	7	13.5	4.7	9	3	6	0.42
VS 9	9	15	4.4	9	3	7	0.64
VS 12	12	21	4	10	7	9	1.1
VS 14	14	23	4	10	10	9	1.5
VS 18	17.5	23	4	10	10	9	2
VS 20	20	23	4	10	10	9	2.4
VS 25	25	34	4	10	20	9	4.3
VS 26	25	31	8	16	11	13	6.3
VS 32	32	37.5	8	18	14.5	13	9
VS 42	42	46	8	18	22	13	18.2
VS 52	52	49	8	18	27	13	24.2
VS 62	62	55	8	21	31	13	37.1
VS 88	88	87.5	12	25	48.5	20	119

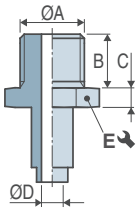
Hollow Screws



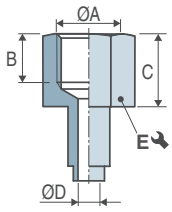
	ØA	B	C	ØD	Material	(g)
IM 50	M5-M	5	11	2.8	Nickel-plated brass	7.4
IM 60 (2) (3)	M6-M	7	11	3.5	Nickel-plated brass	7.3
IM 68	M8-M	8	11	5.2	Nickel-plated brass	6.5
IM 80	G1/8"-M	8	18	6	Nickel-plated brass	23.8
IM 85	M10x150-M	8	18	6	Nickel-plated brass	23.5

Factory-Crimped Fittings

Male - IM



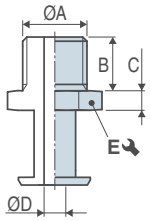
Female- IF



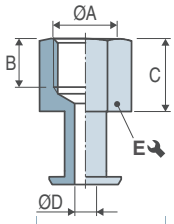
	ØA	B	C	ØD	E	Material	(g)
IM 51	G1/4"-M	11	6	8	21	Aluminum	11.8
IF 50	G1/4"-F	10	15	8	21	Aluminum	15.7
IM 52	G3/8"-M	11	6	8	21	Aluminum	14

Pressed Fittings

Male - IM



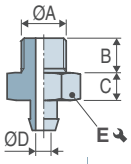
Female - IF



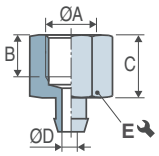
	ØA	B	C	ØD	E	Material	(g)
IM 41	G1/4"-M	11	4	4.4	17	Aluminum	7.8
IF 40	G1/4"-F	10	15	4.4	17	Aluminum	8.4

Barbed Fittings

Male - IM



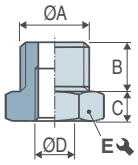
Female - IF



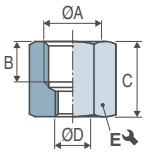
	ØA	B	C	ØD	E	Material	(g)
IM 11 A	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IMC 14	G1/4"-M	10	8	7	17	Aluminum	8.7
IM 21 (2)	M5-M	4.5	5	2.5	7	Nickel-plated brass	3.1
IM 22 (2)	M6-M	5	5	3.5	7	Nickel-plated brass	2.7
IM 23	10/32-M	4.5	5	2.5	7	Brass	3
IM 24	M5-M	4.5	2.5	2.5	10	Nickel-plated brass	3.2
IF 10 A	G1/8"-F	8	12	3.5	14	Aluminum	4
IFC 14	G1/4"-F	12	15	6.9	17	Aluminum	8

Adapters for Hollow Screws

Male - IM



Female- IF



	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Brass	5.9
IM 12 F18	G1/2"-M	14	6	G1/8"-F	22	Nickel-plated brass	46.8
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 14 F18	G1/4"-M	8	5	G1/8"-F	17	Nickel-plated brass	10.6
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IM 38 F18	G3/8"-M	9	5	G1/8"-F	19	Nickel-plated brass	18.8
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9
IF 14 F18	G1/4"-F	9	19	G1/8"-F	17	Nickel-plated brass	20.2

The values represent the average characteristics of our products.

(2) Flow restrictor version available: orifice calibrated to reduce leaks when used with a multi-cup gripper (see page 4/9)

(3) Available in stainless steel

Note: All dimensions are in mm.

VSA

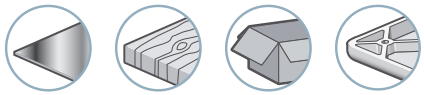
Suction Cups with 1.5 Bellows Ø 5 to 78 mm

VSA series suction cups with bellows combine the advantages of flat suction cups with increased deflection, flexibility and precision.
Used for gripping slightly concave or convex objects.

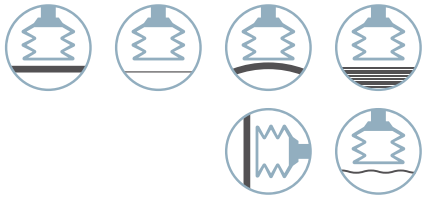
■ Flexibility ■ Precision ■ Deflection

For delicate gripping requiring a very flexible lip (opening bags, gripping tins and flexible aluminum or plastic bottles, etc.), we recommend using 35 Shore A white silicone, SIB. For larger diameters, see page 3/2, MVS series.

Industry-specific applications



Types of use



Materials

NBR	Nitrile	**SIT5**	Translucent silicone
NR	Natural rubber	**SIB**	35 shore A white silicone
STN	Siton® 60 ShoreA	**STN5**	Siton® 50 ShoreA (on request)

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SIT5	SIB	NR	STN (2)
VSA 5	5.5	0.04	0.11	0.06	10	**VSA5NBR**	**VSA5SIT5**	-	-	**VSA5STN**
VSA 11	11	0.225	0.39	0.19	10	**VSA11NBR**	**VSA11SIT5**	-	**VSA11NR**	**VSA11STN**
VSA 14	13	0.42	0.57	0.28	13	**VSA14NBR**	**VSA14SIT5**	-	**VSA14NR**	**VSA14STN**
VSA 16	16	0.75	0.60	0.30	20	**VSA16NBR**	**VSA16SIT5**	**VSA16SIB**	**VSA16NR**	**VSA16STN**
VSA 18	18	0.76	0.99	0.50	25	**VSA18NBR**	**VSA18SIT5**	**VSA18SIB**	**VSA18NR**	**VSA18STN**
VSA 20	19	1.15	1.25	0.63	30	**VSA20NBR**	**VSA20SIT5**	**VSA20SIB**	**VSA20NR**	**VSA20STN**
VSA 22	22	1.4	1.38	0.69	25	**VSA22NBR**	**VSA22SIT5**	**VSA22SIB**	**VSA22NR**	**VSA22STN**
VSA 25	24	3.15	1.79	0.89	20	**VSA25NBR**	**VSA25SIT5**	**VSA25SIB**	**VSA25NR**	**VSA25STN**
VSA 26	25	3.9	2.44	1.22	30	**VSA26NBR**	**VSA26SIT5**	-	**VSA26NR**	**VSA26STN**
VSA 33	33	4.75	3.12	1.56	40	**VSA33NBR**	**VSA33SIT5**	-	**VSA33NR**	**VSA33STN**
VSA 43	43	9.25	4.55	2.27	60	**VSA43NBR**	**VSA43SIT5**	-	**VSA43NR**	**VSA43STN**
VSA 53	53	26.25	9.58	4.79	75	**VSA53NBR**	**VSA53SIT5**	-	**VSA53NR**	**VSA53STN**
VSA 63	63	39.0	13.31	6.66	75	**VSA63NBR**	**VSA63SIT5**	-	**VSA63NR**	**VSA63STN**
VSA 78	78	76.0	24.68	12.34	70	**VSA78NBR**	**VSA78SIT5**	-	**VSA78NR**	**VSA78STN**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.
(2) On request, some models are available in STN5 (Siton® 50 shore A)

Choice of Fittings

(Ø)	Group	M3-M	M5-M	M6-M	M8-M	M10-M	G1/8"-F	G1/8"-M	10/32-M	G1/4"-F	G1/4"-M	G3/8"-M	G1/2"-M
5	**1**	■	-	-	-	-	-	-	-	-	-	-	-
11…25	**1**	-	■	■	-	-	■	■	□	-	-	-	-
26…63	**2**	-	□	□	□	□	■	■	-	■	■	-	-
78	**3**	-	-	-	-	□	-	■	-	■	■	□	□

■ Standard available configurations (suction cup + fitting): see page 2/26 □ Additional mounting configurations: see page 2/29 Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations.

C **Version C**
Barbed fitting

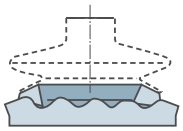
S **Version S**
Factory-crimped fitting

V **Version V**
Removable fitting:
(adapter and hollow screw)

E **Version E**
Pressed fitting

Textured Surfaces

For handling objects with a granular or textured gripping surface, use VSA suction cups with the VSBM foam strip option (see page 2/59).



Please specify the part n°. e.g. VSA78NBRIM14C
Refer to page 2/26

Accessories
To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

COVAL vacuum managers

VSA

Suction Cups with 1.5 Bellows Ø 5 to 78 mm

References - "Suction Cup + Fitting"

Group 1 — C

Ø 5 - 25 mm	THREAD	M3-M	M5-M	M6-M	G1/8"-M	G1/8"-F
	VSA5NBR	VSA5NBRIMM3C	-	-	-	-
	VSA5SIT5	VSA5SIT5IMM3C	-	-	-	-
	VSA5STN	VSA5STNIMM3C	-	-	-	-
	VSA11NBR	-	VSA11NBRIMM5C	VSA11NBRIMM6C	VSA11NBRIM18C	VSA11NBRIF18C
	VSA11NR	-	VSA11NRIMM5C	VSA11NRIMM6C	VSA11NRIM18C	VSA11NRIF18C
	VSA11SIT5	-	VSA11SIT5IMM5C	VSA11SIT5IMM6C	VSA11SIT5IM18C	VSA11SIT5IF18C
	VSA11STN	-	VSA11STNIMM5C	VSA11STNIMM6C	VSA11STNIM18C	VSA11STNIF18C
	VSA14NBR	-	VSA14NBRIMM5C	VSA14NBRIMM6C	VSA14NBRIM18C	VSA14NBRIF18C
	VSA14NR	-	VSA14NRIMM5C	VSA14NRIMM6C	VSA14NRIM18C	VSA14NRIF18C
	VSA14SIT5	-	VSA14SIT5IMM5C	VSA14SIT5IMM6C	VSA14SIT5IM18C	VSA14SIT5IF18C
	VSA14STN	-	VSA14STNIMM5C	VSA14STNIMM6C	VSA14STNIM18C	VSA14STNIF18C
	VSA16NBR	-	VSA16NBRIMM5C	VSA16NBRIMM6C	VSA16NBRIM18C	VSA16NBRIF18C
	VSA16NR	-	VSA16NRIMM5C	VSA16NRIMM6C	VSA16NRIM18C	VSA16NRIF18C
	VSA16SIB	-	VSA16SIBIMM5C	VSA16SIBIMM6C	VSA16SIBIM18C	VSA16SIBIF18C
	VSA16SIT5	-	VSA16SIT5IMM5C	VSA16SIT5IMM6C	VSA16SIT5IM18C	VSA16SIT5IF18C
	VSA16STN	-	VSA16STNIMM5C	VSA16STNIMM6C	VSA16STNIM18C	VSA16STNIF18C
	VSA18NBR	-	VSA18NBRIMM5C	VSA18NBRIMM6C	VSA18NBRIM18C	VSA18NBRIF18C
	VSA18NR	-	VSA18NRIMM5C	VSA18NRIMM6C	VSA18NRIM18C	VSA18NRIF18C
	VSA18SIB	-	VSA18SIBIMM5C	VSA18SIBIMM6C	VSA18SIBIM18C	VSA18SIBIF18C
	VSA18SIT5	-	VSA18SIT5IMM5C	VSA18SIT5IMM6C	VSA18SIT5IM18C	VSA18SIT5IF18C
	VSA18STN	-	VSA18STNIMM5C	VSA18STNIMM6C	VSA18STNIM18C	VSA18STNIF18C
	VSA20NBR	-	VSA20NBRIMM5C	VSA20NBRIMM6C	VSA20NBRIM18C	VSA20NBRIF18C
	VSA20NR	-	VSA20NRIMM5C	VSA20NRIMM6C	VSA20NRIM18C	VSA20NRIF18C
	VSA20SIB	-	VSA20SIBIMM5C	VSA20SIBIMM6C	VSA20SIBIM18C	VSA20SIBIF18C
	VSA20SIT5	-	VSA20SIT5IMM5C	VSA20SIT5IMM6C	VSA20SIT5IM18C	VSA20SIT5IF18C
	VSA20STN	-	VSA20STNIMM5C	VSA20STNIMM6C	VSA20STNIM18C	VSA20STNIF18C
	VSA22NBR	-	VSA22NBRIMM5C	VSA22NBRIMM6C	VSA22NBRIM18C	VSA22NBRIF18C
	VSA22NR	-	VSA22NRIMM5C	VSA22NRIMM6C	VSA22NRIM18C	VSA22NRIF18C
	VSA22SIB	-	VSA22SIBIMM5C	VSA22SIBIMM6C	VSA22SIBIM18C	VSA22SIBIF18C
	VSA22SIT5	-	VSA22SIT5IMM5C	VSA22SIT5IMM6C	VSA22SIT5IM18C	VSA22SIT5IF18C
	VSA22STN	-	VSA22STNIMM5C	VSA22STNIMM6C	VSA22STNIM18C	VSA22STNIF18C
	VSA25NBR	-	VSA25NBRIMM5C	VSA25NBRIMM6C	VSA25NBRIM18C	VSA25NBRIF18C
	VSA25NR	-	VSA25NRIMM5C	VSA25NRIMM6C	VSA25NRIM18C	VSA25NRIF18C
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	VSA25SIT5	-	VSA25SIT5IMM5C	VSA25SIT5IMM6C	VSA25SIT5IM18C	VSA25SIT5IF18C
	VSA25STN	-	VSA25STNIMM5C	VSA25STNIMM6C	VSA25STNIM18C	VSA25STNIF18C

Group 2 — C / E / V

Ø 26 - 63 mm	THREAD	C G1/4"-M	C G1/4"-F	E G1/4"-M	E G1/4"-F	V G1/8"-M	V G1/8"-F	V G1/4"-M	V G1/4"-F
	VSA26NBR	VSA26NBRIM14C	VSA26NBRIF14C	VSA26NBRIM14	VSA26NBRIF14	VSA26NBRIM18V	VSA26NBRIF18V	VSA26NBRIM14V	VSA26NBRIF14V
	VSA26NR	VSA26NRIM14C	VSA26NRIF14C	VSA26NRIM14	VSA26NRIF14	VSA26NRIM18V	VSA26NRIF18V	VSA26NRIM14V	VSA26NRIF14V
	VSA26SIT5	VSA26SIT5IM14C	VSA26SIT5IF14C	VSA26SIT5IM14	VSA26SIT5IF14	VSA26SIT5IM18V	VSA26SIT5IF18V	VSA26SIT5IM14V	VSA26SIT5IF14V
	VSA26STN	VSA26STNIM14C	VSA26STNIF14C	VSA26STNIM14	VSA26STNIF14	VSA26STNIM18V	VSA26STNIF18V	VSA26STNIM14V	VSA26STNIF14V
	VSA33NBR	VSA33NBRIM14C	VSA33NBRIF14C	VSA33NBRIM14	VSA33NBRIF14	VSA33NBRIM18V	VSA33NBRIF18V	VSA33NBRIM14V	VSA33NBRIF14V
	VSA33NR	VSA33NRIM14C	VSA33NRIF14C	VSA33NRIM14	VSA33NRIF14	VSA33NRIM18V	VSA33NRIF18V	VSA33NRIM14V	VSA33NRIF14V
	VSA33SIT5	VSA33SIT5IM14C	VSA33SIT5IF14C	VSA33SIT5IM14	VSA33SIT5IF14	VSA33SIT5IM18V	VSA33SIT5IF18V	VSA33SIT5IM14V	VSA33SIT5IF14V
	VSA33STN	VSA33STNIM14C	VSA33STNIF14C	VSA33STNIM14	VSA33STNIF14	VSA33STNIM18V	VSA33STNIF18V	VSA33STNIM14V	VSA33STNIF14V
	VSA43NBR	VSA43NBRIM14C	VSA43NBRIF14C	VSA43NBRIM14	VSA43NBRIF14	VSA43NBRIM18V	VSA43NBRIF18V	VSA43NBRIM14V	VSA43NBRIF14V
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	VSA53NBR	VSA53NBRIM14C	VSA53NBRIF14C	VSA53NBRIM14	VSA53NBRIF14	VSA53NBRIM18V	VSA53NBRIF18V	VSA53NBRIM14V	VSA53NBRIF14V
	VSA53NR	VSA53NRIM14C	VSA53NRIF14C	VSA53NRIM14	VSA53NRIF14	VSA53NRIM18V	VSA53NRIF18V	VSA53NRIM14V	VSA53NRIF14V
	VSA53SIT5	VSA53SIT5IM14C	VSA53SIT5IF14C	VSA53SIT5IM14	VSA53SIT5IF14	VSA53SIT5IM18V	VSA53SIT5IF18V	VSA53SIT5IM14V	VSA53SIT5IF14V
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	VSA63NBR	VSA63NBRIM14C	VSA63NBRIF14C	VSA63NBRIM14	VSA63NBRIF14	VSA63NBRIM18V	VSA63NBRIF18V	VSA63NBRIM14V	VSA63NBRIF14V
	VSA63NR	VSA63NRIM14C	VSA63NRIF14C	VSA63NRIM14	VSA63NRIF14	VSA63NRIM18V	VSA63NRIF18V	VSA63NRIM14V	VSA63NRIF14V
	VSA63SIT	VSA63SITIM14C	VSA63SITIF14C	VSA63SITIM14	VSA63SITIF14	VSA63SITIM18V	VSA63SITIF18V	VSA63SITIM14V	VSA63SITIF14V
	VSA63STN	VSA63STNIM14C	VSA63STNIF14C	VSA63STNIM14	VSA63STNIF14	VSA63STNIM18V	VSA63STNIF18V	VSA63STNIM14V	VSA63STNIF14V

Group 3 — V / S

Ø 78 mm	THREAD	V G1/8"-M	V G1/4"-M	V G1/4"-F	S G1/4"-M	S G1/4"-F
	VSA78NBR	VSA78NBRIM18V	VSA78NBRIM14V	VSA78NBRIF14V	VSA78NBRIM14	VSA78NBRIF14
	VSA78NR	VSA78NRIM18V	VSA78NRIM14V	VSA78NRIF14V	VSA78NRIM14	VSA78NRIF14
	VSA78SIT5	VSA78SIT5IM18V	VSA78SIT5IM14V	VSA78SIT5IF14V	VSA78SIT5IM14	VSA78SIT5IF14
	VSA78STN	VSA78STNIM18V	VSA78STNIM14V	VSA78STNIF14V	VSA78STNIM14	VSA78STNIF14

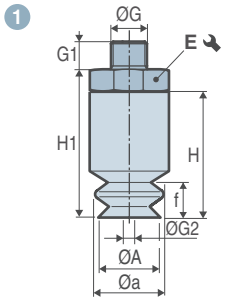
Additional mounting configurations are available (see page 2/29). For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

VSA

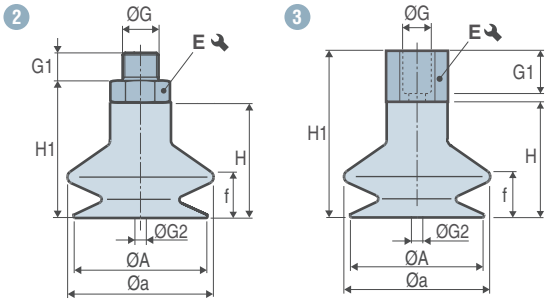
Suction Cups with 1.5 Bellows Ø 5 to 78 mm

Dimensions - "Suction Cup + Fitting"

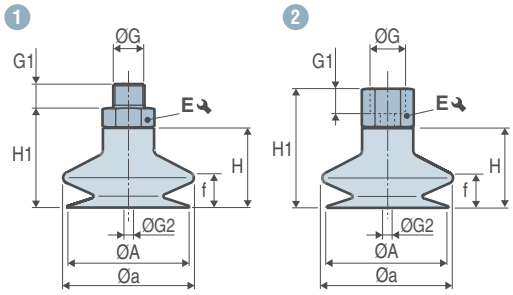
VSA 5 | Group 1



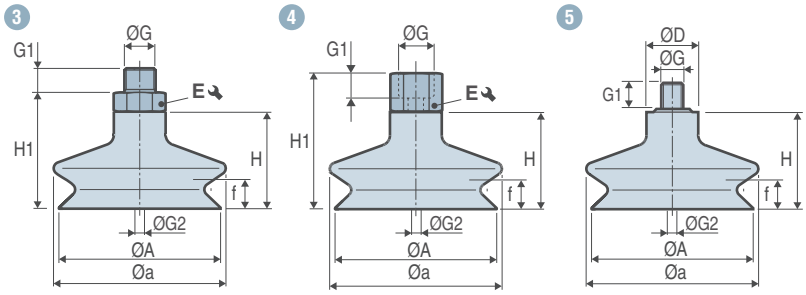
VSA 11 - 25 | Group 1



VSA 26 - 43 | Group 2



VSA 53 - 63 Group 2 / VSA 78 Group 3



Group 1		Diagram	ØA	Øa	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 5 - 25 mm	VSA5---IMM3C	1	5.5	6	-	2	11	13	M3-M	3	1.4	5	0.7
	VSA11---IMM5C	2	11	12.2	-	5.5	16	21	M5-M	4.5	2.5	7	4
	VSA11---IMM6C	2	11	12.2	-	5.5	16	21	M6-M	5	3.5	7	3.6
	VSA11---IM18C	2	11	12.2	-	5.5	16	22	G1/8"-M	7.5	3.5	14	5
	VSA11---IF18C	3	11	12.2	-	5.5	16	28	G1/8"-F	8	3.5	14	4.9
	VSA14---IMM5C	2	13	14	-	5	16	21	M5-M	4.5	2.5	7	4.2
	VSA14---IMM6C	2	13	14	-	5	16	21	M6-M	5	3.5	7	3.8
	VSA14---IM18C	2	13	14	-	5	16	22	G1/8"-M	7.5	3.5	14	5.2
	VSA14---IF18C	3	13	14	-	5	16	28	G1/8"-F	8	3.5	14	5.1
	VSA16---IMM5C	2	16	17.3	-	8.5	19	24	M5-M	4.5	2.5	7	4.4
	VSA16---IMM6C	2	16	17.3	-	8.5	19	24	M6-M	5	3.5	7	4
	VSA16---IM18C	2	16	17.3	-	8.5	19	25	G1/8"-M	7.5	3.5	14	5.4
	VSA16---IF18C	3	16	17.3	-	8.5	19	31	G1/8"-F	8	3.5	14	5.3
	VSA18---IMM5C	2	18	18	-	5	16.5	21.5	M5-M	4.5	2.5	7	4.6
	VSA18---IMM6C	2	18	18	-	5	16.5	21.5	M6-M	5	3.5	7	4.2
	VSA18---IM18C	2	18	18	-	5	16.5	22.5	G1/8"-M	7.5	3.5	14	5.6
	VSA18---IF18C	3	18	18	-	5	16.5	28.5	G1/8"-F	8	3.5	14	5.5
	VSA20---IMM5C	2	19	20	-	5	16	21	M5-M	4.5	2.5	7	4.8
	VSA20---IMM6C	2	19	20	-	5	16	21	M6-M	5	3.5	7	5.8
	VSA20---IM18C	2	19	20	-	5	16	22	G1/8"-M	7.5	3.5	14	5.8
	VSA20---IF18C	3	19	20	-	5	16	28	G1/8"-F	8	3.5	14	5.7
	VSA22---IMM5C	2	22	24	-	8	19	24	M5-M	4.5	2.5	7	5.2
	VSA22---IMM6C	2	22	24	-	8	19	24	M6-M	5	3.5	7	4.8
	VSA22---IM18C	2	22	24	-	8	19	25	G1/8"-M	7.5	3.5	14	6.2
	VSA22---IF18C	3	22	24	-	8	19	31	G1/8"-F	8	3.5	14	6.1
	VSA25---IMM5C	2	24	25	-	12	23	28	M5-M	4.5	2.5	7	6
	VSA25---IMM6C	2	24	25	-	12	23	28	M6-M	5	3.5	7	5.8
	VSA25---IM18C	2	24	25	-	12	23	29	G1/8"-M	7.5	3.5	14	7
	VSA25---IF18C	3	24	25	-	12	23	35	G1/8"-F	8	3.5	14	6.9

Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VSA

Suction Cups with 1.5 Bellows Ø 5 to 78 mm

Dimensions - "Suction Cup + Fitting"

Group 2		Diagram	ØA	Øa	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 26 - 63 mm	VSA26---IM18V	4	25	30	-	6	25	29.5	G1/8"-M	6	3.5	13	18.7
	VSA26---IF18V	5	25	30	-	6	25	38	G1/8"-F	7.5	3.5	13	22
	VSA26---IM14	4	25	30	-	6	25	29	G1/4"-M	11	4.4	17	12.4
	VSA26---IM14C	4	25	30	-	6	25	33	G1/4"-M	10	7	17	13.3
	VSA26---IM14V	4	25	30	-	6	25	30	G1/4"-M	8	3.5	17	28
	VSA26---IF14	5	25	30	-	6	25	40	G1/4"-F	10	4.4	17	13
	VSA26---IF14C	5	25	30	-	6	25	40	G1/4"-F	12	6.9	17	12.6
	VSA26---IF14V	5	25	30	-	6	25	41	G1/4"-F	11	3.5	17	32.6
	VSA33---IM18V	4	33	36.2	-	11	27.5	32	G1/8"-M	6	3.5	13	21.1
	VSA33---IF18V	5	33	36.2	-	11	27.5	40.5	G1/8"-F	7.5	3.5	13	24.4
	VSA33---IM14	4	33	36.2	-	11	27.5	31.5	G1/4"-M	11	4.4	17	14.8
	VSA33---IM14C	4	33	36.2	-	11	27.5	35.5	G1/4"-M	10	7	17	15.7
	VSA33---IM14V	4	33	36.2	-	11	27.5	32.5	G1/4"-M	8	3.5	17	30.4
	VSA33---IF14	5	33	36.2	-	11	27.5	42.5	G1/4"-F	10	4.4	17	15.4
	VSA33---IF14C	5	33	36.2	-	11	27.5	42.5	G1/4"-F	12	6.9	17	15
	VSA33---IF14V	5	33	36.2	-	11	27.5	43.5	G1/4"-F	11	3.5	17	35
	VSA43---IM18V	4	43	46	-	12.5	28	32.5	G1/8"-M	6	3.5	13	25.9
	VSA43---IF18V	5	43	46	-	12.5	28	41	G1/8"-F	7.5	3.5	13	29.2
	VSA43---IM14	4	43	46	-	12.5	28	32	G1/4"-M	11	4.4	17	19.6
	VSA43---IM14C	4	43	46	-	12.5	28	36	G1/4"-M	10	7	17	20.5
	VSA43---IM14V	4	43	46	-	12.5	28	33	G1/4"-M	8	3.5	17	35.2
	VSA43---IF14	5	43	46	-	12.5	28	43	G1/4"-F	10	4.4	17	20.2
	VSA43---IF14C	5	43	46	-	12.5	28	43	G1/4"-F	12	6.9	17	19.8
	VSA43---IF14V	5	43	46	-	12.5	28	44	G1/4"-F	11	3.5	17	39.8
	VSA53---IM18V	6	53	59	-	15	34	38.5	G1/8"-M	6	3.5	13	35
	VSA53---IF18V	7	53	59	-	15	34	47	G1/8"-F	7.5	3.5	13	38.3
	VSA53---IM14	6	53	59	-	15	34	38	G1/4"-M	11	4.4	17	28.7
	VSA53---IM14C	6	53	59	-	15	34	42	G1/4"-M	10	7	17	29.6
	VSA53---IM14V	6	53	59	-	15	34	39	G1/4"-M	8	3.5	17	44.3
	VSA53---IF14	7	53	59	-	15	34	49	G1/4"-F	10	4.4	17	29.3
	VSA53---IF14C	7	53	59	-	15	34	49	G1/4"-F	12	6.9	17	28.9
	VSA53---IF14V	7	53	59	-	15	34	50	G1/4"-F	11	3.5	17	48.9
	VSA63---IM18V	6	63	67	-	15	34	38.5	G1/8"-M	6	3.5	13	39.1
	VSA63---IF18V	7	63	67	-	15	34	47	G1/8"-F	7.5	3.5	13	42.4
	VSA63---IM14	6	63	67	-	15	34	38	G1/4"-M	11	4.4	17	32.8
	VSA63---IM14C	6	63	67	-	15	34	42	G1/4"-M	10	7	17	33.7
	VSA63---IM14V	6	63	67	-	15	34	39	G1/4"-M	8	3.5	17	48.4
	VSA63---IF14	7	63	67	-	15	34	49	G1/4"-F	10	4.4	17	33.4
	VSA63---IF14C	7	63	67	-	15	34	49	G1/4"-F	12	6.9	17	33
	VSA63---IF14V	7	63	67	-	15	34	50	G1/4"-F	11	3.5	17	53

Group 3

Ø 78 mm	VSA78---IM18V	8	78	83	25	14	46.8	-	G1/8"-M	8	6	-	85.4
	VSA78---IM14	6	78	83	-	14	46.8	52.8	G1/4"-M	11	8	21	70.2
	VSA78---IM14V	6	78	83	-	14	46.8	51.8	G1/4"-M	8	6	17	92.7
	VSA78---IF14	7	78	83	-	14	46.8	61.8	G1/4"-F	10	8	21	74.1
	VSA78---IF14V	7	78	83	-	14	46.8	65.8	G1/4"-F	9	6	17	102.3

Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

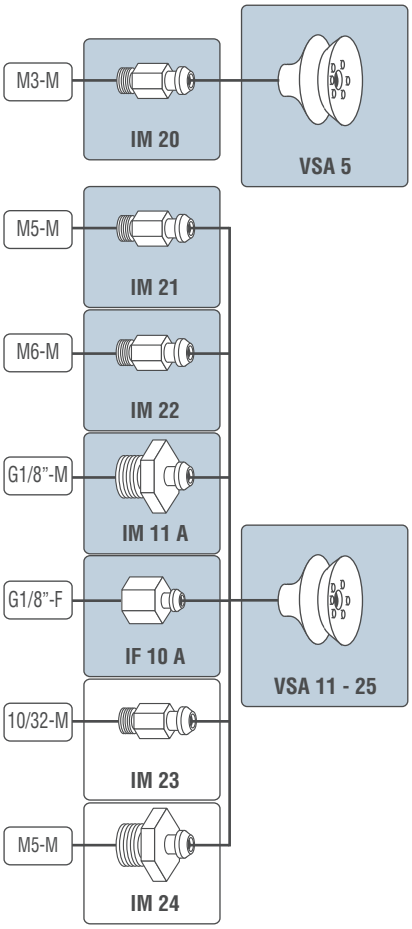
VSA

Suction Cups with 1.5 Bellows Ø 5 to 78 mm

Assembly Diagrams

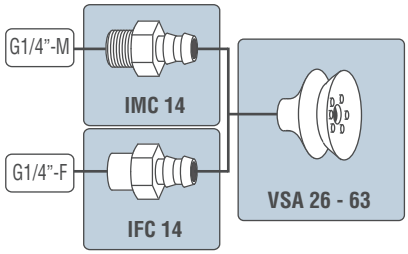
VSA 5 - 25 | Group 1

Barbed fittings C

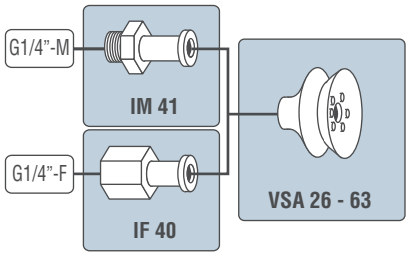


VSA 26 - 63 | Group 2

Barbed fittings C

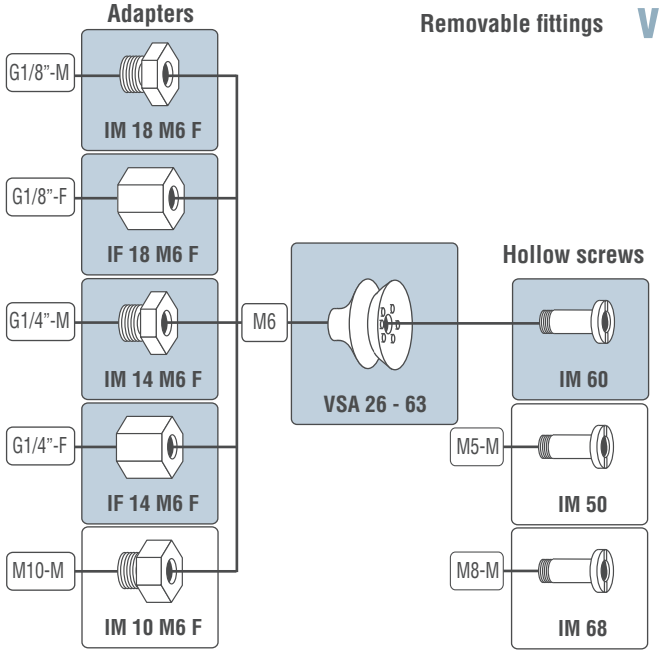


Pressed fittings E



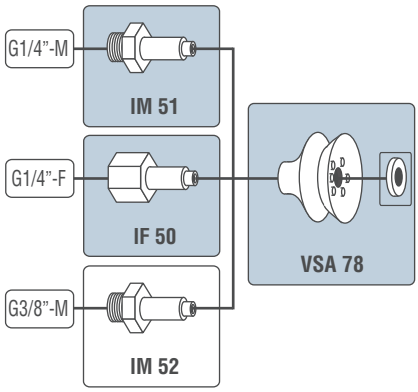
Adapters

Removable fittings V



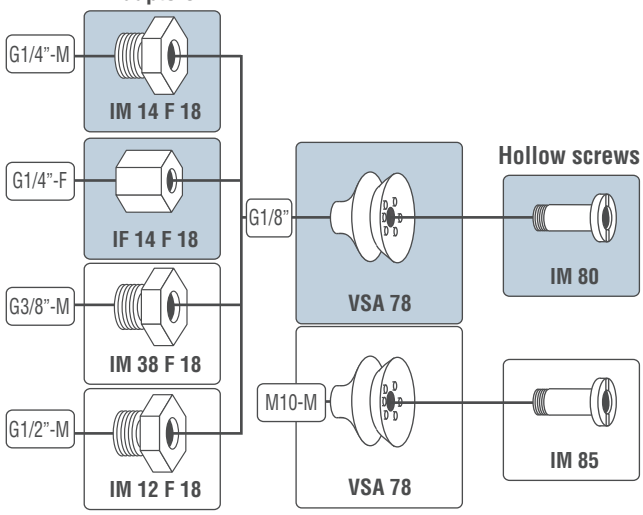
VSA 78 | Group 3

Factory-crimped fittings S



Removable fittings V

Adapters



Configurations (suction cup + fitting) refer to pages 2/26

Non-standard configurations must be ordered in seperate part numbers.

Fittings and suction cups dimension: see page 2/30.

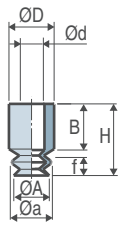
VSA

Suction Cups with 1.5 Bellows Ø 5 to 78 mm

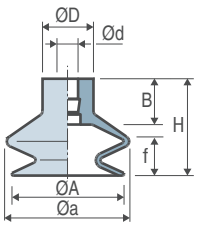
Dimensions

Suction Cups

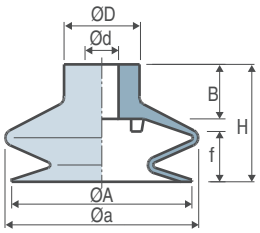
VSA 5



VSA 11 - 25



VSA 26 - 78

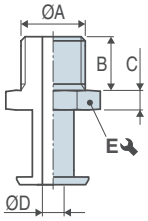


	Ø A	H	Ø a	Ø d	Ø D	f (1)	B	(g)
VSA 5	5.5	11	6	4	7	2	7	0.3
VSA 11	11	16	12.2	4	10	5.5	9	0.9
VSA 14	13	16	14	4	10	5	9	1.1
VSA 16	16	19	17.3	4	10	8.5	9	1.3
VSA 18	18	16.5	18	4	10	5	9	1.5
VSA 20	19	16	20	4	10	5	9	1.7
VSA 22	22	19	24	4	10	8	9	2.1
VSA 25	24	23	25	4	10	12	9	2.9
VSA 26	25	25	30	8	16	6	13	4.6
VSA 33	33	27.5	36.2	8	18	11	13	7
VSA 43	43	28	46	8	18	12.5	13	11.8
VSA 53	53	34	59	8	18	15	13	20.9
VSA 63	63	34	67	8	18	15	13	25
VSA 78	78	46.8	83	12	25	14	20	58.4

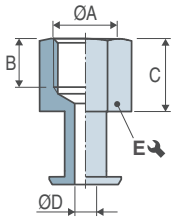
(1) f = Deflection of the suction cup.

Pressed Fittings

Male - IM



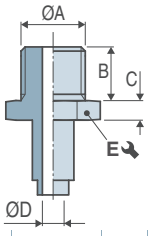
Female - IF



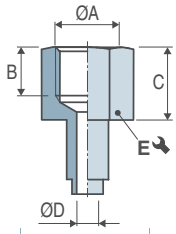
	ØA	B	C	ØD	E	Material	(g)
IM41	G1/4"-M	11	4	4.4	17	Aluminum	7.8
IF40	G1/4"-F	10	15	4.4	17	Aluminum	8.4

Factory-Crimped Fittings

Male - IM

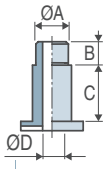


Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 51	G1/4"-M	11	6	4.4	17	Aluminum	11.8
IF 50	G1/4"-F	10	15	8	21	Aluminum	15.7
IM 52	G3/8"-M	11	6	8	21	Aluminum	14

Hollow Screws

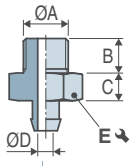


	ØA	B	C	ØD	Material	(g)
IM 50	M5-M	5	11	2.8	Brass	7.4
IM 60 (2) (3)	M6-M	7	11	3.5	Nickel-plated brass	7.5
IM 68	M8-M	8	11	5.2	Nickel-plated brass	6.4
IM 80	G1/8"-M	8	18	6	Nickel-plated brass	23.7
IM 85	M10x150-M	8	18	6	Nickel-plated brass	23.5

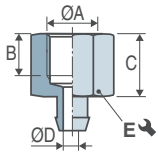
The values represent the average characteristics of our products.
(2) Flow restrictor version available: orifice calibrated to reduce leaks when used with a multi-cup gripper (see page 4/9)
(3) Available in stainless steel

Barbed Fittings

Male - IM



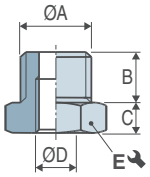
Female - IF



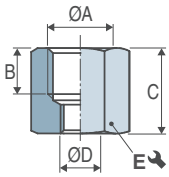
	ØA	B	C	ØD	E	Material	(g)
IM 11 A	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IMC 14	G1/4"-M	10	8	7	17	Aluminum	8.7
IM20	M3-M	3	2	1.4	5	Aluminum	0.4
IM 21 (2)	M5-M	4.5	5	2.5	7	Nickel-plated brass	3.1
IM 22 (2)	M6-M	5	5	3.5	7	Nickel-plated brass	2.7
IM 23	10/32-M	4.5	5	2.5	7	Brass	3
IM 24	M5-M	4.5	2.5	2.5	10	Nickel-plated brass	3.2
IF 10 A	G1/8"-F	8	12	3.5	14	Aluminum	4
IFC 14	G1/4"-F	12	15	6.9	17	Aluminum	8

Adapters for Hollow Screws

Male - IM



Female - IF

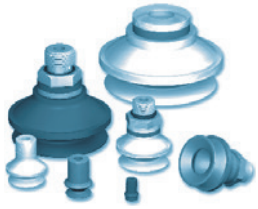


	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Brass	5.9
IM 12 F18	G1/2"-M	14	6	M6-F	22	Nickel-plated brass	46.5
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 14 F18	G1/4"-M	8	5	G1/8"-F	17	Nickel-plated brass	10.6
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IM 38 F18	G3/8"-M	9	5	G1/8"-F	19	Nickel-plated brass	18.8
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9
IF 14 F18	G1/4"-F	9	19	G1/8"-F	17	Nickel-plated brass	20.2

Note: All dimensions are in mm.

VSAB

Suction Cups with 1.5 Bellows Ø 5 to 50 mm



The VSAB series 1.5 bellows suction cups are suitable for gripping slightly concave or convex products. And due to their stroke, VSAB cups are capable of gripping products at varying heights.

Industry-specific applications

Types of use

Materials

NBR Nitrile **STN** Siton® **SI** Translucent silicone

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	Si	STN
VSAB 5	5.6	0.05	0.08	0.03	1.5	**VSAB5NBR**	**VSAB5SI**	**VSAB5STN**
VSAB 8	8.8	0.15	0.21	0.10	1.9	**VSAB8NBR**	**VSAB8SI**	**VSAB8STN**
VSAB 10	11	0.48	0.39	0.19	4	**VSAB10NBR**	**VSAB10SI**	**VSAB10STN**
VSAB 15	15.7	1.1	0.68	0.34	5	**VSAB15NBR**	**VSAB15SI**	**VSAB15STN**
VSAB 20	22	2.7	1.14	0.57	10	**VSAB20NBR**	**VSAB20SI**	**VSAB20STN**
VSAB 30	34	10	2.60	1.30	15	**VSAB30NBR**	**VSAB30SI**	**VSAB30STN**
VSAB 40	43	15	4.22	2.11	20	**VSAB40NBR**	**VSAB40SI**	**VSAB40STN**
VSAB 50	53	32	7.14	3.57	30	**VSAB50NBR**	**VSAB50SI**	**VSAB50STN**

(1) Actual force of the suction cup in use with a 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-M	G1/8"-M	G1/4"-M
5…15	■	-	-
20	-	■	-
30…50	-	-	■

Types of Assembly

C **Version C:** Barbed fitting

■ Standard available configurations (suction cup + fitting) Fitting: M = male

See part n° table below

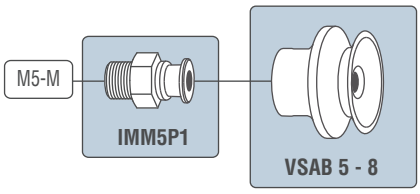
References - "Suction Cup + Fitting"

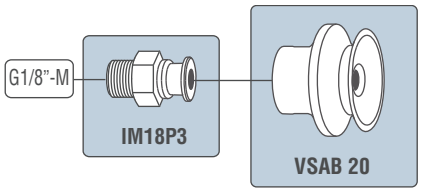
	THREAD	C M5-M
Ø 5 - 15 mm	**VSAB5NBR**	VSAB5NBRIMM5C
	VSAB5SI	VSAB5SIIMM5C
	VSAB5STN	VSAB5STNIMM5C
	VSAB8NBR	VSAB8NBRIMM5C
	VSAB8SI	VSAB8SIIMM5C
	VSAB8STN	VSAB8STNIMM5C
	VSAB10NBR	VSAB10NBRIMM5C
	VSAB10SI	VSAB10SIIMM5C
	VSAB10STN	VSAB10STNIMM5C
	VSAB15NBR	VSAB15NBRIMM5C
	VSAB15SI	VSAB15SIIMM5C
	VSAB15STN	VSAB15STNIMM5C

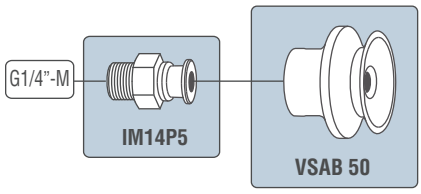
	THREAD	C G1/8"-M
Ø 20 mm	**VSAB20NBR**	VSAB20NBRIM18C
	VSAB20SI	VSAB20SIIM18C
	VSAB20STN	VSAB20STNIM18C

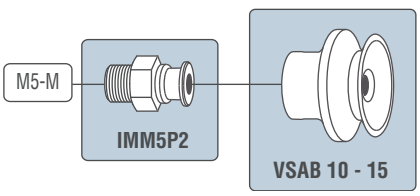
	THREAD	C G1/4"-M
Ø 30 - 50 mm	**VSAB30NBR**	VSAB30NBRIM14C
	VSAB30SI	VSAB30SIIM14C
	VSAB30STN	VSAB30STNIM14C
	VSAB40NBR	VSAB40NBRIM14C
	VSAB40SI	VSAB40SIIM14C
	VSAB40STN	VSAB40STNIM14C
	VSAB50NBR	VSAB50NBRIM14C
	VSAB50SI	VSAB50SIIM14C
	VSAB50SSTN	VSAB50STNIM14C

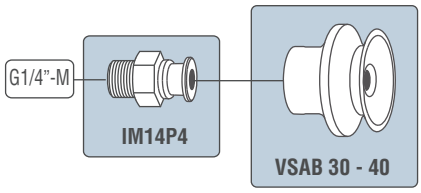
Assembly Diagrams











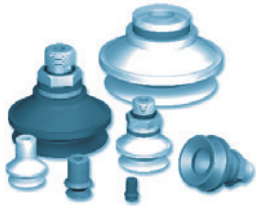
Please specify the part n°. e.g. VSAB30NBRIM14C
See part n° table above

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring extensions, and feeder systems, etc.)
see chapters **4** and **12**.

VSAB

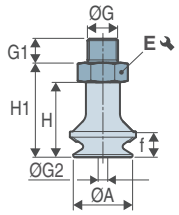
Suction Cups with 1.5 Bellows Ø 5 to 50 mm

Dimensions

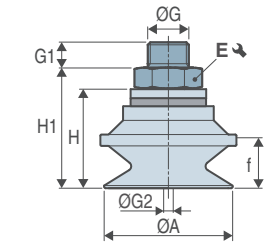


Suction Cup + Fitting

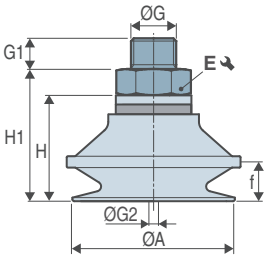
VSAB 5…15



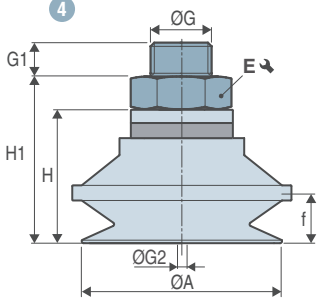
VSAB 20…30



VSAB 40



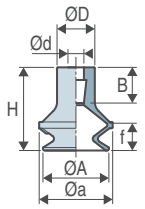
VSAB 50



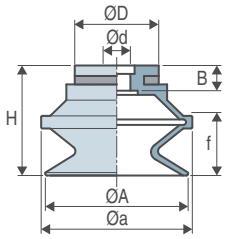
	Diagrams	ØA	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
VSAB5---IMM5C	1	5.6	1.5	9.2	12.7	M5-M	4	1.5	7	1.8
VSAB8---IMM5C	1	8.8	3.5	11.9	15.4	M5-M	4	1.5	7	2
VSAB10---IMM5C	1	11	4.5	16.4	20.9	M5-M	4	2.7	7	1.6
VSAB15---IMM5C	1	15.7	6.5	19.8	24.3	M5-M	4	2.7	7	2.1
VSAB20---IM18C	2	22	10	19	22.5	G1/8"-M	7	4	14	5.5
VSAB30---IM14C	2	34	15	26.2	32.2	G1/4"-M	9	5	17	13.2
VSAB40---IM14C	3	43	15	28	34	G1/4"-M	9	5	17	18.9
VSAB50---IM14C	4	53	13	35.3	41.3	G1/4"-M	9	5	21	31.7

Suction Cups

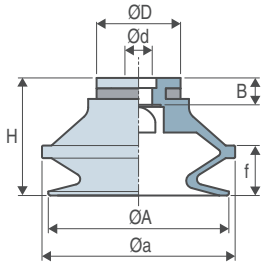
VSAB 5…15



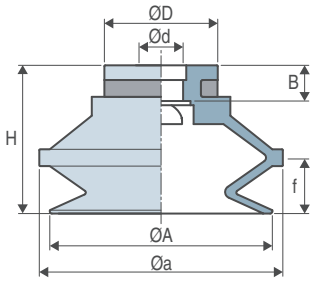
VSAB 20…30



VSAB 40

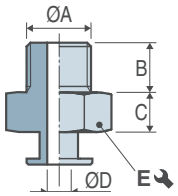


VSAB 50



	ØA	H	Øa	Ød	ØD	f (1)	B	(g)
VSAB 5	5.6	9.2	6.2	2	4.5	1.5	3.5	0.12
VSAB 8	8.8	11.9	9.6	2	5.5	3.5	3.5	0.27
VSAB 10	11	16.4	12	3.8	9	4.5	5	0.8
VSAB 15	15.7	19.8	17.5	3.8	9	6.5	3	1.3
VSAB 20	22	19	24	5	14.5	10	4.5	2.5
VSAB 30	34	26.2	36	6.5	20	15	6	6.9
VSAB 40	43	28	46	6.5	20	15	6.4	12.6
VSAB 50	53	35.3	58	10.5	27	13	8.5	21.7

Barbed Fittings



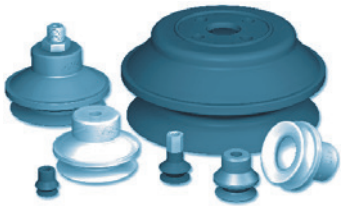
	ØA	B	C	ØD	E	Material	(g)
IMM5P1	M5-M	4	3.5	1.5	7	Brass	1.7
IMM5P2	M5-M	4	4.5	2.7	7	Aluminum	0.8
IM18P3	G1/8"-M	7	3.5	4	14	Aluminum	3
IM14P4	G1/4"-M	9	6	5	17	Aluminum	6.3
IM14P5	G1/4"-M	9	6	5	21	Aluminum	10

The values represent the average characteristics of our products.
Note: All dimensions are in mm.

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

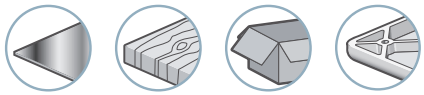
VSAG

Suction Cups with 1.5 Bellows Ø 10 to 150 mm



The VSAG series 1.5 bellows suction cups are recommended for gripping concave of convex products as well as sensitive products due to the cushioning effect of the bellows. The bellows also compensate for height variations in product gripping.

Industry-specific applications



Types of use

Materials

NBR Nitrile
SI Translucent silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VSAG 10	10.7	0.2	0.41	0.21	4	**VSAG10NBR**	**VSAG10SI**	**VSAG10STN**
VSAG 15	15	0.7	0.57	0.29	6	**VSAG15NBR**	**VSAG15SI**	**VSAG15STN**
VSAG 20B	20	1	1.07	0.54	8	**VSAG20BNBR**	**VSAG20BSI**	**VSAG20BSTN**
VSAG 30	30	4	3.41	1.70	15	**VSAG30NBR**	**VSAG30SI**	-
VSAG 40	40	9	5.20	2.60	30	**VSAG40NBR**	**VSAG40SI**	-
VSAG 50	50	26	8.60	4.22	40	**VSAG50NBR**	**VSAG50SI**	-
VSAG 75	75	76	20.29	10.07	70	**VSAG75NBR**	**VSAG75SI**	**VSAG75STN**
VSAG 110	110	280	43.02	21.11	100	**VSAG110NBR**	**VSAG110SI**	**VSAG110STN**
VSAG 150	150	640	84.91	42.21	130	**VSAG150NBR**	**VSAG150SI**	-

(1) Actual force of the suction cup in use with a 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-F	M5-M	M6-M	M10-M	M10x125F	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F	G1/2"-F
10…15	■	■	-	-	-	■	■	-	-	-
20…50	-	-	■	□	-	■	■	■	■	-
75	-	-	-	-	■	-	-	■	■	-
110…150	-	-	-	-	-	-	-	-	-	■

■ Standard available configurations (suction cup + fitting) refer to page 2/34
□ Additional mounting configurations see page 2/36
Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations:

C **Version C**
Barbed fitting

V **Version V**
Removable fitting
(adapter and hollow screw)

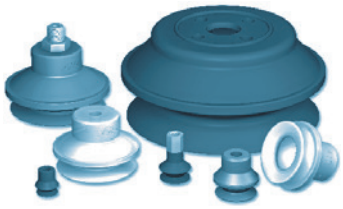
Please specify the part n°. e.g. VSAG10NBRIM18C
Refer to page 2/34

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring extensions, and feeder systems, etc.) see chapters **4** and **12**.

VSAG

Suction Cups with 1.5 Bellows Ø 5 to 50 mm

References - "Suction Cup + Fitting"



		C			
	THREAD	M5-M	M5-F	G1/8"-M	G1/8"-F
Ø 10 - 15 mm	**VSAG10NBR**	VSAG10NBRIMM5C	VSAG10NBRIFM5C	VSAG10NBRIM18C	VSAG10NBRIF18C
	VSAG10SI	VSAG10SIIMM5C	VSAG10SIIFM5C	VSAG10SIIM18C	VSAG10SIIF18C
	VSAG10STN	VSAG10STNIMM5C	VSAG10STNIFM5C	VSAG10STNIM18C	VSAG10STNIF18C
	VSAG15NBR	VSAG15NBRIMM5C	VSAG15NBRIFM5C	VSAG15NBRIM18C	VSAG15NBRIF18C
	VSAG15SI	VSAG15SIIMM5C	VSAG15SIIFM5C	VSAG15SIIM18C	VSAG15SIIF18C
	VSAG15STN	VSAG15STNIMM5C	VSAG15STNIFM5C	VSAG15STNIM18C	VSAG15STNIF18C

		C		V				
	THREAD	G1/8"-M	G1/8"-F	M6-M	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F
Ø 20 - 50 mm	**VSAG20BNBR**	VSAG20BNBRIM18C	VSAG20BNBRIF18C	VSAG20BNBRIMM6V	VSAG20BNBRIM18V	VSAG20BNBRIF18V	VSAG20BNBRIM14V	VSAG20BNBRIF14V
	VSAG20BSI	VSAG20BSIIM18C	VSAG20BSIIF18C	VSAG20BSIIMM6V	VSAG20BSIIM18V	VSAG20BSIIF18V	VSAG20BSIIM14V	VSAG20BSIIF14V
	VSAG20BSTN	VSAG20BSTNIM18C	VSAG20BSTNIF18C	VSAG20BSTNIMM6V	VSAG20BSTNIM18V	VSAG20BSTNIF18V	VSAG20BSTNIM14V	VSAG20BSTNIF14V
	VSAG30NBR	VSAG30NBRIM18C	VSAG30NBRIF18C	VSAG30NBRIMM6V	VSAG30NBRIM18V	VSAG30NBRIF18V	VSAG30NBRIM14V	VSAG30NBRIF14V
	VSAG30SI	VSAG30SIIM18C	VSAG30SIIF18C	VSAG30SIIMM6V	VSAG30SIIM18V	VSAG30SIIF18V	VSAG30SIIM14V	VSAG30SIIF14V
	VSAG40NBR	VSAG40NBRIM18C	VSAG40NBRIF18C	VSAG40NBRIMM6V	VSAG40NBRIM18V	VSAG40NBRIF18V	VSAG40NBRIM14V	VSAG40NBRIF14V
	VSAG40SI	VSAG40SIIM18C	VSAG40SIIF18C	VSAG40SIIMM6V	VSAG40SIIM18V	VSAG40SIIF18V	VSAG40SIIM14V	VSAG40SIIF14V
	VSAG50NBR	VSAG50NBRIM18C	VSAG50NBRIF18C	VSAG50NBRIMM6V	VSAG50NBRIM18V	VSAG50NBRIF18V	VSAG50NBRIM14V	VSAG50NBRIF14V
	VSAG50SI	VSAG50SIIM18C	VSAG50SIIF18C	VSAG50SIIMM6V	VSAG50SIIM18V	VSAG50SIIF18V	VSAG50SIIM14V	VSAG50SIIF14V

		V		
	THREAD	M10x125 F	G1/4"-M	G1/4"-F
Ø 75 mm	**VSAG75NBR**	VSAG75NBR	VSAG75NBRIM14V	VSAG75NBRIF14V
	VSAG75SI	VSAG75SI	VSAG75SIIM14V	VSAG75SIIF14V
	VSAG75STN	VSAG75STN	VSAG75STNIM14V	VSAG75STNIF14V

		V	
	THREAD	G1/2"-F *	G1/2"-F **
Ø 110 - 150 mm	**VSAG110NBR**	VSAG110NBRIFS12V	VSAG110NBRIF12V
	VSAG110SI	VSAG110SIIFS12V	VSAG110SIIF12V
	VSAG110STN	VSAG110STNIFS12V	VSAG110STNIF12V
	VSAG150NBR	VSAG150NBRIFS12V	VSAG150NBRIF12V
	VSAG150SI	VSAG150SIIFS12V	VSAG150SIIF12V

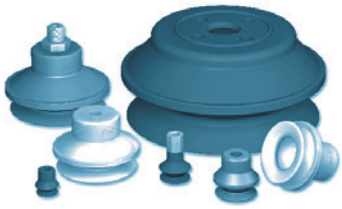
*Configured using fitting n° IFS12120
** Configured using fitting n° IF12120

Additional mounting configurations are available (see page 2/36).
For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

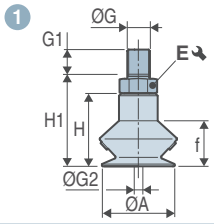
VSAG

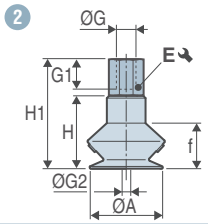
Suction Cups with 1.5 Bellows Ø 5 to 50 mm

Dimensions - "Suction Cup + Fitting"

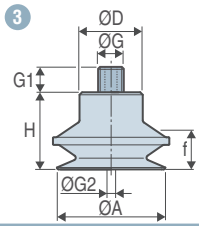


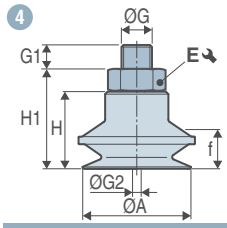
VSAG 10 - 15

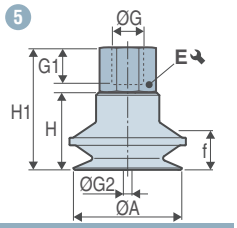




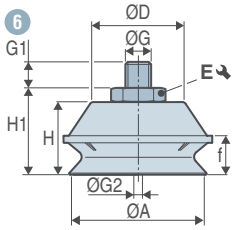
VSAG 20B - 50

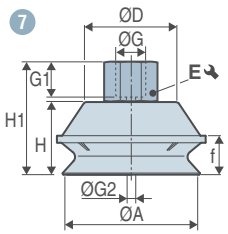


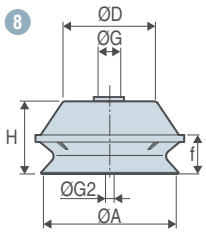




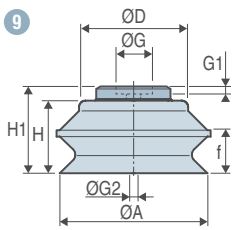
VSAG 75

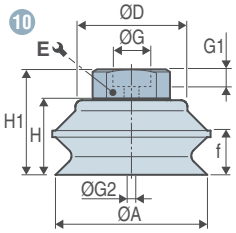






VSAG 110 - 150





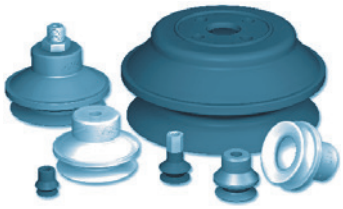
		Diagrams	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 10 - 15 mm	VSAG10---IMM5C	1	10.7	-	5	13.3	16.8	M5-M	4.5	2.2	7	1.3
	VSAG10---IFM5C	2	10.7	-	5	13.3	22.3	M5-F	6	2.2	14	1.8
	VSAG10---IM18C	1	10.7	-	5	13.3	18.3	G1/8"-M	8	2.2	14	4.5
	VSAG10---IF18C	2	10.7	-	5	13.3	28.3	G1/8"-F	9	2.2	14	5.7
	VSAG15---IMM5C	1	15	-	10	16	19.5	M5-M	4.5	2.2	7	1.6
	VSAG15---IFM5C	2	15	-	10	16	25	M5-F	6	2.2	14	2.1
	VSAG15---IM18C	1	15	-	10	16	21	G1/8"-M	8	2.2	14	4.8
	VSAG15---IF18C	2	15	-	10	16	31	G1/8"-F	9	2.2	14	6
Ø 20B - 40 mm	VSAG20B---IM18C	4	20	-	12	22	27	G1/8"-M	8	4	14	7.1
	VSAG20B---IF18C	5	20	-	12	22	37	G1/8"-F	9	4	14	8.5
	VSAG20B---IMM6V	3	20	15	12	22	-	M6-M	6	3.5	-	5.7
	VSAG20B---IM18V	4	20	-	12	22	26.5	G1/8"-M	6	3.5	13	12.3
	VSAG20B---IF18V	5	20	-	12	22	35	G1/8"-F	7.5	3.5	13	15.6
	VSAG20B---IM14V	4	20	-	12	22	27	G1/4"-M	8	3.5	17	21.6
	VSAG20B---IF14V	5	20	-	12	22	38	G1/4"-F	11	3.5	17	26.2
	VSAG30---IM18C	4	30	-	17	30.5	35.5	G1/8"-M	8	4	14	13.2
	VSAG30---IF18C	5	30	-	17	30.5	45.5	G1/8"-F	9	4	14	14.6
	VSAG30---IMM6V	3	30	20	17	30.5	-	M6-M	6	3.5	-	11.8
	VSAG30---IM18V	4	30	-	17	30.5	35	G1/8"-M	6	3.5	13	18.4
	VSAG30---IF18V	5	30	-	17	30.5	43.5	G1/8"-F	7.5	3.5	13	21.7
	VSAG30---IM14V	4	30	-	17	30.5	35.5	G1/4"-M	8	3.5	17	27.7
	VSAG30---IF14V	5	30	-	17	30.5	46.5	G1/4"-F	11	3.5	17	32.3
	VSAG40---IM18C	4	40	-	15.5	30.5	35.5	G1/8"-M	8	4	14	18.8
	VSAG40---IF18C	5	40	-	15.5	30.5	45.5	G1/8"-F	9	4	14	20.2
	VSAG40---IMM6V	3	40	25	15.5	30.5	-	M6-M	6	3.5	-	17.4
	VSAG40---IM18V	4	40	-	15.5	30.5	35	G1/8"-M	6	3.5	13	24
	VSAG40---IF18V	5	40	-	15.5	30.5	43.5	G1/8"-F	7.5	3.5	13	27.3
	VSAG40---IM14V	4	40	-	15.5	30.5	35.5	G1/4"-M	8	3.5	17	33.3
	VSAG40---IF14V	5	40	-	15.5	30.5	46.5	G1/4"-F	11	3.5	17	37.9
Ø 50 mm	VSAG50---IM18C	4	50	-	20	36.5	41.5	G1/8"-M	8	4	14	27.4
	VSAG50---IF18C	5	50	-	20	36.5	51.5	G1/8"-F	9	4	14	28.8
	VSAG50---IMM6V	3	50	-	20	36.5	-	M6-M	6	3.5	-	30
	VSAG50---IM18V	4	50	-	20	36.5	41	G1/8"-M	6	3.5	13	36.6
	VSAG50---IF18V	5	50	-	20	36.5	49.5	G1/8"-F	7.5	3.5	13	40
	VSAG50---IM14V	4	50	-	20	36.5	41.5	G1/4"-M	8	3.5	17	45.9
	VSAG50---IM14F	5	50	-	20	36.5	52.5	G1/4"-F	11	3.5	17	50.4
Ø 75 - 150 mm	VSAG75---	8	75	50.5	22	43.2	-	M10x125-F	-	-	-	87.6
	VSAG75---IM14V	6	75	50.5	22	43.2	48.2	G1/4"-M	10	5	17	94.6
	VSAG75---IF14V	7	75	50.5	22	43.2	60.2	G1/4"-F	10	5	17	95.9
	VSAG110---IF12V	10	110	85	32.5	55	85	G1/2"-F	24	19	48	488.8
	VSAG110---IFS12V	9	110	85	32.5	55	68	G1/2"-F	13	-	-	407.5
	VSAG150---IF12V	10	150	120	39.5	75.5	105.5	G1/2"-F	24	19	48	911.4
	VSAG150---IFS12V	9	150	120	39.5	75.5	88.5	G1/2"-F	13	-	-	830.1

Note: All dimensions are in mm. (1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

VSAG

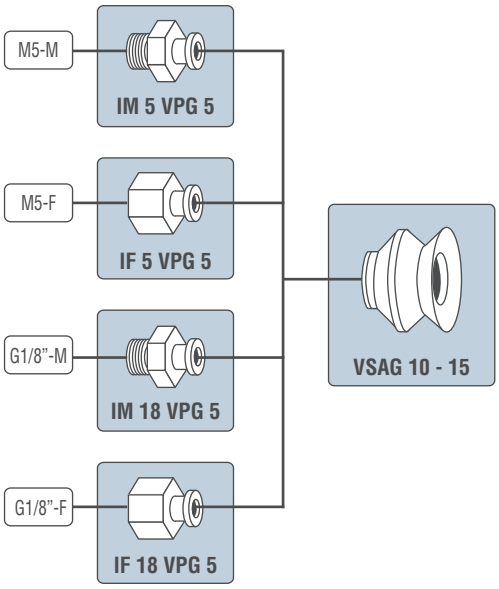
Suction Cups with 1.5 Bellows Ø 5 to 50 mm

Assembly Diagrams



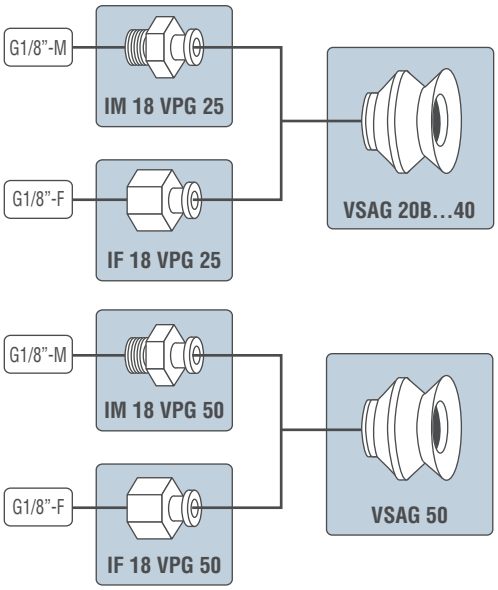
VSAG 10 - 15

Barbed fittings C



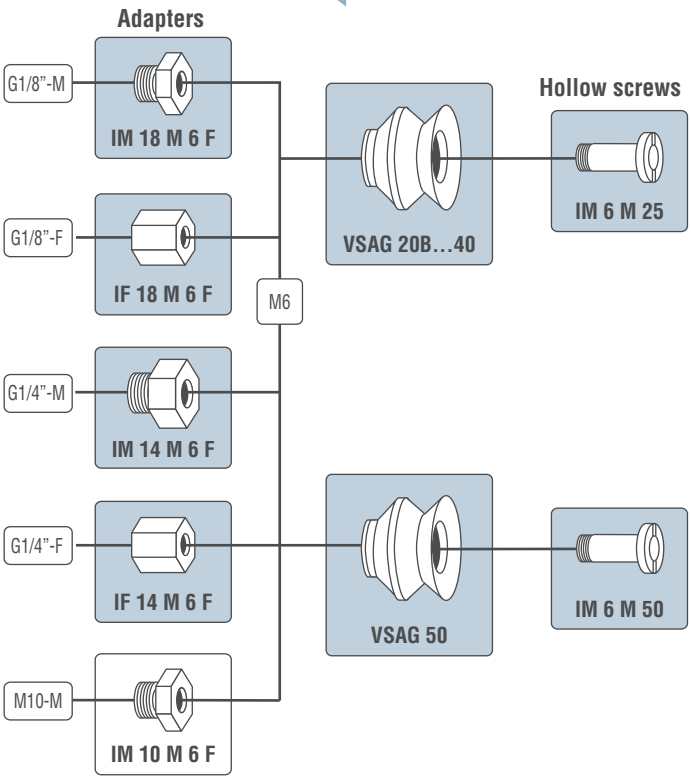
VSAG 20B - 50

Barbed fittings C



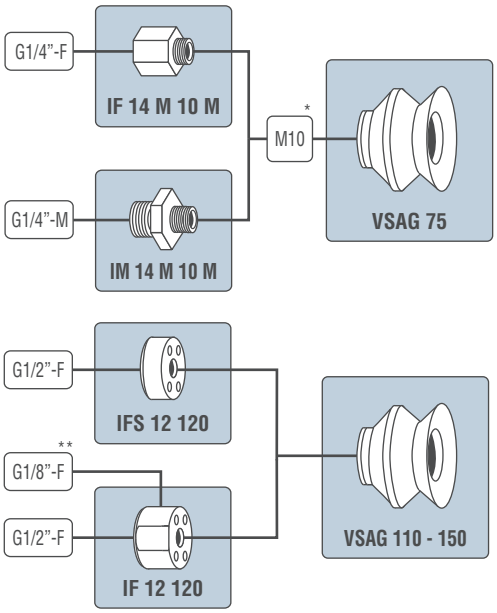
VSAG 20B - 50

Removable fittings V



VSAG 75 - 150

Removable fittings V



* 125 thread
** Female auxiliary radial output

Configurations (suction cup + fitting) refer to page 2/34

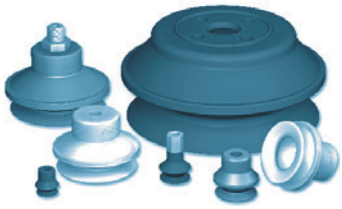
Non-standard configurations must be ordered in seperate part numbers.

Fittings and suction cups dimensions: see pages 2/37 and 2/38.

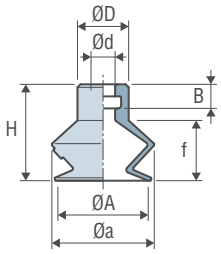
VSAG

Suction Cups with 1.5 Bellows Ø 5 to 50 mm

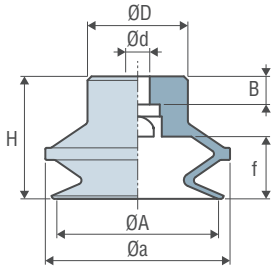
Dimensions - Suction Cups



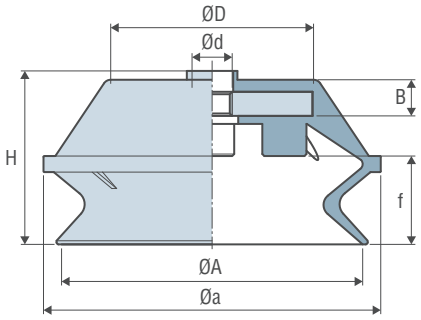
VSAG 10 - 15



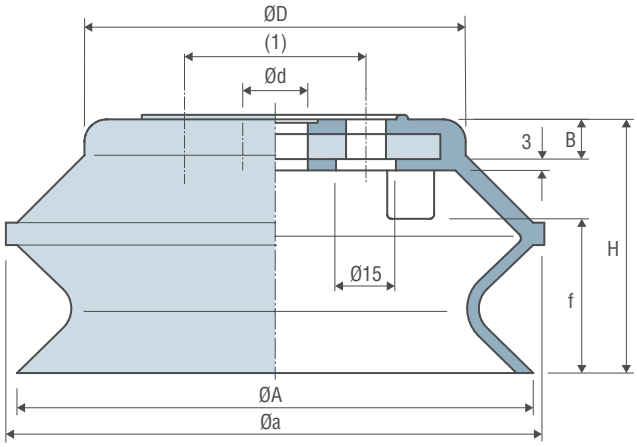
VSAG 20 - 50



VSAG 75



VSAG 110 - 150



(1) 4 holes Ø 9 on Ø 40

(Ø)	ØA	H	Øa	Ød	ØD	f (1)	B	(g)
VSAG 10	10.7	13.3	12.5	4	8.5	5	4	0.6
VSAG 15	15	16	17	4	8.5	10	4	0.9
VSAG 20 B	20	22	24	6	15	12	7	3
VSAG 30	30	30.5	36	6	20	17	7	9.1
VSAG 40	40	30.5	46	6	25	15.5	7	14.7
VSAG 50	50	36.5	59.5	7.8	28.5	20	7	22.5
VSAG 75	75	43.2	84	M10 x 125 - F	50.5	22	9	87.6
VSAG 110	110	55	121.5	14	85	32.5	9	264
VSAG 150	150	75.5	166	13	120	39.5	11	686.6

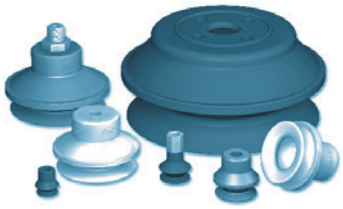
The values represent the average characteristics of our products.
Note: All dimensions are in mm.

(1) f = Deflection of the suction cup.

VSAG

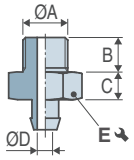
Suction Cups with 1.5 Bellows Ø 5 to 50 mm

Dimensions - Fittings

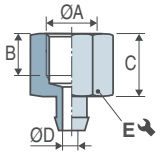


Barbed fittings

Male - IM

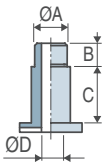


Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 5 VPG5	M5-M	4.5	3.5	2.2	7	Aluminum	0.7
IM 18 VPG5	G1/8"-M	8	5	2.2	14	Aluminum	3.9
IM 18 VPG25	G1/8"-M	8	5	4	14	Aluminum	4.1
IM 18 VPG50	G1/8"-M	8	5	4	14	Aluminum	4.9
IF 5 VPG5	M5-F	6	9	2.2	14	Aluminum	1.2
IF 18 VPG5	G1/8"-F	9	15	2.2	14	Aluminum	5.1
IF 18 VPG25	G1/8"-F	9	15	4	14	Aluminum	5.5
IF 18 VPG50	G1/8"-F	9	15	4	14	Aluminum	6.3

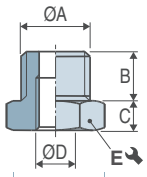
Hollow Screws



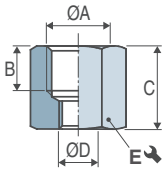
	ØA	B	C	ØD	Material	(g)
IM 6 M25	M6-M	6	6	3.5	Nickel-plated brass	2.7
IM 6 M50	M6-M	6	6	3.5	Nickel-plated brass	7.5

Adapters for Hollow Screws

Male - IM



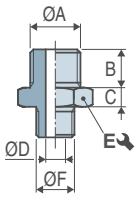
Female - IF



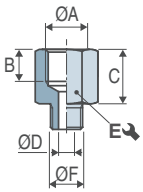
	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6	13	Nickel-plated brass	5.9
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9

Removable Fittings

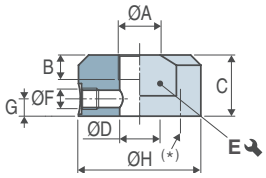
Male - IM



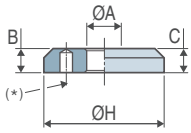
Female - IF



Female - IF 12120



Female - IFS 12120



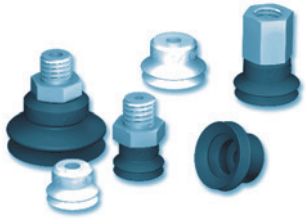
(1) 4 holes Ø 9 on Ø 40

	ØA	B	C	ØD	E	ØF	G	H	Material	(g)
IM 14 M10M	G1/4"-M	10	5	5	17	M10x125-M	-	-	Aluminum	7
IF 14 M10M	G1/4"-F	10	17	5	17	M10x125-M	-	-	Aluminum	8.3
IF 12120	G1/2"-F	24	30	19	48	G1/8"-F	8.7	60	Aluminum	224.8
IFS 12120	G1/2"-F	13	13	-	-	-	-	65	Aluminum	143.5

The values represent the average characteristics of our products.
Note: All dimensions are in mm.

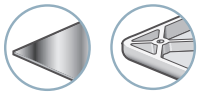
VSAJ

Suction Cups with 1.5 Bellows Ø 15 to 30 mm



The VSAJ series 1.5 bellows suction cups are recommended to grip slightly convex or concave products. They are also able to compensate for height variations in products being gripped.

Industry-specific applications



Types of use

Materials

NBR Nitrile
SI Translucent silicone

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	(lbf) (1)	R_{min} (mm)	NBR	SI
VSAJ 15	15	0.5	0.81	0.41	10	**VSAJ15NBR**	**VSAJ15SI**
VSAJ 20	20	1.2	1.54	0.76	13	**VSAJ20NBR**	**VSAJ20SI**
VSAJ 30	30	3	3.00	1.49	26	**VSAJ30NBR**	**VSAJ30SI**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-M	M6-M	M10-M	G1/8"-F	G1/8"-M	G1/4"-F	G1/4"-M
15…20	■	-	-	■	■	-	-
30	-	■	□	■	■	■	■

■ Standard available configurations (suction cup + fitting) refer to page 2/40

□ Additional mounting configurations see page 2/41

Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations:

C **Version C**
Barbed fitting

V **Version V**
Removable fitting
(adapter and hollow screw)

Please specify the part n°. e.g. VSAJ20NBRIM18C
Refer to page 2/40

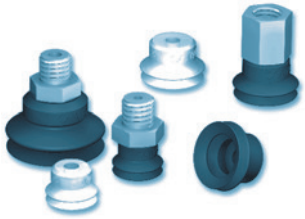
Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (spring systems, extensions, feeder systems, etc.) see chapters **4** and **12**.

COVAL vacuum managers

VSAJ

Suction cups with 1.5 bellows Ø 15 to 30 mm

References and Dimensions - "Suction Cup + Fitting"

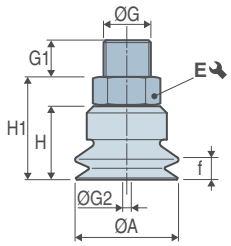


References - "Suction Cup + Fitting"

		C		V				
Ø 15 - 20 mm	THREAD	G1/8"-M	G1/8"-F	M5-M	G1/8"-M	G1/8"-F		
	VSAJ15NBR	VSAJ15NBRIM18C	VSAJ15NBRIF18C	VSAJ15NBRIMM5V	VSAJ15NBRIM18V	VSAJ15NBRIF18V		
	VSAJ15SI	VSAJ15SIIM18C	VSAJ15SIIF18C	VSAJ15SIIMM5V	VSAJ15SIIM18V	VSAJ15SIIF18V		
	VSAJ20NBR	VSAJ20NBRIM18C	VSAJ20NBRIF18C	VSAJ20NBRIMM5V	VSAJ20NBRIM18V	VSAJ20NBRIF18V		
	VSAJ20SI	VSAJ20SIIM18C	VSAJ20SIIF18C	VSAJ20SIIMM5V	VSAJ20SIIM18V	VSAJ20SIIF18V		
		C		V				
Ø 30 mm	THREAD	G1/8"-M	G1/8"-F	M5-M	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F
	VSAJ30NBR	VSAJ30NBRIM18C	VSAJ30NBRIF18C	VSAJ30NBRIMM6V	VSAJ30NBRIM18V	VSAJ30NBRIF18V	VSAJ30NBRIM14V	VSAJ30NBRIF14V
	VSAJ30SI	VSAJ30SIIM18C	VSAJ30SIIF18C	VSAJ30SIIMM6V	VSAJ30SIIM18V	VSAJ30SIIF18V	VSAJ30SIIM14V	VSAJ30SIIF14V

VSAJ 15 -20

1



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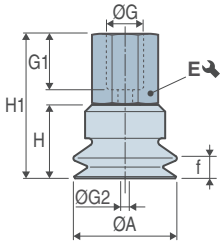

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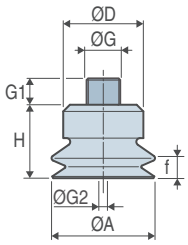

VSAJ 30

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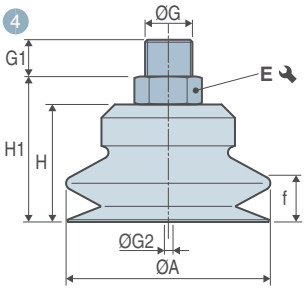

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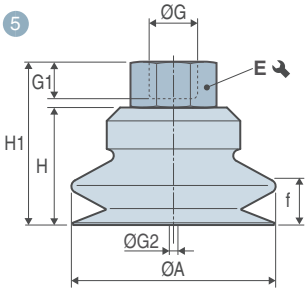

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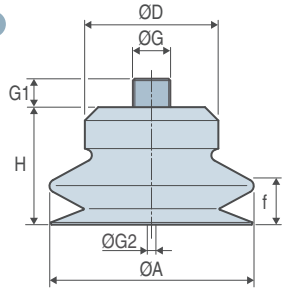


		Diagrams	ØA	ØD	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
Ø 15 - 20 mm	VSAJ15---IM18C	1	15	-	3.3	11	16	G1/8"-M	8	2.2	14	4.8
	VSAJ15---IF18C	2	15	-	3.3	11	26	G1/8"-F	9	2.5	14	6
	VSAJ15---IMM5V	3	15	12	3.3	11	-	M5-M	5	2.5	-	3
	VSAJ15---IM18V	1	15	-	3.3	11	15.5	G1/8"-M	6	2.5	13	9.4
	VSAJ15---IF18V	2	15	-	3.3	11	24	G1/8"-F	7.5	2.5	13	12.6
	VSAJ20---IM18C	1	20	-	5.5	13	18	G1/8"-M	8	3	14	5.7
	VSAJ20---IF18C	2	20	-	5.5	13	28	G1/8"-F	9	3	14	7
	VSAJ20---IMM5V	3	20	15	5.5	13	-	M5-M	5	2.5	-	3.8
	VSAJ20---IM18V	1	20	-	5.5	13	17.5	G1/8"-M	6	2.5	13	10.1
	VSAJ20---IF18V	2	20	-	5.5	13	26	G1/8"-F	7.5	2.5	13	14.6
Ø 30 mm	VSAJ30---IM18C	4	30	-	7	17	42	G1/8"-M	8	4	14	9
	VSAJ30---IF18C	5	30	-	7	17	32	G1/8"-F	9	4	14	8.4
	VSAJ30---IMM6V	6	30	20	7	17	-	M6-M	6	3.5	-	7.6
	VSAJ30---IM18V	4	30	-	7	17	21.5	G1/8"-M	6	3.5	13	14.2
	VSAJ30---IF18V	5	30	-	7	17	30	G1/8"-F	7.5	3.5	13	17.5
	VSAJ30---IM14V	4	30	-	7	17	21.5	G1/4"-M	8	3.5	17	20.8
	VSAJ30---IF14V	5	30	-	7	17	33	G1/4"-F	11	3.5	17	28.1

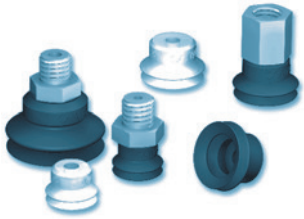
Note: All dimensions are in mm.
(1) f = Deflection of the suction cup.
(2) Ø G2 = Ø internal orifice of the fitting.

Additional mounting configurations are available (see page 2/41). For standard configurations (suction cup+fitting), the C and V versions are delivered unassembled.

VSAJ

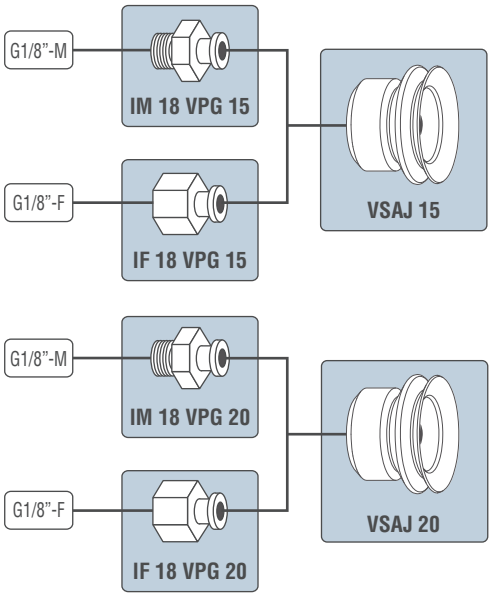
Suction Cups with 1.5 Bellows Ø 15 to 30 mm

Assembly Diagrams

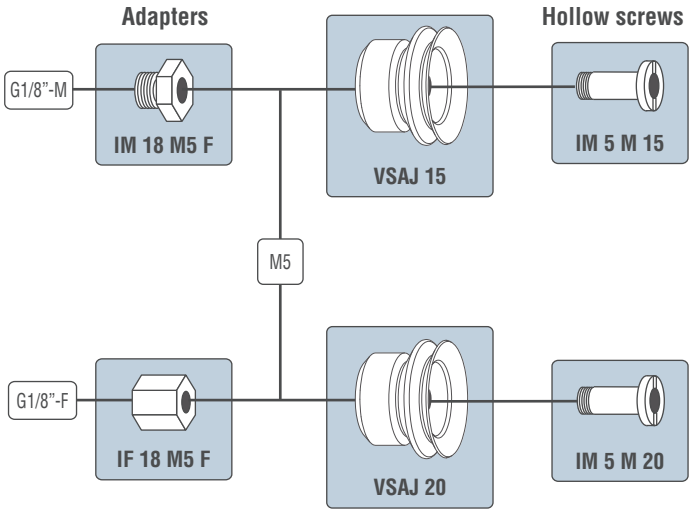


VSAJ 15 - 20

Barbed fittings C

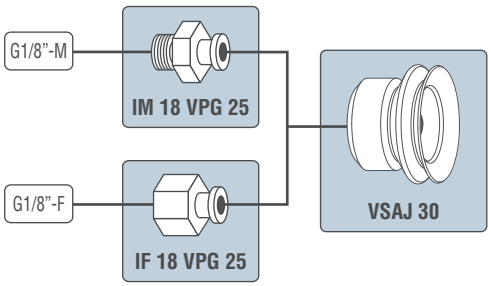


Removable fittings V

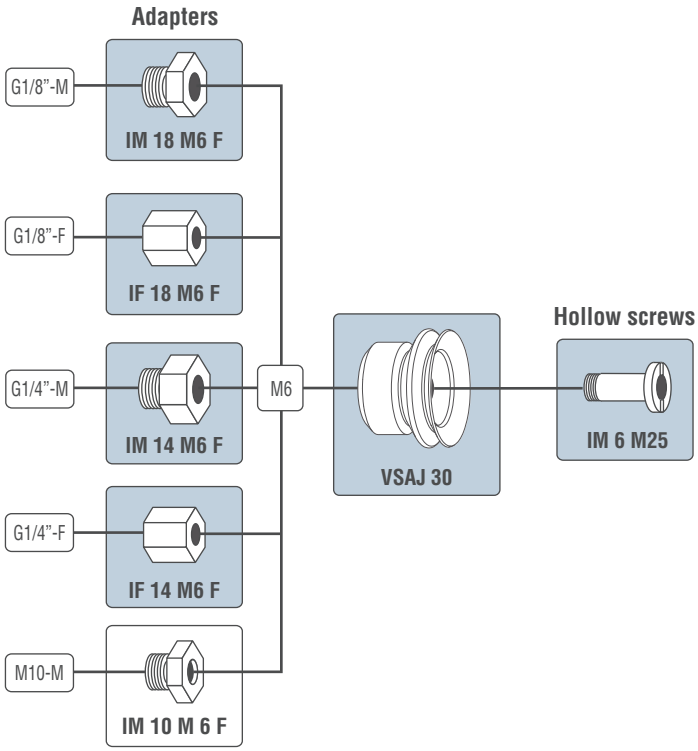


VSAJ 30

Barbed fittings C



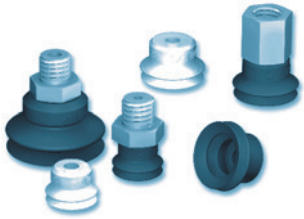
Removable fittings V



VSAJ

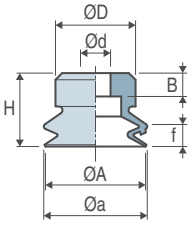
Suction Cups with 1.5 Bellows Ø 15 to 30 mm

Dimensions

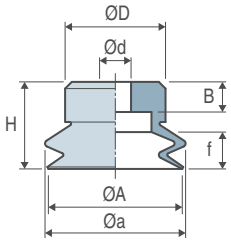


Suction Cups

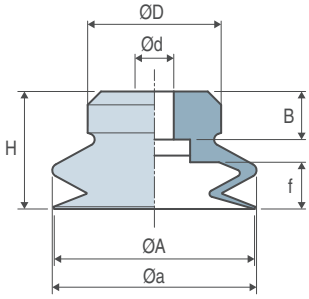
VSAJ 15



VSAJ 20



VSAJ 30

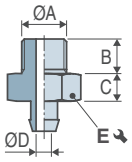


	Ø A	H	Ø a	Ø d	Ø D	f (1)	B	(g)
VSAJ 15	15	11	15.5	4.5	12	3.3	3.5	9
VSAJ 20	20	13	21	4.7	15	5.5	4.5	8.4
VSAJ 30	30	17	30.6	5.8	20	7	7.2	7.6

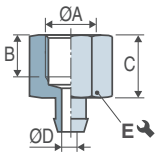
(1) f = Deflection of the suction cup.

Barbed Fittings

Male - IM

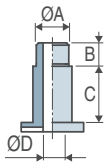


Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 18 VPG15	G1/8"-M	8	5	2.2	14	Aluminum	4
IM 18 VPG20	G1/8"-M	8	5	3	14	Aluminum	4.1
IM 18 VPG25	G1/8"-M	8	5	4	14	Aluminum	4.1
IF 18 VPG15	G1/8"-F	9	15	2.5	14	Aluminum	5.2
IF 18 VPG20	G1/8"-F	9	15	3	14	Aluminum	5.4
IF 18 VPG25	G1/8"-F	9	15	4	14	Aluminum	5.5

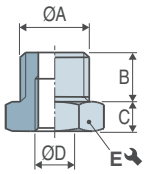
Hollow Screws



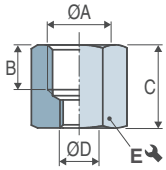
	ØA	B	C	ØD	Material	(g)
IM 5 M15	M5-M	5	2	2.5	Nickel-plated brass	1.3
IM 5 M20	M5-M	5	4	2.5	Nickel-plated brass	2.2
IM 6 M25	M6-M	6	6	3.5	Nickel-plated brass	2.7

Adapters for Hollow Screws

Male - IM



Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Nickel-plated brass	5.9
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 18 M5F	G1/8"-M	6	4.5	M5-F	13	Nickel-plated brass	7.3
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M5F	G1/8"-F	7.5	13	M5-F	13	Nickel-plated brass	10.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9

The values represent the average characteristics of our products.
Note: All dimensions are in mm.

VSA-VS BM

Suction Cups with Foam Ring Seals

The VSA and VS series suction cups equipped with VSBM foam rings are suitable for gripping products with rough surfaces. For example...

- sawn wood, sheet metal, flat surfaces with holes.
- Any rough surfaces for which the suction cups' lips do not seal properly.

Industry-specific applications

Types of use

Materials

NBR Nitrile **SIT5** Translucent silicone **Si** Silicone

Specifications

Some suction cup models are available with a foam ring:

- **VSA series:** Standard 1.5 bellows suction cups, Ø 20 to 78 mm in nitrile (NBR) or in transparent silicone (SIT5).
- **VS series:** Standard 2.5 bellows suction cups, Ø 20 to 78 mm in nitrile (NBR) or in transparent silicone (SIT5).
- Foam ring in nitrile for nitrile suction cups (good resistance to oil).
- Foam ring in silicone (SI) for transparent suction cups (SIT5) and silicone glue. (Resistant up to 320°F and leaves no marks on gripped products. Do not use for gripping of products before painting or lacquering.)
- Assembling: foam rings are factory-bonded onto suction cup lips.

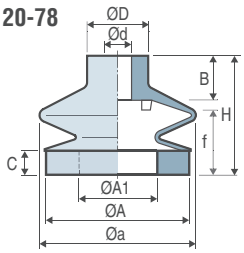
Suction Cup Properties

	Ø (mm)	(cm³) NBR	(cm³) SIT5 / SI	(lbf)(1)	NBR	SIT5 / SI		Ø (mm)	(cm³) NBR	(cm³) SIT5 / SI	(lbf)(1)	NBR	SIT5 / SI
VSA 20	20	-	1.3	1.26	-	**VSA20SIT5BM**	**VS 20**	20	-	2.2	1.03	-	**VS20SIT5BM**
VSA 25	25	-	3.4	1.37	-	**VSA25SIT5BM**	**VS 25**	25	-	5.7	1.46	-	**VS25SIT5BM**
VSA 26	26	-	4.2	2.43	-	**VSA26SIT5BM**	**VS 26**	26	-	6.4	2.43	-	**VS26SIT5BM**
VSA 33	33	6.7	5.3	3.12	**VSA33NBRBM**	**VSA33SIT5BM**	**VS 32**	32	11.9	10.6	2.72	**VS32NBRBM**	**VS32SIT5BM**
VSA 43	43	12.3	10.8	4.54	**VSA43NBRBM**	**VSA43SIT5BM**	**VS 42**	42	22.6	21.1	4.70	**VS42NBRBM**	**VS42SIT5BM**
VSA 53	53	34.8	30.5	9.58	**VSA53NBRBM**	**VSA53SIT5BM**	**VS 52**	52	44.6	40.3	6.50	**VS52NBRBM**	**VS52SIT5BM**
VSA 63	63	52.9	45.9	13.31	**VSA63NBRBM**	**VSA63SIT5BM**	**VS 62**	62	86.4	79.4	9.26	**VS62NBRBM**	**VS62SIT5BM**
VSA 78	78	102.4	87.5	24.68	**VSA78NBRBM**	**VSA78SIT5BM**	**VS 88**	88	201.3	181.1	29.88	**VS88NBRBM**	**VS88SIT5BM**

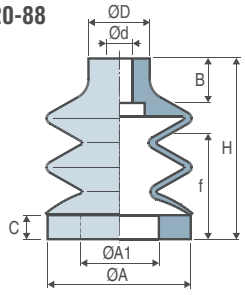
(1) Actual force of the suction cup in use with a 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Dimensions

VSA-BM 20-78



VS-BM 20-88



	ØA	Øa	Ød	ØD	B	NBR ØA1	NBR C	NBR H	NBR f (2)	NBR (g)	SIT5 / SI ØA1	SIT5 / SI C	SIT5 / SI H	SIT5 / SI f (2)	SIT5 / SI (g)
VSA 20 ... BM	20	20	4	10	9	-	-	-	-	-	10	2	18	6.0	1.9
VSA 25 ... BM	25	25	4	10	9	-	-	-	-	-	13	2	25	13.0	3.3
VSA 26 ... BM	25	30	8	16	13	-	-	-	-	-	13	2	27	7.0	5
VSA 33 ... BM	32	36.2	8	18	13	22	5	32.5	13.5	7.3	19	2	29.5	12.0	7.5
VSA 43 ... BM	42	46	8	18	13	28	5	33	15.0	12.5	20	5	33	15.0	14
VSA 53 ... BM	53	59	8	18	13	33	10	44	20.0	23.6	33	5	39	17.5	23.7
VSA 63 ... BM	62	67	8	18	13	42	10	44	20.0	27.8	42	5	39	17.5	28.4
VSA 78 ... BM	78	83	12	25	20	58	10	56.8	19.0	62.1	54	5	51.8	16.5	63.6
VS 20 ... BM	20	-	4	10	9	-	-	-	-	-	10	2	25	11.0	2.6
VS 25 ... BM	25	-	4	10	9	-	-	-	-	-	13	2	36	21.0	4.6
VS 26 ... BM	25	-	8	16	13	-	-	-	-	-	13	2	33	12.0	6.6
VS 32 ... BM	32	-	8	18	13	22	5	42.5	17.0	9.3	19	2	39.5	15.5	9.5
VS 42 ... BM	42	-	8	18	13	28	5	51	24.5	18.9	20	5	51	24.5	20.4
VS 52 ... BM	53	-	8	18	13	33	10	59	32.0	26.9	33	5	54	29.5	27
VS 62 ... BM	62	-	8	21	13	42	10	65	36.0	37.1	42	5	60	33.5	40.5
VS 88 ... BM	88	-	12	25	20	68	10	97.5	53.5	123.6	64	5	92.5	51.0	125.4

(2) f = Deflection of the suction cup.

Note: All dimensions are in mm.

The values represent the average characteristics of our products.

Please specify the part n°. e.g. VS42NBRBM
See part n° table above

Selection of fittings: please refer to fittings which are available in the suction cup series. **VSA** series: page 2/25, **VS** series: page 2/43.

VSBM
Foam Rings

The foam ring is designed for gripping products with an uneven or ridged surface, e.g.
- Sawn wood, sheet metal, flat surfaces with bumps or hollows.
- All granular surfaces to which suction cups cannot adhere correctly and therefore cannot be airtight.

Industry-specific applications

Types of use

Materials

NBR Nitrile **SIT5** Translucent silicone **Si** Silicone

Operating Characteristics of the Materials

- Nitrile (NBR - Black)
  5 or 10mm thick, depending on the diameters of the suction cups.
  Good resistance to oil.
  The nitrile foam strip can only be bonded to nitrile suction cups.
- Silicone (SI - White)
  2 or 5 mm thick, depending on the diameters of the suction cups.
  Heat-resistant up to 320°F, does not leave marks on products handled.
  Do not use the silicone foam strip for gripping products before painting or lacquering.
  The silicone foam strip can only be bonded onto silicone suction cups (bonding is guaranteed if it is carried out in the factory).
- Mounting
  The foam rings are mounted by bonding. In all cases, this should be performed in our factory as we have the adhesives adapted to the materials. It is essential that bonding of silicone be carried out in the COVAL factory.

Foam Ring Characteristics

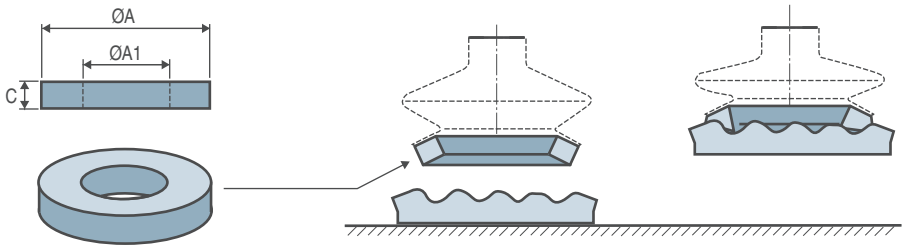
NBR

Part Nr.	ØA	ØA1	C	f (1)	(g)
VSBM32	32	22	5	2.5	0.3
VSBM42	42	28	5	2.5	0.7
VSBM53	53	33	10	5.0	2.7
VSBM62	62	42	10	5.0	2.8
VSBM78	78	58	10	5.0	3.7
VSBM88	88	68	10	5.0	4.6

SI

Part Nr.	ØA	ØA1	C	f (1)	(g)
VSBM20SI	20	10	2	1.0	0.2
VSBM25SI	25	13	2	1.0	0.4
VSBM32SI	32	19	2	1.0	0.5
VSBM42SI	42	20	5	2.5	2.2
VSBM53SI	53	33	5	2.5	2.8
VSBM62SI	62	42	5	2.5	3.4
VSBM78SI	88	64	5	2.5	5.2
VSBM88SI	88	64	5	2.5	6.4

Note: Suction cups with bellows are preferable when foam rings are required, as the slope of the lips is better suited to this type of grip. Please consult us for other models based on quantities.



Please specify the part n°. e.g. VSBM32SI
See part n° table above

The values represent the average characteristics of our products.
(1) f = Deflection of the suction cup. Note: All dimensions are in mm.

VSBO, VSBO+

Bottle Suction Cups

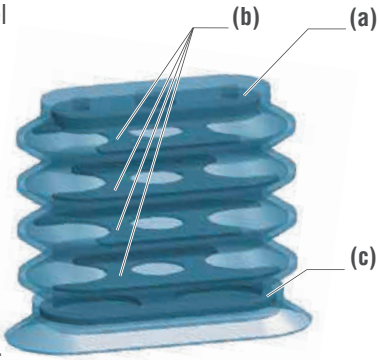
Designed for gripping 750 ml bottles, the VSBO suction cups range has grown with the development of the VSBO+, a specially created suction cup for gripping bottles at high frequency.

For the gripping of Magnum bottles, we have designed the Magnum suction cup VSBO 50105 with a lip shape and surface suited for the weight and the diameter of the bottle.

- The VSBO and VSBO+ are made for handling bottles from the side during vertical or horizontal gripping.
- The VSBO+ is equipped with anti-slip cleats to ensure the gripping of 750 ml bottles at high frequency and in humid environments.
- F2 mounting options: the VSBO Series includes 2 M6 threads allowing the suction cups to be mounted internally with 2 M5 screws or externally with 2 M6 screws.
- To increase lifting force while maintaining a large stroke and flexibility, the VSBO and VSBO+suction cups are equipped with stainless steel upper inserts (**a**), and 4 stainless steel reinforcements (**b**) inside the bellows and with a lower reinforcement (**c**) available either in stainless steel or polypoprylene.

Industry-specific applications

Types of use



Materials

Suction cups
NBR Nitrile
NR Natural rubber

Reinforcements
Version D5 ■ Upper stainless steel insert (**a**), the 4 internal stainless steel reinforcements (**b**) and the lower reinforcement in stainless steel (**c**).
Version D5P ■ Upper stainless steel insert (**a**), the 4 internal stainless steel reinforcements (**b**) and the lower reinforcement in polypropylene (c).

Suction Cup Characteristics VSBO

	(cm³)	(lbf)(1)	(lbf)(1)	f(2) (mm)	(g)	NBR		NR	
						D5	D5P	D5	D5P
VSBO 4095	112.5	35.52	18.66	34	128	VSBO4095NBRD5	VSBO4095NBRD5P	VSBO4095NRD5	VSBO4095NRD5P

(1) Force measured at 65% on dry and smooth bottle without safety factor. (2) f = Deflection of the suction cup.

Mounting holes:

The VSBO suction cup center to center distance is 45 mm.

Suction cup replacement without insert and reinforcements

NBR (Nitrile): Part No **VSBO4095NBR**

NR (Natural rubber): Part No **VSBO4095NR**

Suction Cup Characteristics VSBO+

	(cm³)	(lbf)(1)	(lbf)(1)	f (2) (mm)	(g)	NBR		NR	
						D5	D5P	D5	D5P
VSBO 4095C	112.5	35.52	18.66	35.5	128	VSBO4095CNBRD5	VSBO4095CNBRD5P	VSBO4095CNRD5	VSBO4095CNRD5P

(1) Force measured at 65% on dry and smooth bottle without safety factor. (2) f = Deflection of the suction cup.

Mounting holes:

The VSBO+ suction cup has 2 center to center distances: 30 or 45 mm.

It includes an integrated seal to simplify the mounting.

Suction cup replacement without insert and reinforcements:

NBR (Nitrile): Part No **VSBO4095CNBR**

NR (Natural rubber): Part No **VSBO4095CNR**

The values represent the average characteristics of our products.

Specify the part number e.g.: VSBO4095CNBRD5
Please refer to the characteristics table above

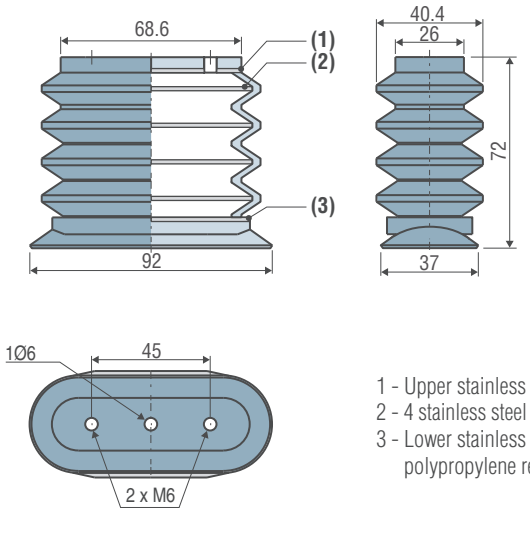
Options:
- Sensing valve (see page 3/11)
- Magnum bottle suction cup VSBO50105 (see page 3/10)

VSBO, VSBO+

Bottle Suction Cups

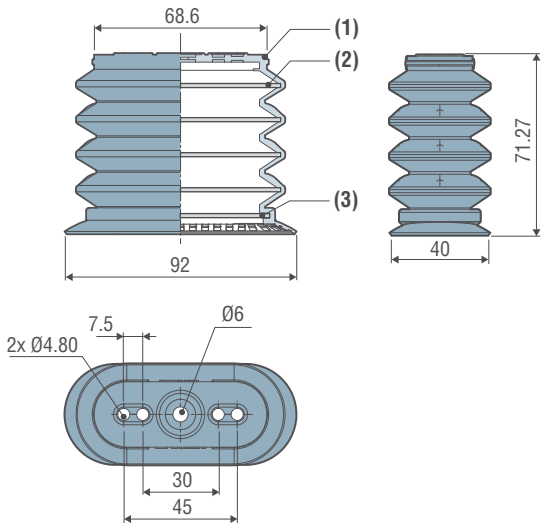
Suction Cup Dimensions

VSBO (VSBO4095)



1 - Upper stainless steel fitting
2 - 4 stainless steel reinforcements
3 - Lower stainless steel or polypropylene reinforcement

VSBO+ (VSBO4095C)



Suction Cups for Gripping Magnum Bottles

For the gripping of Magnum bottles, we have designed the Magnum suction cup **VSBO 50105 D5** with a lip shape and surface suited for the weight and the diameter of the bottle.

The **VSBO50105D5** includes:

- Suction cup with 4 bellows in nitrile, VSBO4095NBR
- One stainless steel upper insert
- A lower stainless steel reinforcement
- A 50 x 105 mm nitrile lip
- 4 stainless steel internal reinforcement

Materials

Suction cups	**Insert and reinforcements**	
NBR Nitrile	**Upper insert**	stainless steel
	4 internals reinforcements	stainless steel

Suction Cup Characteristics

	(cm³)	(lbf)(1)	(lbf)(1)	f (2) (mm)	(g)	NBR
VSBO50105	142.5	55.08	18.66	2.5 + 34	202	**VSBO50105D5**

(1) Force measured at 65% on dry and smooth bottle without safety factor.
(2) f = Deflection of the suction cup.

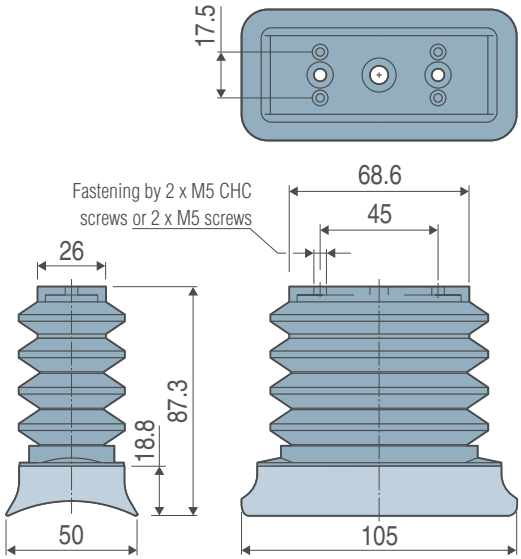
Note: The **VSBO4095** cups may be converted to a Magnum cup **VSBO50105D5** using the kit, **VPO50105M**. This includes the lip (50 x 105 mm) in nitrile (NBR) with reinforcement for mounting below the cup.

Spare parts:

- 4 bellows suction cup in nitrile (NBR) without insert and reinforcement, part number: VSBO4095NBR or VSBO4095CNBR
- Sealing lip with dimensions 50 x 105 mm in nitrile (NBR), part number: VPBO50105NBR

Specify the part number e.g.: VSBO50105D5
Please refer to the characteristics table above

Dimensions



VSBO, VSBO+

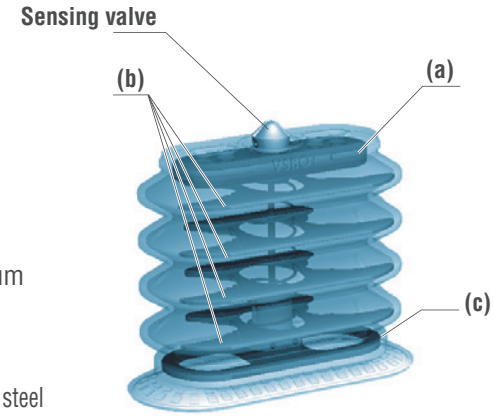
Suction Cups for Bottle Handling with Sensing Valve (V3 version)

Designed for gripping 750 ml bottles, the VSBO and VSBO+ suction cups are available with a new sensing valve (V3 version) ensuring an airtight vacuum network if a bottle is missing. This new technology gives a greater sensitivity in opening the valve and placing the suction cup under vacuum once contact is made with bottle.

The VSBO suction cups with sensing valve are include one upper stainless steel insert (**a**), 4 stainless steel reinforcements (**b**) in the bellows and a trigger plate in POM (**c**) to increase the traction force while offering a large stroke and flexibility for box filling and emptying applications.

Types of use

Industry-specific applications



Materials

Suction cup	Insert and reinforcements		Sensing valve	
NBR Nitrile	**Upper insert**	Stainless steel	**Pin**	Nylon
	4 internals reinforcements	Stainless steel	**Cone**	Aluminum
			O-ring	Nitrile
			Trigger plate	POM
			Reinforcements	Stainless steel
			Spring	Stainless steel

Advantages of the V3 Sensing Valve

The sensing valve opens when pressure is exerted on the suction cup by a lower reinforcement called the "trigger plate".

- No loss of stroke for the suction cup when placed under vacuum
- Valve adjustment from under the suction cup
- Immediate vacuum action from the first pressure
- Elimination of auto-suction cup phenomenon on release
- No vacuum loss in the event a bottle is absent

Vacuum switch connection

The VSBO and VSBO+ suction cups with sensing valve V3 (45mm center to center distance) has a Ø 5 mm enabling a vacuum switch connection or a blow-off.

Mounting options:

The VSBO suction cups (VSBO4095..) have 3 mounting center distances (30, 40 and 45 mm) to select while ordering.

The VSBO+ suction cups (VSBO4095C..) have 2 mounting center distances. They include an integrated seal to simplify the mounting.

Characteristics

	(cm³)	(lbf)(1)	(lbf)(1)	f (2) (mm)	(g)
VSBO	112.5	35.52	18.66	34	118
VSBO+	112.5	35.52	18.66	35.5	118

(1) Force measured at 65% on dry and smooth bottle without safety factor.
(2) f = Deflection of the suction cup.

Suction Cup References

	Part numbers and center to center distance for cups in NBR			Part numbers and center to center distance for cups in NR		
	30 mm	40 mm	45 mm	30 mm	40 mm	45 mm
VSBO	**VSBO4095CH330**	**VSBO4095CH340**	**VSBO4095CH345**	**VSBO4095NRCH330**	**VSBO4095NRCH340**	**VSBO4095NRCH345**
VSBO+	**VSBO4095CNBRCH3**	-	**VSBO4095CNBRCH3**	**VSBO4095CNRCH3**	-	**VSBO4095CNRCH3**

The values represent the average characteristics of our products.

Specify the part number e.g.: VSBO4095CNBRCH3
Please refer part number table above

Replacement cup without valve, fitting and reinforcements

- **VSBO** series

NBR (nitrile): Part No VSBO4095NBR

NR (Natural rubber): Part No VSBO4095NR

- **Serie VSBO+**

NBR (nitrile): Part No VSBO4095CNBR

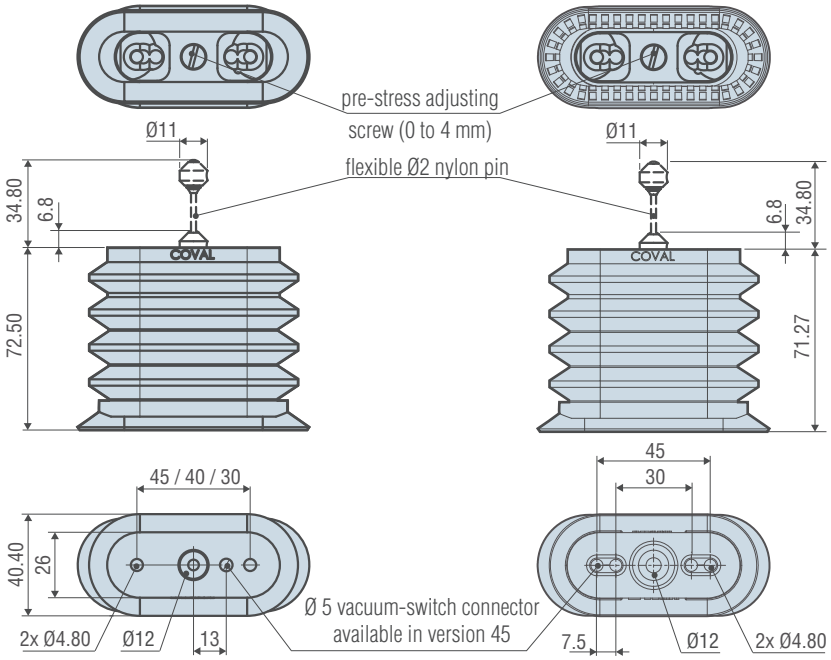
NR (Natural rubber): Part No VSBO4095CNR

VSBO, VSBO+

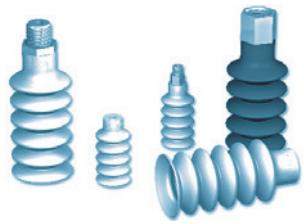
Suction Cups for Bottle Handling with Sensing Valve (V3 version)

Dimensions

VSBO (VSBO4095) **VSBO+ (VSBO4095C)**



VSD
Long Stroke Suction Cups



Long stroke suction cups (3.5 and 4.5 bellows) are specially recommended for handling spherical or cylindrical objects or which require compensation for varying heights.

Industry-specific applications

Types of use

Materials

NBR Nitrile
SIT3 30 Shore A translucent
SIT5 60 Shore A translucent silicone

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	R_{min} (mm)	NBR	SIT3	SIT5
VSD 18	17.5	2.5	0.89	20	-	-	**VSD18SIT5**
VSD 32	32	21.7	2.35	35	**VSD32NBR**	**VSD32SIT3**	-

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	Group	M5-M	M6-M	M8-M	M10-M	G1/8"-F	G1/8"-M	10/32-M	G1/4"-F	G1/4"-M
VSD 18	1	■	■	-	-	■	■	□	-	-
VSD 32	2	□	□	□	□	■	■	-	■	■

■ Standard available configurations (suction cup + fitting) See part n° below
□ Additional mounting configurations see page 2/53
Fitting: M = male F = female

Types of Assembly

COVAL suction cups can be assembled in a wide variety of configurations.

C **Version C:** Factory-crimped fitting

E **Version E:** Pressed fitting

V **Version V:** Removable fitting: (adapter and hollow screw)

References - "Suction Cup + Fitting"

Group 1 — C

Ø 18	THREAD	M5-M	M6-M	G1/8"-M	G1/8"-F
	VSD18SIT5	VSD18SIT5IMM5C	VSD18SIT5IMM6C	VSD18SIT5IM18C	VSD18SIT5IF18C

Group 2 — C, E, V

Ø 32	THREAD	G1/4"-M	G1/4"-F	G1/4"-M	G1/4"-F	G1/8"-M	G1/8"-F	G1/4"-M	G1/4"-F
	VSD32NBR	VSD32NBRIM14C	VSD32NBRIF14C	VSD32NBRIM14	VSD32NBRIF14	VSD32NBRIM18V	VSD32NBRIF18V	VSD32NBRIM14V	VSD32NBRIF14V
	VSD32SIT3	VSD32SIT3IM14C	VSD32SIT3IF14C	VSD32SIT3IM14	VSD32SIT3IF14	VSD32SIT3IM18V	VSD32SIT3IF18V	VSD32SIT3IM14V	VSD32SIT3IF14V

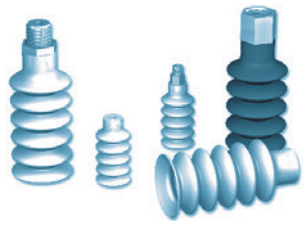
Please specify the part n°. e.g. VSD18SIT5IMM5C
See part n° table above

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring systems, extensions, feeder systems, etc.) see chapters **4** and **12**.

VSD

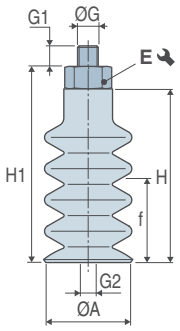
Long Stroke Suction Cups

Dimensions - "Suction Cup + Fitting"



VSD 18	Group 1	VSD 32	Group 2

1



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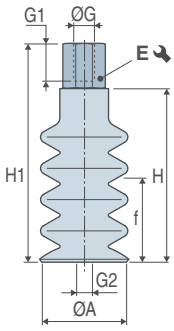

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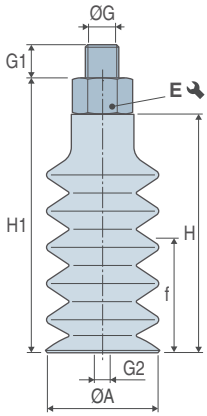

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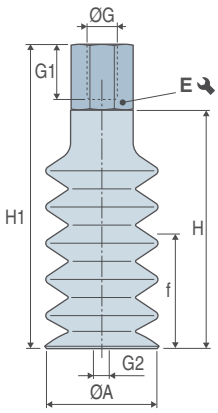


	Group 1	Diagram	ØA	f (1)	H	H1	ØG	G1	ØG2(2)	E	(g)
Ø 18 mm	VSD18-IMM5C	1	17.5	18	36	41	M5-M	4.5	2.5	7	6.2
	VSD18-IMM6C	1	17.5	18	36	41	M6-M	5	3.5	7	5.8
	VSD18-IM18C	1	17.5	18	36	42	G1/8"-M	7.5	3.5	14	7.2
	VSD18-IF18C	2	17.5	18	36	48	G1/8"-F	8	3.5	14	7.1

	Group 2	Diagram	ØA	f (1)	H	H1	G	G1	ØG2(2)	E	(g)
Ø 32 mm	VSD32-IM18V	3	32	34	65	69,5	G1/8"-M	6	3.5	13	29.2
	VSD32-IF18V	4	32	34	65	78	G1/8"-F	7.5	3.5	13	32.5
	VSD32-IM14	3	32	34	65	69	G1/4"-M	11	4.4	17	22.9
	VSD32-IM14C	3	32	34	65	73	G1/4"-M	10	7	17	23.8
	VSD32-IM14V	3	32	34	65	70	G1/4"-M	8	3.5	17	38.5
	VSD32-IF14	4	32	34	65	80	G1/4"-F	10	4.4	17	23.7
	VSD32-IF14C	4	32	34	65	80	G1/4"-F	12	6.9	17	23.1
	VSD32-IF14V	4	32	34	65	81	G1/4"-F	11	3.5	17	43.5

(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

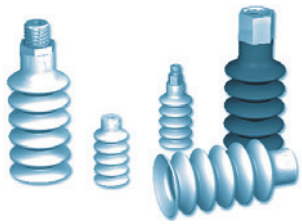
Note: All dimensions are in mm.

Assembly diagrams
See page 2/53.

VSD

Long Stroke Suction Cups

Assembly Diagrams

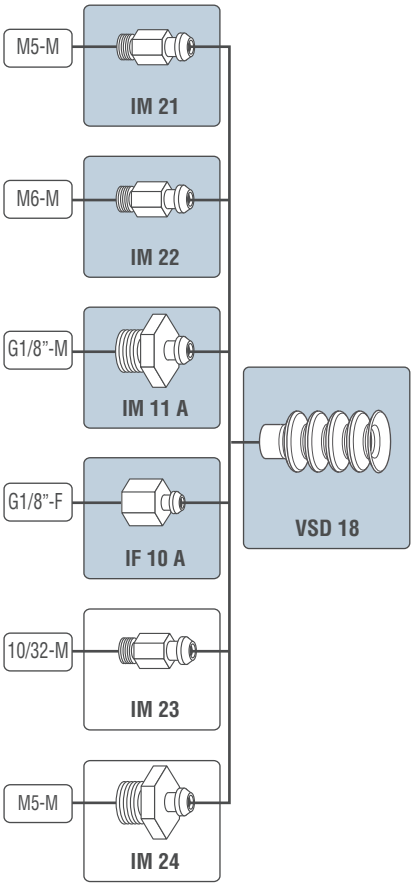


2

VSD

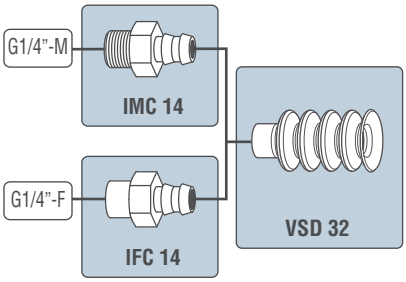
VSD 18	Group 1

Barbed fittings C

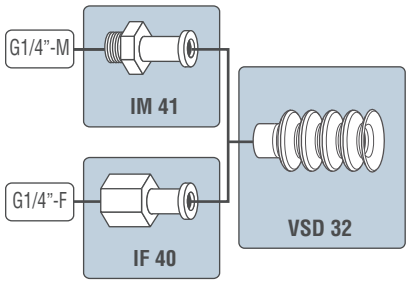


VSD 32	Group 2

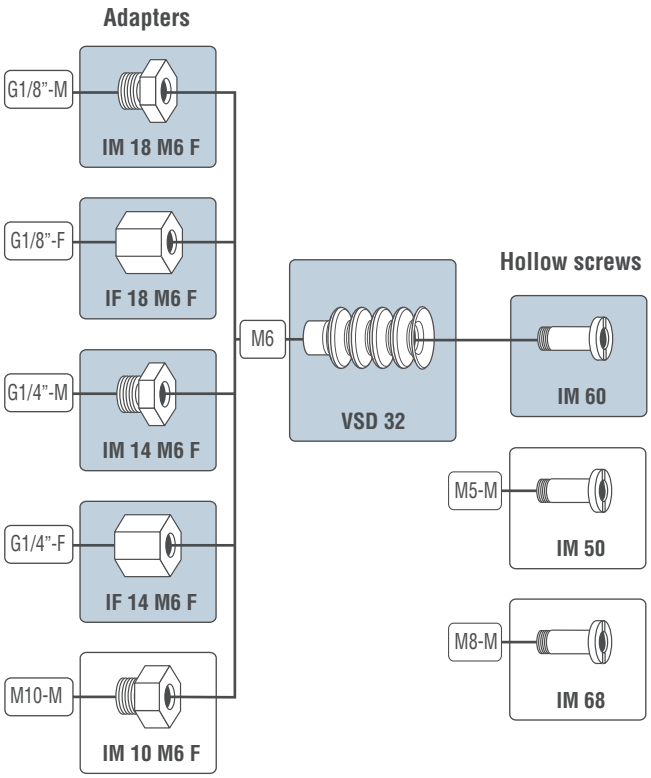
Barbed fittings C



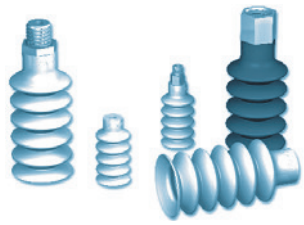
Pressed fittings E



Removable fittings V

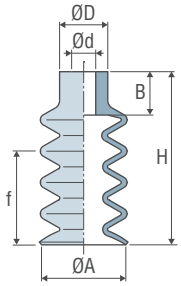


VSD
Long Stroke Suction Cups
Dimensions

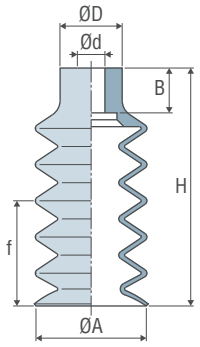


Suction Cups

VSD 18



VSD 32

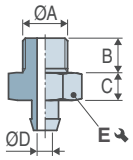


	ØA	f (1)	H	Ød	ØD	B	(g)
VSD 18	17.5	18	36	4	10	9	3.1
VSD 32	32	34	65	8	18	13	15.1

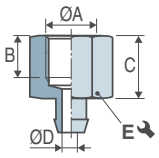
(1) f = Deflection of the suction cup.

Barbed Fittings

Male - IM

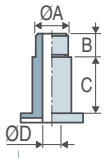


Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 11 A	G1/8"-M	7.5	6	3.5	14	Aluminum	4.1
IMC 14	G1/4"-M	10	8	7	17	Aluminum	8.7
IM 21 (2)	M5-M	4.5	5	2.5	7	Nickel-plated brass	3.1
IM 22 (2)	M6-M	5	5	3.5	7	Nickel-plated brass	2.7
IM 23	10/32-M	4.5	5	2.5	7	Brass	3.0
IM 24	M5-M	4.5	2.5	2.5	10	Nickel-plated brass	3.2
IF 10 A	G1/8"-F	8	12	3.5	14	Aluminum	4.0
IFC 14	G1/4"-F	12	15	6.9	17	Aluminum	8.0

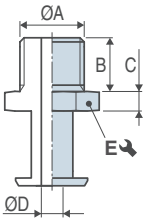
Hollow Screws



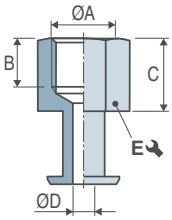
	ØA	B	C	ØD	Material	(g)
IM 50	M5-M	5	11	2.8	Brass	7.4
IM 60 (2) (3)	M6-M	7	11	3.5	Nickel-plated brass	7.5
IM 68	M8-M	8	11	5.2	Nickel-plated brass	6.4

Pressed Fittings

Male - IM



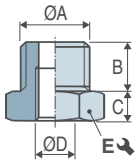
Female - IF



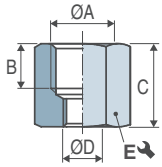
	ØA	B	C	ØD	E	Material	(g)
IM 41	G1/4"-M	11	4	4.4	17	Aluminum	7.8
IF 40	G1/4"-F	10	15	4.4	17	Aluminum	8.6

Adapters for Hollow Screws

Male - IM



Female - IF

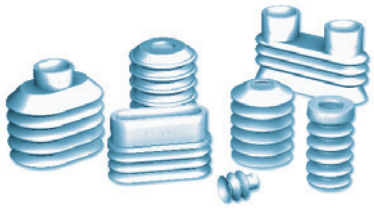


	ØA	B	C	ØD	E	Material	(g)
IM 10 M6F	M10-M	7	3.5	M6-F	13	Brass	5.9
IM 14 M6F	G1/4"-M	8	5	M6-F	17	Nickel-plated brass	15.9
IM 18 M6F	G1/8"-M	6	4.5	M6-F	13	Nickel-plated brass	6.6
IF 14 M6F	G1/4"-F	11	16	M6-F	17	Nickel-plated brass	20.5
IF 18 M6F	G1/8"-F	7.5	13	M6-F	13	Nickel-plated brass	9.9

The values represent the average characteristics of our products.
Note: All dimensions are in mm.
(2) Flow restrictor version available: orifice calibrated to reduce leaks when used with a multi-cup gripper (see page 4/9).
(3) Available in stainless steel.

VSD, VSE, VSP

Suction Cups for Bakery Applications



Suction cups specially developed for gripping delicate objects such as cakes (buns, biscuits, etc.). Specific shape and shore hardness options are available depending on the application. Food-grade silicone allows the suction cups to be used at temperatures between -40 °F to 428 °F.

Industry-specific applications

Types of use

Materials

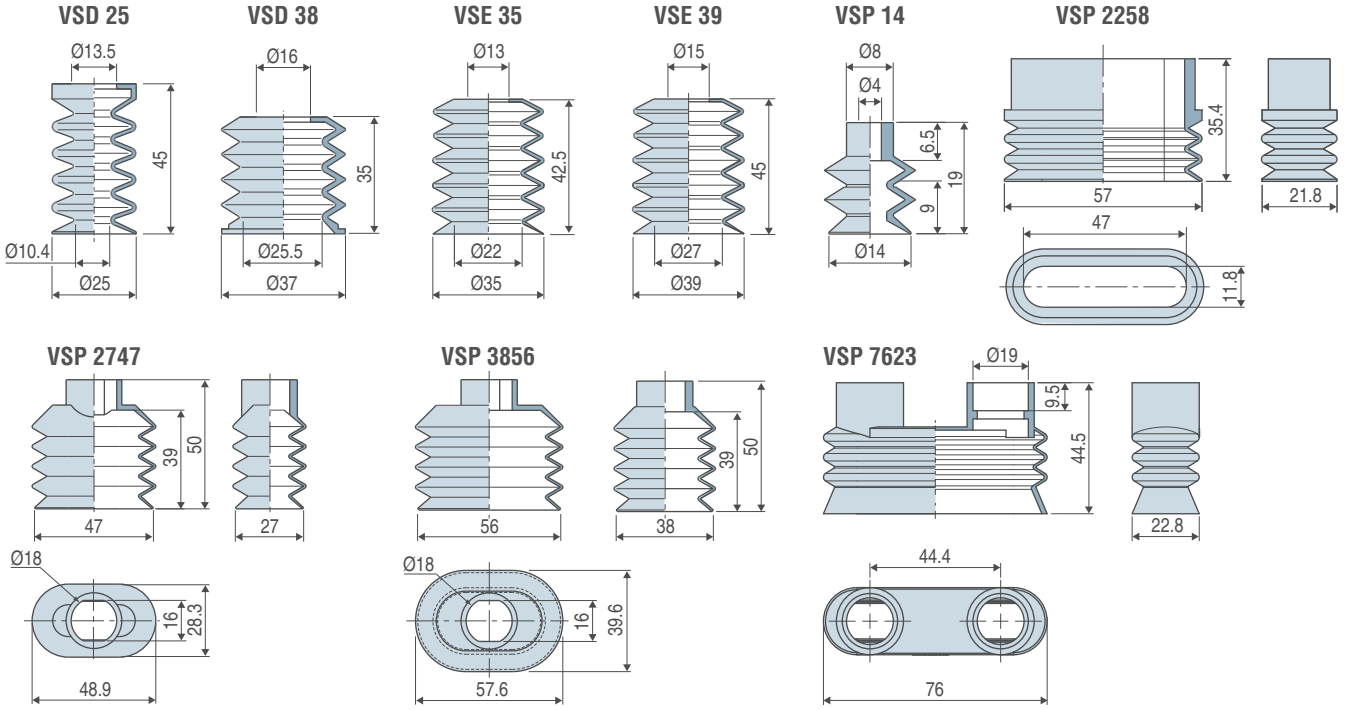
Si Silicone
Si3 30 Shore A silicone
Si5 50 Shore A silicone
SIT3 30 Shore A translucent silicone
SIT5 50 Shore A translucent silicone
SIT6 60 Shore A translucent silicone
SIT7 70 Shore A translucent silicone

Suction Cup Characteristics

	dim. (mm)	f (1)	maximum vacuum (%)	shore hardness	(g)	Fittings			
						M5-M	G1/4"-M	G1/8"-F	G1/8"-M
VSD 25 SI	Ø 25	24	90	30	6.5	-	-	-	-
VSD 38 SI5	Ø 38	21	20	50	6.3	-	-	-	-
VSE 35 SI3	Ø 35	26	20	30	8.8	-	-	-	-
VSE 35 SI	Ø 35	26	30	50	8.8	-	-	-	-
VSE 39 SI	Ø 39	28	30	50	11.5	-	-		-
VSP 14 SI3	Ø 14	9	70	30 (2)	0.9	IM21SP139	-	IF10ASP139	IM11ASP139
VSP 14 SIT6	Ø 14	9	90	60	0.9	IM21SP139	-	IF10ASP139	IM11ASP139
VSP 2258 SIT5	22 x 58	8	20	50	12.5	-	-	-	-
VSP 2747 SIT3	27 x 47	26	15	30	9.8	-	IM14VSP3856	-	-
VSP 3856 SIT5	38 x 56	28	15	50	11.8	-	IM14VSP3856	-	-
VSP 7623 SIT5	23 x 76	14	15	50	13.5	-	-	-	-

(1) f = Deflection of the suction cup. (2) Non-toxic red silicone

Suction Cup Dimensions



The values represent the average characteristics of our products.
Note: All dimensions are in mm

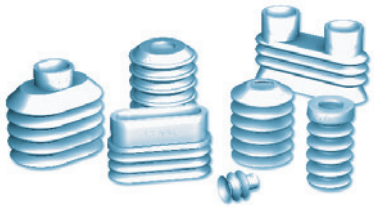
Specify the part number e.g.: VSP14SIT6
Please refer to the characteristics table above

Accessories

To optimize the use of your suction cups, Coval offers a comprehensive range of accessories (nozzle fittings, spring extensions, and feeder systems, etc.), see chapters **4** and **12**.

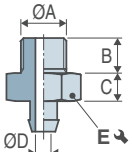
VSD, VSE, VSP

Suction Cups for Bakery Applications

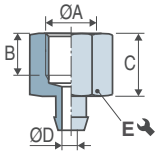


Barbed Fittings

Male - IM



Female - IF



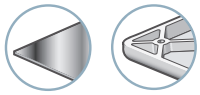
	ØA	B	C	ØD	E	Material	(g)
IM 11 ASP 139	G1/8"-M	7.5	6	3.5	14	Aluminum	4.3
IM 14 VSP 3856	G1/4"-M	14.6	3	9	Ø 24	Aluminum	12
IM 21 SP 139	M5-M	4.5	5	2.5	7	Nickel-plated brass	2.8
IF 10 ASP 139	G1/8"-F	8	12	3.5	14	Aluminum	4.3

VSG

Suction Cups with 2.5 Bellows Ø 5 and 7mm

The VSG series 2.5 bellows suction cups benefit from very flexible lips allowing the gripping of small concave or convex products. They are ideal for the gripping of sensitive products which require a soft lip.

Industry-specific applications



Types of use

Materials

NBR Nitrile
SI Silicone
STN Siton®

Suction Cup Properties

	Ø (mm)	(cm³)	(lbf) (1)	R_{min} (mm)	NBR	SI	STN
VSG 5	5	0.03	0.08	3.5	**VSG5NBR**	**VSG5SI**	**VSG5STN**
VSG 7	7	0.04	0.23	4	**VSG7NBR**	**VSG7SI**	**VSG7STN**

(1) Actual force of the suction cup in use with 65% vacuum and including a safety factor of 2 for horizontal handling and a factor of 4 for vertical handling.

Choice of Fittings

(Ø)	M5-M	M5-F	G1/8"-M	G1/8"-F
5 - 7	■	■	■	■

■ Standard available configurations (suction cup + fitting)
See part n° table below

Fitting: M = male
F = female

Type of Assembly

C **Version C**
Barbed fitting

References - "Suction Cup + Fitting"

	THREAD	M5-M	M5-F	G1/8"-M	G1/8"-F
Ø 5 -7 mm	**VSG5NBR**	VSG5NBRIMM5C	VSG5NBRIFM5C	VSG5NBRIM18C	VSG5NBRIF18C
	VSG5SI	VSG5SIIMM5C	VSG5SIIFM5C	VSG5SIIM18C	VSG5SIIF18C
	VSG5STN	VSG5STNIMM5C	VSG5STNIFM5C	VSG5STNIM18C	VSG5STNIF18C
	VSG7NBR	VSG7NBRIMM5C	VSG7NBRIFM5C	VSG7NBRIM18C	VSG7NBRIF18C
	VSG7SI	VSG7SIIMM5C	VSG7SIIFM5C	VSG7SIIM18C	VSG7SIIF18C
	VSG7STN	VSG7STNIMM5C	VSG7STNIFM5C	VSG7STNIM18C	VSG7STNIF18C

Please specify the part n°. e.g. VSG5NBR
See part n° table above

Accessories
To optimize use of your suction cups, Coval offers a comprehensive range of accessories (sensors, spring systems, extensions, feeder systems, etc.) see chapters **4** and **12**.

VSG

Suction Cups with 2.5 Bellows Ø 5 and 7mm

Dimensions

Suction Cups + Fittings

VSG 5 VSG 7

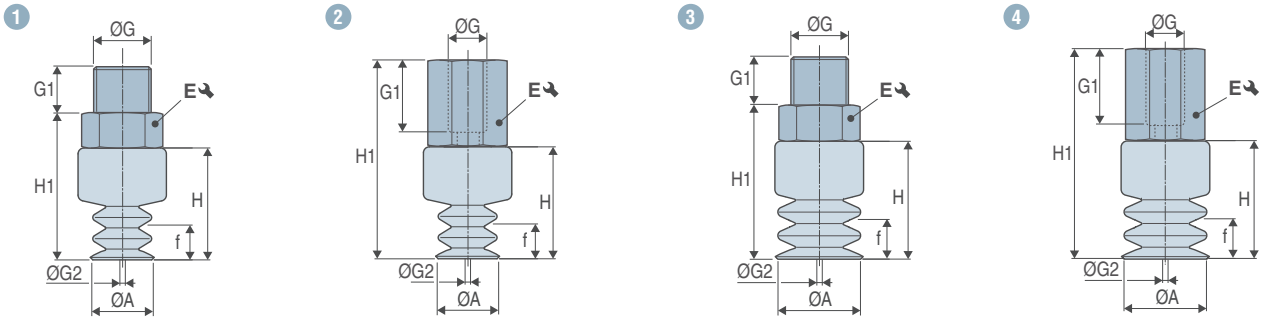
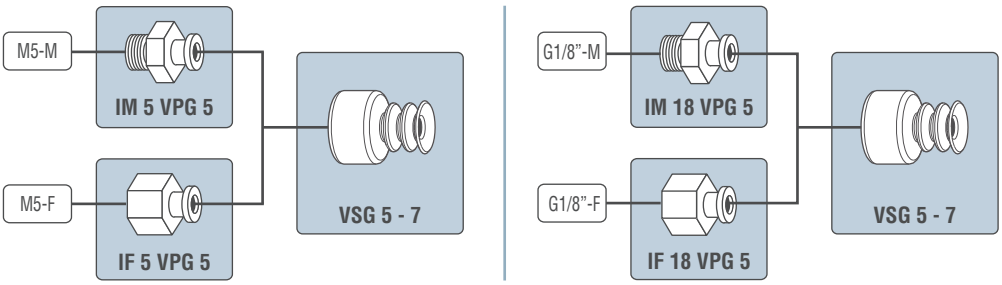


	Diagram	ØA	f (1)	H	H1	ØG	G1	ØG2 (2)	E	(g)
VSG5-IMM5C	1	5	3	9.5	13	M5-M	4.5	2.2	7	2.6
VSG5-IFM5C	2	5	3	9.5	18.5	M5-F	6	2.2	14	3.1
VSG5-IM18C	1	5	3	9.5	14.5	G1/8"-M	8	2.2	14	5.8
VSG5-IF18C	2	5	3	9.5	24.5	G1/8"-F	9	2.2	14	7
VSG7-IMM5C	3	7	3	10	13.5	M5-M	4.5	2.2	7	0.9
VSG7-IFM5C	4	7	3	10	19	M5-F	6	2.2	14	1.4
VSG7-IM18C	3	7	3	10	15	G1/8"-M	8	2.2	14	4.1
VSG7-IF18C	4	7	3	10	25	G1/8"-F	9	2.2	14	5.3

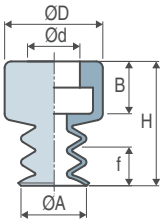
(1) f = Deflection of the suction cup. (2) Ø G2 = Ø internal orifice of the fitting.

Assembly Diagrams

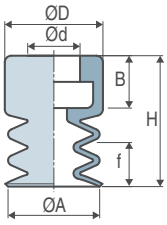


Suction Cups

VSG 5



VSG 7

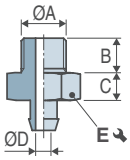


	ØA	H	Ød	ØD	f (1)	B	(g)
VSG 5	5	9.5	4	7.5	3	4	1.9
VSG 7	7	10	4	7.5	3	4	0.24

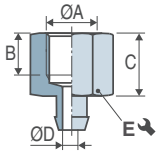
(1) f = Deflection of the suction cup

Barbed Fittings

Male - IM



Female - IF



	ØA	B	C	ØD	E	Material	(g)
IM 5 VPG 5	M5-M	4.5	3.5	2.2	7	Aluminum	0.7
IF 5 VPG 5	M5-F	6	9	2.2	14	Aluminum	1.2
IM 18 VPG 5	G1/8"-M	8	5	2.2	14	Aluminum	3.9
IF 18 VPG 5	G1/8"-F	9	15	2.2	14	Aluminum	5.1

The values represent the average characteristics of our products.

Note: All dimensions are in mm.

VSO
Suction Cups for Egg-handling

The VSO range of suction cups has been specially designed to meet the constraints involved when handling eggs.
- Very flexible lip
- Different shapes of suction cup
- Food-grade silicone meets FDA and CE standards.

Industry-specific applications

Types of use

Materials
SI 35 Shore A red silicone
SIT3 35 Shore A translucent silicone
SIT6 60 Shore A translucent silicone

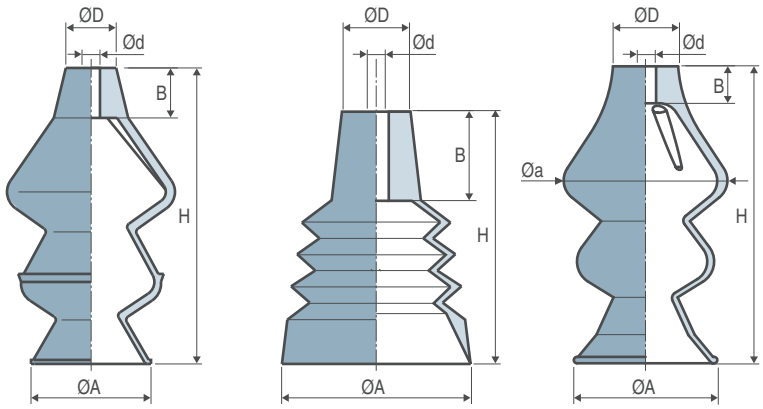
Suction Cup Characteristics

	Ø (mm)	(cm³)	(lbf) (1)	SI	SIT3	SIT6
VSO 30	30	40	0.24	**VSO30SI**	-	-
VSO 33	33	13	0.24	-	-	**VSO33SIT6**
VSO 36	36	34	0.24	-	**VSO36SIT3**	-

(1) at 30% vacuum with a safety factor of 2 included.

Suction Cup Dimensions

VSO 30 SI **VSO 33 SIT6** **VSO 36 SIT3**



	Ø A	H	Ø a	Ø d	Ø D	B	(g)
VSO 30	30	74	-	4.5	12.6	12.5	17
VSO 33	33	46	-	4.5	12.5	14	7.3
VSO 36	36	75	41	5.3	16.4	9.2	16.36

Specify the part number e.g.: VSO 30 SI
Please refer to the characteristics table above

The values represent the average characteristics of our products.
Note: All dimensions are in mm