# Vacuum suction grippers ESG





### Vacuum suction grippers ESG

### Key features

### **Product overview**

Suction grippers from Festo offer outstanding functionality and quality.

#### Vacuum suction grippers ESG

- ing workpieces with a wide range of weights, surfaces and shapes
- An extensive, modular range of suction cups with connection attachments, in different shapes, materials and sizes, plus a selec-

tion of suction cup holders, angle and height compensators and vacuum filters within the modular suction gripper system, provide

users with a huge choice of possible combinations for a wide variety of applications.

→ Page 7 Modular products with over 2000 variants • The ideal solution for transport-• Choose from: • Wide range of variants - 15 suction cup diameters • A suitable solution for every - 6 different materials - includtask

- ing antistatic ones
- 6 suction cup shapes
- Numerous suction cup holders
- Optional accessories (vacuum filters and angle compensators)
- Wide range to suit applications ٠ with various temperature ranges and workpiece surfaces
- Suction cups made from silicone are approved for use in the food industry

Suction gripper as a complete solution

Suction gripper made of individual components



Vacuum suction grippers ESG









### Vacuum suction grippers ESG

# Key features

# Suction cups with connector VAS/VASB

### Sturdy and reliable

• The ideal solution for transporting workpieces with a wide range of weights, surfaces and shapes



- Choose from:
  - 12 suction cup diameters
  - 2 suction cup shapes: round and bellows design with 1.5 convolutions
  - 3 materials: nitrile rubber, polyurethane and silicone for use in a wide variety of applications



- Wide range to suit applications with various temperature ranges and workpiece surfaces
- Suction cups made from silicone are approved for use in the food industry
- All tubing connection sizes correspond to a holder size



Datasheets  $\rightarrow$  Internet: vas

## Key features

#### At a glance

The Festo suction gripper range offers a wide variety of possible combinations with a modular product system comprising more than 2000 variants. Choose from:

- 2 suction cup shapes:
  - Round, 15 different diameters
  - Oval, 11 different diameters
- 6 suction cup designs
- 6 different suction cup materials

#### The complete solution

The suction gripper ESG comes already assembled to meet your specific requirements and is ready to use. The suction cup shape and dimensions together form a part number which you can customise to form a type code by adding your own choice of suction cup material, holder type, tubing connection and accessories.

By adding individual components

you can create new areas of appli-

cation for your suction gripper

• Numerous suction cup holders:

pensators

- With and without height com-

- With various tubing connec-

tions: push-in connector,

barbed connector, thread

filters, angle compensators and

• Optional accessories: vacuum

suction cup inserts

The benefit to you:

ESG.

The benefit to you: With just one part number and type code you can order your own complete suction gripper.

Even extremely small workpieces,

can be conveyed gently and accu-

All parts of the modular range can

also be replaced quickly and easi-

Suction grippers can be ordered

complete, or as individual compo-

ly if requirements change.

e.g. in the electronics industry,

ratelv.

nents.



Cost savings thanks to:

• Reduced warehousing

· Low investment costs

try-specific solutions

• The low-cost suction cup can be

easily replaced (wearing part)

• Large range – including indus-

• Modular range

Long service life

#### The individual components

If, for instance, you have to handle a different workpiece surface finish, all you need to do is add the right suction cup.

Suction cup holder ESH	Datasheets $\rightarrow$ Internet: esh	Vacuum suction cup ESS	Datasheets → Internet: ess
<ul> <li>The area of application determines which is the right suction cup holder to use.</li> <li>The suction cup or accessory is attached directly to the suction cup holder.</li> <li>6 holder sizes</li> <li>8 holder types</li> <li>3 tubing connector options</li> </ul>		<ul> <li>The suction cup consists of the suction cup itself, plus the support plate with mounting.</li> <li>Here too, the area of application of the suction gripper determines which is the right suction cup to use.</li> <li>6 connection sizes: a tubing connection for every holder size</li> <li>2 suction cup shapes</li> <li>6 suction cup designs</li> <li>6 suction cup materials</li> </ul>	(#) (#)
Accessories			
Vacuum filter ESF	Datasheets $\rightarrow$ Internet: esf	Angle compensator ESWA	Datasheets → Internet: eswa
• For protecting vacuum genera- tors from contamination or damage		<ul> <li>The angle compensator ensures maximum suction cup grip for materials with uneven surfaces.</li> </ul>	
Suction-cup insert OASI	Datasheets → Internet: oasi		
<ul> <li>For conveying unstable and fragile workpieces</li> </ul>			

#### →Internet: www.festo.com/catalogue/...

#### Subject to change – 2024/10

# Product range overview

#### Suction cup holder

Threaded connection G For suction cup @ 60 ... 200 mm For suction cup size 15x45 ... 30x90 mm

Push-in connector QS For suction cup @ 2 ... 50 mm For suction cup size 4x10 ... 10x30 mm

Barbed connector PK For suction cup @ 2 ... 50 mm For suction cup size 4x10 ... 10x30 mm

Holder type For suction cup @ [mm] For suction cup size [mm]

#### Angle compensation

For suction cup @ 10 ... 100 mm Only holder sizes 3, 4 and 5

#### Vacuum filter

For suction cup @ 10 ... 50 mm For suction cup size 4x10 ... 30x90 mm Only holder sizes 3 and 4



Round, flat

2 ... 200

HA

2 ... 200

		Round, bellows	Round, bellows	
Round, extra deep	Round, flat	1.5 convolutions	3.5 convolutions	Oval, flat
15 100	30 100	10 80	10 50	4x10 30x90

® Registered trademark of the Bayer MaterialScience AG Group

Suction cup shape

For suction cup @[mm]

HC

HB

2 ... 200

4x10 ... 30x90 4x10 ... 30x90 4x10 ... 30x90

HCL

2...200 4...200

HD

HDL

2 ... 200 4 ... 200 2 ... 100

4x10 ... 30x90

HE

HF

4x10 ... 30x90 4x10 ... 10x30

2 50

# Type codes

# ESG, round design

)01	Series	006	Bellows, 3.5 convolutions
SG	Suction gripper		None
		CN	NBR (nitrile rubber)
002	Suction cup size	CS	VMQ (silicone)
2	2 mm diameter		
ł	4 mm diameter	007	Suction cup with connector, deep
6	6 mm diameter		None
3	8 mm diameter	GT	Vulkollan®
10	10 mm diameter		
5	15 mm diameter	008	Suction cup holder
20	20 mm diameter	HA	Male thread, 2 nuts, connection on top
30	30 mm diameter	HB	Female thread, connection on side
i0	40 mm diameter	НС	Male thread, 2 nuts, connection on top, height compensation
50	50 mm diameter	HCL	Male thread, 2 nuts, connection on top, long height compensa-
50	60 mm diameter		tion
30	80 mm diameter	HD	Male thread, 2 nuts, connection on the side, height compensa-
100	100 mm diameter		tion
50	150 mm diameter	HDL	Male thread, 2 nuts, connection on the side, long height com- pensation
200	200 mm diameter	HE	Male screw-in thread, connection on top
			Male screw-in thread, connection on top, height compensation
003	Standard suction cup		
	None	009	Vacuum connection
6F	FPM (fluoro rubber)		None
5N	NBR (nitrile rubber)	G	Threaded connection
S	VMQ (silicone)	PK	Barbed fitting connection
50	PUR (polyurethane)	QS	Push-in connector
SNA	BR (butadiene rubber), anti-static	43	
		010	Angle compensator
)04	Suction cup with connector extra deep		None
	None	WA	Ball joint with 30° deflection
F	FPM (fluoro rubber)		
N	NBR (nitrile rubber)	011	Filters
ES	VMQ (silicone)		None
EU	PUR (polyurethane)	F	Filters
005	Bellows, 1.5 convolutions	012	Suction cup insert
	None		None
BN	NBR (nitrile rubber)	ES	Sinter
	VMQ (silicone)	[3	
BS			
BS BT	Vulkollan®		

 $^{\ensuremath{\text{ B}}}$  Registered trademark of the Bayer MaterialScience AG Group

# Type codes

# ESG, oval design

001	Series	
ESG	Suction gripper	
002	Suction cup size	
4x10	4x10 mm	
4x20	4x20 mm	
6x10	6x10 mm	
6x20	6x20 mm	
8x20	8x20 mm	
8x30	8x30 mm	
10x30	10x30 mm	
15x45	15x45 mm	
20x60	20x60 mm	
25x75	25x75 mm	
30x90	30x90 mm	
003	Suction cup, oval	
ON	NBR (nitrile rubber)	

HB Fe HC Ma HCL Ma tio	ale thread, 2 nuts, connection on top         male thread, connection on side         ale thread, 2 nuts, connection on top, height compensation         ale thread, 2 nuts, connection on top, long height compensa-
HC Ma HCL Ma tio	ale thread, 2 nuts, connection on top, height compensation ale thread, 2 nuts, connection on top, long height compensa-
HCL Ma tio	ale thread, 2 nuts, connection on top, long height compensa-
tio	
	in la
HD Ma tio	ale thread, 2 nuts, connection on the side, height compensa-
	ale thread, 2 nuts, connection on the side, long height com-
HE Ma	ale screw-in thread, connection on top
HF Ma	ale screw-in thread, connection on top, height compensation
005 Va	cuum connection
No	one
G Th	readed connection
PK Ba	arbed fitting connection
QS Pu	ish-in connector
006 Fil	ters
No	one
F Fit	

Holder size 1

For suction  $\sup \emptyset 2/4 \text{ mm}$ 

Suction cup shape: • Round, flat



Datasheets → Internet: ess

### General technical data – Suction cup S

Suction cu	ıp shape		Suction cup Ø [mm]			
			2	4		
S – round,	5 – round, flat: material FPM, NBR, BR, VMQ (silicone), PUR					
P	Connection suction cup holder		0.D. 3 mm <sup>1)</sup>	0.D. 3 mm <sup>1)</sup>		
M	Nominal width	[mm]	0.6	1.2		
	Holding force at nominal operating pressure	[N]	0.1	0.46		
	–0.7 bar					
	Suction cup volume	[cm <sup>3</sup> ]	0.002	0.008		
	Min. workpiece radius	[mm]	10	10		
	Weight	[g]	0.1	0.1		

1) Is inserted into the suction cup holder.

#### Material types – Suction cup S

Material	F	Ν	NA	S	U	
Shore hardness	60 ±5	50 ±5	50 ±5	50 ±5	60 ±5	
Suction cup	FPM	NBR	BR	VMQ (silicone)	PUR	
	Colour: grey	Colour: black	Colour: black/white	Colour: transparent	Colour: blue	
			dot			
Screwed plug	Nickel-plated brass	ckel-plated brass				
Note on materials	RoHS-compliant					

#### Operating and environmental conditions – Suction cup S

perating and environmental conditions – Suction cup S							
Material	F	Ν	NA	S	U		
Operating medium	Atmospheric air based o	Atmospheric air based on ISO 85731:2010 [7:-:-]					
Ambient temperature [°C]	-10 +200	-10 +70	-10 +70	-30 +180	-20 +60		
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion stress						
Special characteristics	-	-	Antistatic	-	-		
Food-safe	-	-	-	As per manufacturer's declaration	_		

1) More information: www.festo.com/x/topic/crc

General technical data – Suction cup hole	der HA/HB/HC/HCL			Datasheets → Internet: esł
Vacuum port [1]			QS-4	PK-3
HA – Vacuum port on top, mounting with	lock nut, without height compensat	or		
1 1	Mounting thread [2]		M6x0.75	M5x0.5
	Suction cup mounting [3]		Ø 3 mm	Ø 3 mm
ГТЦ	Nominal width	[mm]	3	2.5
	Volume	[cm <sup>3</sup> ]	0.239	0.09
	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	6	3
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
3	Seal materials		NBR	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HB – Vacuum port on the side, mounting	with female thread, without height	compensat	pr	
2 2 2	Mounting thread [2]		M3	M3
	Suction cup mounting [3]		Ø 3 mm	Ø 3 mm
	Nominal width	[mm]	3	2.5
	Volume	[cm <sup>3</sup> ]	0.228	0.108
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	5	4
	Materials of holder	101	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with			1	1
1 1	Mounting thread [2]		M12x1	M8x0.75
	Suction cup mounting [3]		Ø 3 mm	Ø 3 mm
	Nominal width	[mm]	2.4	1.2
	Volume	[cm <sup>3</sup> ]	0.385	0.117
	Height compensator	[mm]	3	3
	Spring force (normal/min.length)	[N]	Max. 1	Max. 1
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	17	8
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with	h lock nut, with long height compen	sator		
1 1	Mounting thread [2]		M12x1	M12x1
	Suction cup mounting[3]		Ø 3 mm	ø3mm
	Nominal width	[mm]	2.8	1.9
┟╞╪┥┑╴┎┶╪┙	Volume	[cm <sup>3</sup> ]	0.489	0.360
	Height compensator	[mm]	10	10
─└╅╪┿┙╶┈╵┟╪╪┿	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	20	19
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
m m	Seal materials		NBR, steel	NBR, steel
	Jeat materials		NDR, Steet	

General technical data – Suction cu	ıp holder HD/HDL			Datasheets → Internet: es
Vacuum port[1]			QS-4	PK-3
ID – Vacuum port on the side, mou	inting with lock nut, with height compe	ensator		
	Mounting thread [2]		M8x0.75	M8x0.75
	Suction cup mounting [3]		Ø 3 mm	Ø 3 mm
	Nominal width	[mm]	3	1.9
└╷┼┰┚└╻┼┰┚	Volume	[cm <sup>3</sup> ]	0.241	0.120
	Height compensator	[mm]	3	3
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
3 3	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	13	11
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
			1	
DL – Vacuum port on the side, mo	unting with lock nut, with long height	compensator		
	Mounting thread [2]		M12x1	M12x1
	Suction cup mounting [3]	r	Ø 3 mm	Ø 3 mm
ſЩŲ ĽЩŲ	Nominal width	[mm]	3	1.9
Ğ₁┼₽ Ğ₁┼₽	Volume	[cm <sup>3</sup> ]	0.272	0.150
	Height compensator	[mm]	10	10
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
└╧┠╗╖╔╴└╤┠╼╼		[°C]	0+60	-10 +60
ш Ш 3 3	Weight	[g]	29	28
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant Datasheets → Internet: e
acuum port [1]	ip holder HE	thout height (	M3	
acuum port [1] <b>E – Vacuum port on top, with thre</b> a	up holder HE aded connection for direct screw-in, wi	thout height (	M3	
acuum port [1] E – Vacuum port on top, with threa	up holder HE aded connection for direct screw-in, wi Mounting thread [2]	thout height (	M3 compensator M3	
acuum port [1] E – Vacuum port on top, with threa	up holder HE aded connection for direct screw-in, wi	thout height (	M3 compensator	
acuum port [1] E – Vacuum port on top, with threa	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3]	[mm]	M3 compensator M3 Ø 3 mm	
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acuum port [1] <b>E – Vacuum port on top, with three</b> <b>1</b> <b>2</b> <b>3</b> <b>3</b> <b>3</b> <b>4</b> <b>a</b> <b>a</b> <b>a</b> <b>a</b> <b>b</b> <b>a</b> <b>b</b> <b>b</b> <b>b</b> <b>c</b> <b>b</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b>	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Note on materials up holder HF aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [°C] [g] th height com [mm] [cm <sup>3</sup> ]	M3 compensator M3 Ø 3 mm 1.2 0.04 -10 +60 1 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 M10x1 Ø 3 mm 2 0.108	Datasheets → Internet: e
acuum port [1] E – Vacuum port on top, with three acuum port on top, with three acuum port [1] F – Vacuum port on top, with three 1 1 1 1 1 2 1 1 2 1 2 1 2 1 1 2 1 1 2 1 1 2 1 1 1 2 1 1 1 1 1 1 1 1 1 1 1 1 1	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Note on materials up holder HF aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         Ø 3 mm         2         0.108         2.6	Datasheets → Internet: e
acuum port [1] <b>E – Vacuum port on top, with three</b> <b>1</b> <b>2</b> <b>3</b> <b>3</b> <b>3</b> <b>4</b> <b>a</b> <b>a</b> <b>a</b> <b>a</b> <b>b</b> <b>a</b> <b>b</b> <b>b</b> <b>b</b> <b>c</b> <b>b</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b>	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Note on materials up holder HF aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min.length)	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         Ø 3 mm         2         0.108         2.6         2/4	Datasheets → Internet: e
acuum port [1] <b>E – Vacuum port on top, with three</b> <b>1</b> <b>2</b> <b>3</b> <b>3</b> <b>3</b> <b>4</b> <b>a</b> <b>a</b> <b>a</b> <b>a</b> <b>b</b> <b>a</b> <b>b</b> <b>b</b> <b>b</b> <b>c</b> <b>b</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b> <b>c</b>	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Note on materials aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature	[mm] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 3 mm         2         0.108         2.6         2/4         -10 +60	Datasheets → Internet: e
<pre>/acuum port [1] IE - Vacuum port on top, with three I I I I I I I I I I I I I I I I I I</pre>	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Anote on materials Note on materials Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min.length) Ambient temperature Weight	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 3 mm         2         0.108         2.6         2/4         -10 +60         14	Datasheets → Internet: e
<pre>/acuum port [1] IE - Vacuum port on top, with three I I I I I I I I I I I I I I I I I I</pre>	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Ip holder HF aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normat/min. length) Ambient temperature Weight Materials of holder	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 3 mm         2         0.108         2.6         2/4         -10 +60         14         Tempered steel	Datasheets → Internet: e
1         2         3         3         General technical data – Suction cull         /acuum port [1]         IF – Vacuum port on top, with three	aded connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Anote on materials Note on materials Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min.length) Ambient temperature Weight	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	M3         compensator         M3         Ø 3 mm         1.2         0.04         -10 +60         1         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 3 mm         2         0.108         2.6         2/4         -10 +60         14	Datasheets → Internet: e

### Holder size 2

For suction cup Ø 6/8 mm

### Suction cup shape:

• Round, flat



Datasheets  $\rightarrow$  Internet: ess

Т

### General technical data – Suction cup S

Su	iction cup shape			Suction cup Ø [mm]	
				6	8
S٠	– round, flat: mate	rial FPM, NBR, BR, VMQ (silicone), PUR			
P	4	Connection suction cup holder		I.D. 4 mm <sup>1)</sup>	I.D. 4 mm <sup>1)</sup>
16-		Nominal width	[mm]	2	2
6	2	Holding force at nominal operating pressure –0.7 bar	[N]	1.1	2.3
		Suction cup volume	[cm <sup>3</sup> ]	0.015	0.030
		Min. workpiece radius	[mm]	15	20
		Weight	[g]	0.2	0.2

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1) Is fitted into the suction cup holder.

#### Custia \_

Material types – Suction cup S						
Material	F	Ν	NA	S	U	
Shore hardness	60 ±5	50 ±5	50 ±5	50 ±5	60 ±5	
Suction cup	FPM	NBR	BR	VMQ (silicone)	PUR	
	Colour: grey	Colour: black	Colour: black/white dot	Colour: transparent	Colour: blue	
Screwed plug	Nickel-plated brass					
Note on materials	RoHS-compliant					

### Operating and environmental conditions – Suction cup S

Operating and environmental conditions – Suction cup S							
Material	F	Ν	NA	S	U		
Operating medium	Atmospheric air based o	on ISO 8573-1:2010[7:-	:-]				
Ambient temperature [°C]	-10 +200	-10 +70	-10 +70	-30 +180	-20 +60		
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion stress	- Low corrosion stress					
Special characteristics	-	-	Antistatic	-	-		
Food-safe	-	-	-	As per manufacturer's declaration	_		

1) More information: www.festo.com/x/topic/crc

General technical data – Suction cup hol	der HA/HB/HC/HCL			Datasheets $\rightarrow$ Internet: es
Vacuum port [1]			QS-6	PK-4
HA – Vacuum port on top, mounting with	lock nut, without height compens	sator		
1	Mounting thread [2]		M10x1	M8x0.75
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	Nominal width	[mm]	2	2
	Volume	[cm <sup>3</sup> ]	0.501	0.169
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	12	7
T T	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
3 3	Seal materials		NBR	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HB – Vacuum port on the side, mounting	with female thread, without heig	ht compensat	or	
2 2	Mounting thread [2]	•	M4	M4
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	Nominal width	[mm]	2	2
	Volume	[cm <sup>3</sup> ]	0.418	0.188
	Ambient temperature	[°C]	0 +60	-10 +60
ц ц	Weight	[g]	13	11
3 3	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with	lock nut, with beight compensate	)r		
1 1	Mounting thread [2]	//	M12x1	M8x0.75
	Suction cup mounting [3]		ø 4 mm	Ø 4 mm
П	Nominal width	[mm]	2.2	1.2
	Volume	[cm <sup>3</sup> ]	0.551	0.192
	Height compensator	[mm]	3	3
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
┕┰╧┰╜  ┕┰╧┲₿	Ambient temperature	[°C]	0+60	-10 +60
$\Psi$ $\Xi$	Weight	[g]	18	8
3 3	Materials of holder	151	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting wit		onsator	1 I	
1 1	Mounting thread [2]	ciisatoi	M12x1	M12x1
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
П	Nominal width	[mm]	2.2	2.2
	Volume	[cm <sup>3</sup> ]	0.519	0.398
	Height compensator	[mm]	10	10
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
	Ambient temperature	[°C]	0 +60	-10 +60
<u>ŢŢŢ</u> <u></u> <u></u>	Weight	[g]	20	19
	Materials of holder	191	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
THE HEAL	Seal materials		NBR, steel	NBR, steel
3 1	Note on materials		RoHS-compliant	RoHS-compliant

eneral technical data – Suction cup h cuum port [1]			QS-6	Datasheets → Internet: e PK-4
	ng with lock nut, with height compe	nsator		I
A A	Mounting thread [2]		M8x0.75	M8x0.75
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	Nominal width	[mm]	1.8	1.8
	Volume	[cm <sup>3</sup> ]	0.417	0.183
	1 Height compensator	[mm]	3	3
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
ЗЗ	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	15	12
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy stee
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
I. Vacuum nort on the side mount	ting with lock put with long boight			
	ting with lock nut, with long height of Mounting thread [2]	compensator	M12x1	M12x1
	Suction cup mounting [3]			
	Nominal width	[mm]	Ø 4 mm 2.2	Ø 4 mm 2.2
	Volume	[mm]	0.260	
ЧТР ЧТР		[cm <sup>3</sup> ]	10	0.138
	Height compensator	[mm]		
╽│╢┈╢┚││╏══╜	Spring force (normal/min.length)	[N]	Max. 1	Max. 1 -10 +60
	Ambient temperature	[°C]	0 +60 33	32
3 3	Weight Materials of holder	[g]	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy stee
	Seal materials		NBR, steel	NBR, steel
			,	
neral technical data – Suction cup h	Note on materials		RoHS-compliant	RoHS-compliant $Datasheets \rightarrow Internet:$
			M5	Datasheets → Internet:
neral technical data – Suction cup h cuum port[1] – Vacuum port on top, with threade		thout height d	M5	
cuum port [1]	nolder HE	thout height o	M5	
uum port [1] - Vacuum port on top, with threade	nolder HE ad connection for direct screw-in, wit	thout height o	M5 compensator	
- Vacuum port [1]	nolder HE ad connection for direct screw-in, with Mounting thread [2]	thout height o	M5 compensator M5	
- Vacuum port [1]	ed connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3]		M5 compensator M5 Ø 4 mm	
uum port [1] - Vacuum port on top, with threade	and der HE ed connection for direct screw-in, wir Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	M5 compensator M5 Ø 4 mm 2	
uum port [1] - Vacuum port on top, with threade	ed connection for direct screw-in, wir Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm <sup>3</sup> ]	M5 compensator M5 Ø 4 mm 2 0.036	
- Vacuum port [1]	ed connection for direct screw-in, wir Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm <sup>3</sup> ] [°C]	M5 mpensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel	Datasheets → Internet:
uum port [1] - Vacuum port on top, with threade	and der HE ed connection for direct screw-in, wir Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials	[mm] [cm <sup>3</sup> ] [°C]	M5 mpensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P	Datasheets → Internet:
- Vacuum port [1]	and der HE  ed connection for direct screw-in, wir  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder	[mm] [cm <sup>3</sup> ] [°C]	M5 mpensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel	Datasheets → Internet:
- Vacuum port [1]	and der HE  ed connection for direct screw-in, wir  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials	[mm] [cm <sup>3</sup> ] [°C]	M5 mpensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         3	and der HE  ed connection for direct screw-in, wir  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials	[mm] [cm <sup>3</sup> ] [°C]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant	Datasheets → Internet:
recurrence of the second se	Anolder HE Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials Moter HF	[mm] [cm <sup>3</sup> ] [°C] [g]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I          cuum port [1]	and der HE  ed connection for direct screw-in, wir  Mounting thread [2]  Suction cup mounting [3]  Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials  nolder HF ed connection for direct screw-in, wire	[mm] [cm <sup>3</sup> ] [°C] [g]	M5 mpensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 pensator	Datasheets → Internet:
recurrence of the second se	anolder HE  ed connection for direct screw-in, wit  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials  nolder HF  ed connection for direct screw-in, wit  Mounting thread [2]	[mm] [cm <sup>3</sup> ] [°C] [g]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 pensator M10x1	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I          cuum port [1]	anolder HE  ed connection for direct screw-in, wit  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials  Note on materials  nolder HF  ed connection for direct screw-in, wit  Mounting thread [2]  Suction cup mounting [3]	[mm] [cm <sup>3</sup> ] [°C] [g]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 pensator M10x1 Ø 4 mm	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I cuum port [1] - Vacuum port on top, with threader	anolder HE         ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on materials         molder HF         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width	[mm] [cm <sup>3</sup> ] [°C] [g] th height com	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 <b>pensator</b> M10x1 Ø 4 mm 2	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I cuum port [1] - Vacuum port on top, with threader	anolder HE         ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 Ø 4 mm 2 0.09	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I cuum port [1] - Vacuum port on top, with threader	anolder HE         ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on materials         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Height compensator	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm]	M5 compensator M5 Ø 4 mm 2 0.036 -10 +60 3 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant M10x1 pensator M10x1 Ø 4 mm 2 0.09 2.6	Datasheets → Internet:
recurrence of the second se	ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Noder HF         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min.length)	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N]	M5         compensator         M5         Ø 4 mm         2         0.036         -10 +60         3         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         Ø 4 mm         2         0.09         2.6         2/4	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I cuum port [1] - Vacuum port on top, with threader	ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Noder HF         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min. length)         Ambient temperature	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	M5         compensator         M5         Ø 4 mm         2         0.036         -10 +60         3         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 4 mm         2         0.09         2.6         2/4         -10 +60	Datasheets → Internet:
- Vacuum port [1]          - Vacuum port on top, with threader         1         1         1         3    neral technical data – Suction cup I cuum port [1] - Vacuum port on top, with threader	nolder HE         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         nolder HF         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min. length)         Ambient temperature         Weight	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N]	M5         compensator         M5         Ø 4 mm         2         0.036         -10 +60         3         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 4 mm         2         0.09         2.6         2/4         -10 +60         14	Datasheets → Internet:
recurrence of the second se	ad connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Noder HF         ed connection for direct screw-in, with         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min. length)         Ambient temperature	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	M5         compensator         M5         Ø 4 mm         2         0.036         -10 +60         3         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M10x1         pensator         M10x1         Ø 4 mm         2         0.09         2.6         2/4         -10 +60	Datasheets → Internet:

#### Holder size 3

For suction cup Ø 10/15 mm

- Suction cup shape:
- Round, flat
- Round, extra-deep
- Round, bellows with 1.5 convolutions
- Round, bellows with 3.5 convolutions



General technical	data – Suction cup S/E/B/C			Datasheets → Internet: ess
Suction cup shape			Suction cup Ø [mm]	
			10	15
S – round, flat: ma	terial FPM, NBR, BR, VMQ (silicone), PUR			
	Connection suction cup holder		M4	M4
	Nominal width	[mm]	2	2
	Holding force at nominal operating pressure –0.7 bar	[N]	3.9	8.5
	Suction cup volume	[cm <sup>3</sup> ]	0.050	0.208
	Min. workpiece radius	[mm]	30	35
	Weight	[g]	1.5	1.9
E – round, extra de	eep: material FPM, NBR, VMQ (silicone), PUR			
	Connection suction cup holder		-	M4
	Nominal width	[mm]	-	2
	Holding force at nominal operating pressure –0.7 bar	[N]	-	9.8
	Suction cup volume	[cm <sup>3</sup> ]	-	0.350
	Min. workpiece radius	[mm]	-	20
	Weight	[g]	-	1.9
B – round, bellows	1.5 convolutions: material NBR, VMQ (silicone), PUR			
	Connection suction cup holder		M4	-
	Nominal width	[mm]	2	-
	Holding force at nominal operating pressure –0.7 bar	[N]	4.7	-
	Suction cup volume	[cm <sup>3</sup> ]	0.380	
	Min. workpiece radius	[mm]	20	-
	Height compensator	[mm]	4	-
	Weight	[g]	1.8	-
C – round, bellows	3.5 convolutions: material NBR, VMQ (silicone)			
	Connection suction cup holder		M4	-
	Nominal width	[mm]	2	-
	Holding force at nominal operating pressure –0.7 bar	[N]	3.9	-
	Suction cup volume	[cm <sup>3</sup> ]	0.290	-
	Min. workpiece radius	[mm]	25	-
	Height compensator	[mm]	3.3	-
	Weight	[g]	1.6	-

Material types – Suction cup							
Material	F	Ν	NA	S	U		
Shore hardness	60 ±5	60 ±5	50 ±5	50 ±5	60 ±5		
Suction cup	FPM	NBR	BR	VMQ (silicone)	PUR		
	Colour: grey	Colour: black	Colour: black/white dot	Colour: transparent	Colour: blue		
Screwed plug	Nickel-plated brass	S		*			
Note on materials	RoHS-compliant						
	- ·						
<b>Operating and environmental condition</b> Material	- ·	Ν	NA	S	U		
Material	ns – Suction cup F	N Ised on ISO 8573-1:201		S	U		
Material Operating medium	ns – Suction cup F			S -30 +180	U -20 +60		
Material Operating medium Ambient temperature [°C]	ns – Suction cup F Atmospheric air ba	used on ISO 8573-1:201	0[7:-:-]	-			
Material Operating medium	F Atmospheric air ba	used on ISO 8573-1:201	0[7:-:-]	-			
Material Operating medium Ambient temperature [°C] Corrosion resistance class CRC <sup>1)</sup>	F Atmospheric air ba -10 +200 1 - Low corrosion s	ised on ISO 8573-1:201 -10 +70 otress	0 [7::-]  -10 +70	-30 +180	-20+60		

1) More information: www.festo.com/x/topic/crc

General technical data – Suction cup hole	der HA/HB/HC/HCL			Datasheets → Internet: esh
Vacuum port [1]			QS-6	PK-4
HA – Vacuum port on top, mounting with	lock nut, without height compens	ator		
1 1	Mounting thread [2]		M12x1	M8x0.75
	Suction cup mounting [3]		M4	M4
Е Ц	Nominal width	[mm]	5	2.5
<u>_</u> ┌╨┯┿╤┯┺┓ <u>↓↓↓</u>	Volume	[cm <sup>3</sup> ]	0.520	0.274
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	20	10
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR	NBR, steel
3	Note on materials		RoHS-compliant	RoHS-compliant
HB – Vacuum port on the side, mounting	with female thread, without heig	ht compensa	tor	
2 2	Mounting thread [2]		M6	M6
	Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.3	2.5
┟┰┊┰╢╒┫╌╢_┟┰┊┰╢╕╸╸╸	Volume	[cm <sup>3</sup> ]	0.539	0.313
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	29	27
3 3	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with	lock nut, with height compensato	r		
1 1	Mounting thread [2]	-	M14x1	M14x1
	Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.4	2.5
┟┶╪┵┪	Volume	[cm <sup>3</sup> ]	1.041	0.789
	Height compensator	[mm]	6	6
	Spring force (normal/min. length)	[N]	2/5	2/5
	Ambient temperature	[°C]	0+60	-10 +60
┟┼┽	Weight	[g]	34	32
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
З	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with	lock nut, with long height comp	ensator		
	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.4	3
	Volume	[cm <sup>3</sup> ]	1.616	1.383
	Height compensator	[mm]	20	20
	Spring force (normal/min. length)	[N]	1/3	1/3
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	48	46
$\uparrow \uparrow \uparrow \uparrow$ $\uparrow \uparrow \uparrow \uparrow$	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
3 3				

eneral technical data – Suction cup ho	אמפו אש/ חשב		QS-6	Datasheets → Internet: PK-4
acuum port [1]	<b>611 1 1 1 1 1 1 1 1 1 1 1 1 1</b>		LA2-0	F N-4
D – Vacuum port on the side, mountin		nsator		
	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.3	3
└╷┼┎┚	Volume	[cm <sup>3</sup> ]	0.573	0.343
	Height compensator	[mm]	6	6
	Spring force (normal/min.length)	[N]	2/5	2/5
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	46	44
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy stee
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
L – Vacuum port on the side, mounti	ng with lock nut, with long height (	compensator		
	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.3	3
	Volume	[cm <sup>3</sup> ]	0.474	0.252
	Height compensator	[mm]	20	20
	Spring force (normal/min. length)	[N]	1/3	1/3
	Ambient temperature	[°C]	0+60	-10 +60
	Weight		65	63
	Materials of holder	[g]	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy ste
			NBR, steel	NBR, steel
				I NDR. SLEEL
3 3	Seal materials Note on materials		RoHS-compliant	RoHS-compliant
eneral technical data – Suction cup h	Note on materials			
eneral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials	thout height (	RoHS-compliant G1/8	RoHS-compliant
neral technical data – Suction cup ho	Note on materials	thout height (	RoHS-compliant G1/8	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials Ider HE	thout height (	RoHS-compliant G1/8 compensator	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials Ider HE I connection for direct screw-in, wi Mounting thread [2]	thout height (	RoHS-compliant G1/8 compensator G1/8	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials I connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3]		RoHS-compliant     G1/8     compensator     G1/8     M4	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials A connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	RoHS-compliant     G1/8     compensator     G1/8     M4     3	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials Older HE d connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm <sup>3</sup> ]	RoHS-compliant     G1/8     compensator     G1/8     M4     3     0.106	RoHS-compliant
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials Older HE d connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm <sup>3</sup> ] [°C]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials Older HE d connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm] [cm <sup>3</sup> ] [°C]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials A connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm <sup>3</sup> ] [°C]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded neral technical data – Suction cup ho cuum port [1]	Note on materials         Older HE         I connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials	[mm] [cm <sup>3</sup> ] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded neral technical data – Suction cup ho cuum port [1]	Note on materials         Older HE         I connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on for direct screw-in, with	[mm] [cm <sup>3</sup> ] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 3 neral technical data – Suction cup ho cuum port [1]	Note on materials         Aconnection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Solder HF         I connection for direct screw-in, with         Mounting thread [2]	[mm] [cm <sup>3</sup> ] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         Note on materials         Older HE         I connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on materials         Note on grader to the screw-in, with the screw-in, with the screw-ing [3]	[mm] [cm <sup>3</sup> ] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M4	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded neral technical data – Suction cup ho cuum port [1] – Vacuum port on top, with threaded	Note on materials         Aconnection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Solder HF         I connection for direct screw-in, with         Mounting thread [2]	[mm] [cm <sup>3</sup> ] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         Note on materials         Older HE         I connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on materials         Note on grader to the screw-in, with the screw-in, with the screw-ing [3]	[mm] [cm³] [°C] [g]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M4	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         Note on materials         Ider HE         Identity of the second of the secon	[mm] [cm³] [°C] [g] th height com	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M4         3.3	RoHS-compliant Datasheets → Internet:
eneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 - Vacuum port on top, with threaded eneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         A connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10+60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M4         3.3         0.400	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         A connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Note on materials         Note on cup mounting [3]         Note on materials	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10+60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M4         3.3         0.400         6	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         A connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min.length)	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         6         6/12	RoHS-compliant Datasheets → Internet:
neral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 1 - Vacuum port on top, with threaded aneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded	Note on materials         Note on materials         A connection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min.length)         Ambient temperature	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         6         6/12         -10 +60	RoHS-compliant Datasheets → Internet:
eneral technical data – Suction cup ho cuum port [1] - Vacuum port on top, with threaded 1 - Vacuum port on top, with threaded 	Note on materials         Note on materials         Aconnection for direct screw-in, wi         Mounting thread [2]         Suction cup mounting [3]         Nominal width         Volume         Ambient temperature         Weight         Materials of holder         Seal materials         Note on materials         Suction cup mounting [3]         Nominal width         Volume         Height compensator         Spring force (normal/min.length)         Ambient temperature         Weight	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	RoHS-compliant         G1/8         compensator         G1/8         M4         3         0.106         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         6         6/12         -10 +60         54	RoHS-compliant Datasheets → Internet:

### Angle compensator ESWA

Angle compensator ESWA			Datasheets → Internet: eswa
	Pneumatic connection		M4
	Design		Ball joint
	Angle compensator +/-	[°]	15
	Operating pressure	[bar]	-0.95 +4
	Ambient temperature	[°C]	0+60
	Weight	[g]	9
	Housing materials		Aluminium, nickel-plated brass
	Seal materials		NBR
	Note on materials		RoHS-compliant

#### Vacuum filter ESF

Datasheets → Internet: esf

Pneumatic connection		M4
Flow rate at vacuum pressure	[l/min]	100
=–0.75 bar		
Grade of filtration	[µm]	10
Operating pressure	[bar]	-0.95 +4
Ambient temperature	[°C]	0+60
Weight	[g]	9
Housing materials		Aluminium, nickel-plated brass
Filter materials		PVF
Seal materials		NBR
Note on materials		RoHS-compliant

### Suction-cup insert OASI

Suction-cup insert OASI				Datasheets → Internet: oasi
For round suction cup, bellows 3.5 convo	lutions		Suction cup Ø [mm]	
			10	
	Type of mounting		Plug-in	
	Operating pressure	[bar]	-0.95 0	
	Ambient temperature	[°C]	5 +50	
	Food-safe		As per manufacturer's declaration	
	Weight	[g]	0.1	
	Suction cup insert materials		PE	
	Note on materials		RoHS-compliant	

### Suction gripper ESG, suction cup Ø 20/30/40/50 mm, oval

# Datasheet – Holder size 4

#### Holder size 4

For suction cup Ø 20/30/40/50 mm and Suction cup size 4x10/4x20/6x-10/6x20/8x20/8x30/10x30 mm

- Suction cup shape:
- Round, flat
- Round, extra-deep • Round, bellows with
- 1.5 convolutions • Round, bellows with 3.5 convolutions
- Round, deep
- Oval, flat



Datasheets  $\rightarrow$  Internet: ess

1
General technical data – Suction cup S/E/B/C/G
Suction cup shape

General technic	al data – Suction cup S/E/B/C/G				Datash	eets $\rightarrow$ Internet: ess
Suction cup sha	pe		Suction cup Ø[mr	n]		
			20	30	40	50
S – round, flat:	material FPM, NBR, BR, VMQ (silicone), PUR					
	Connection suction cup holder		M6	M6	M6	M6
	Nominal width	[mm]	3	3	3	3
	Holding force at nominal operating pressure –0.7 bar	[N]	16.3	40.8	69.6	105.8
	Suction cup volume	[cm <sup>3</sup> ]	0.318	0.867	1.566	2.387
	Min. workpiece radius	[mm]	60	110	230	330
	Weight	[g]	6.4	9	16.3	22
E – round, extra	deep: material FPM, NBR, VMQ (silicone), PUR			·	·	
(O)	Connection suction cup holder		M6	M6	M6	M6
	Nominal width	[mm]	3	3	3	3
$\subseteq$	Holding force at nominal operating pressure –0.7 bar	[N]	17	37.2	67.6	103.6
	Suction cup volume	[cm <sup>3</sup> ]	0.84	2.12	4.04	7.9
	Min. workpiece radius	[mm]	30	50	80	100
	Weight	[g]	6.4	9.2	16.9	23.4
B – round, bello	ws 1.5 convolutions: material NBR, VMQ (silicone), PUR, V	ulkollar	® (technical values	in brackets)	•	
<u>A</u>	Connection suction cup holder		M6	M6	M6	M6
	Nominal width	[mm]	3	3	3 (2.5)	3 (2.5)
	Holding force at nominal operating pressure –0.7 bar	[N]	12.9	26.2	52.3 (59)	72.6 (100)
	Suction cup volume	[cm <sup>3</sup> ]	1.6	4.07	8.87 (9.8)	14.23 (17.6)
	Min. workpiece radius	[mm]	40	80	90 (35)	150 (40)
	Height compensator	[mm]	6	8	9.5 (9)	11 (10)
	Weight	[g]	6.7	9.9	18.7 (18)	24.7 (24)
C – round, bello	ws 3.5 convolutions: material NBR, VMQ (silicone)					
	Connection suction cup holder		M6	M6	M6	M6
	Nominal width	[mm]	3	3	3	3
	Holding force at nominal operating pressure –0.7 bar	[N]	8.2	20.8	42.4	63.4
	Suction cup volume	[cm <sup>3</sup> ]	2.75	9.47	19.72	38.92
	Min. workpiece radius	[mm]	50	80	100	180
	Height compensator	[mm]	7	10.5	12.8	17.5
	Weight	[g]	6.9	12.2	21.9	32.1
G – round, deep	: material Vulkollan®					
	Connection suction cup holder		-	M6	M6	M6
	Nominal width	[mm]	-	2.5	2.5	2.5
$\checkmark$	Holding force at nominal operating pressure –0.7 bar	[N]	-	36	64	97
	Suction cup volume	[cm <sup>3</sup> ]	-	2.4	5.4	11.2
	Min. workpiece radius	[mm]	-	26	35	40
	Height compensator	[mm]	-	3.5	5.5	8
	Weight	[g]	-	12	14	17

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### General technical data – Suction cup O

Suction cup shape						Suction cup size [mm]							
					4x10	4x20	6x10	6x20	)	8x20	8x3	0	10x30
0 – oval, flat: materia	l NBR												
	Connection suction	n cup holder			M6	M6	M6	M6		M6	M6		M6
	Nominal width			[mm]	2.5	2.5	2.5	2.5		2.5	2.5		2.5
	Holding force at no	ominal operating pre	essure –0.7 bar	[N]	2	3.4	2.9	5.9		8	10.9	9	15.2
	Suction cup volum	е		[cm <sup>3</sup> ]	0.064	0.112	0.106	0.19	6	0.256	0.3	76	0.350
• ·	Weight			[g]	2	2.5	2	2.5		2.5	3		2.9
Shore hardness		60 ±5	60 ±5		50 ±5		50 ±5		60 ±5			2 ±5	0
Suction cup		FPM	NBR		BR		VMQ (silicor	20)	PUR			ulkolla	n®
outlion cup		Colour: grey	Colour: blac		Colour: bla	ack/	Colour: tran		-	ır: blue			reddish
					white dot		ent				b	orown	
				Nickel-plated brass								Vrough	t
Threaded plug for suc	tion 20, 30	Nickel-plated bra	SS	l							V V		
Threaded plug for suc cup Ø [mm]	tion 20, 30	Nickel-plated bra Galvanised and c		eel									
	tion 20, 30	· · · · · · · · · · · · · · · · · · ·	hrome-plated st	eel							a		um alloy
		Galvanised and c Nickel-plated bra Nickel-plated wro	hrome-plated st ss ought aluminium	n alloy							a V	lumini Vrough	um alloy It
		Galvanised and c Nickel-plated bra	hrome-plated st ss ought aluminium	n alloy							a V	lumini Vrough	um alloy

Material	F	Ν	NA	S	U	Т		
Operating medium	Atmospheric air bas	mospheric air based on ISO 8573-1:2010 [7:-:-]						
Ambient temperature [°C]	-10 +200	-10 +70	-10 +70	-30 +180	-20 +60	-10 +80		
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion st	L - Low corrosion stress						
Special characteristics	-	-	Antistatic	-	-	-		
Food-safe	-	-		As per manufac- turer's declaration	-	-		

1) More information: www.festo.com/x/topic/crc

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General technical data – Suction cup hol			1	Datasheets $\rightarrow$ Internet: es
/acuum port [1]			QS-6	РК-4
IA – Vacuum port on top, mounting with		ator		
1 1	Mounting thread [2]		M14x1	M12x1
E A	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	5	2.5
	Volume	[cm <sup>3</sup> ]	0.719	0.668
	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	30	23
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR	NBR, steel
3	Note on materials		RoHS-compliant	RoHS-compliant
IB – Vacuum port on the side, mounting	with female thread, without heig	ht compensa	tor	
2 2	Mounting thread [2]	•	M6	M6
	Suction cup mounting[3]		M6	M6
	Nominal width	[mm]	5	2.5
┰╪ <del>┰</del> ╢╔ <del>╔╶</del> ╖ <sub>┍</sub> ┟┰╪┰┨ <sub>┣┺╍╼┉</sub> ┍	Volume	[cm <sup>3</sup> ]	0.646	0.416
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	27	25
3 3	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
IC – Vacuum port on top, mounting with	lock nut, with height compensato	nr		·
1 1	Mounting thread [2]	<u> </u>	M14x1	M14x1
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	3.4	2.5
┢╪┪  ┎╪┱	Volume	[cm <sup>3</sup> ]	1.153	0.911
	Height compensator	[mm]	6	6
	Spring force (normal/min. length)	[N]	5/10	5/10
	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	33	31
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
3 3	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
ICL – Vacuum port on top, mounting wit	lock nut with long hoight comp	ancator	• 	
1 1	Mounting thread [2]	ensalui	M14x1	M14x1
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	3.4	3
	Volume	[cm <sup>3</sup> ]	1.780	1.535
	Height compensator	[mm]	20	20
<sub>─</sub> ┠┼┼╋	Spring force (normal/min. length)	[N]	1/9	1/9
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	47	45
└╷┊┰╜ └╷┊┰╜	Materials of holder	101	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
			1 · · · · · · · · · · · · · · · · · · ·	· · · · · · · · · · · · · · · · · · ·

	.der HD/HDL			Datasheets → Internet: esh
Vacuum port [1]			QS-6	PK-4
HD – Vacuum port on the side, mounting	with lock put with boight compo	ncator	<b>4</b> 0 0	
	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M14A1 M6	M6
	Nominal width	[mm]	5	3
	Volume	[cm <sup>3</sup> ]	0.678	0.449
│ └ <u>╷</u> ┊┬┚ │ └╷┊┬┚	Height compensator	[mm]	6	6
		[N]	5/10	5/10
│ └┴╨─╜╰ └┴╊┹╨╚	Ambient temperature	[°C]	0+60	-10 +60
3	Weight	[g]	45	43
	Materials of holder	151	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
	Note of materials			
HDL – Vacuum port on the side, mounting		compensator		
	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	5	3
	Volume	[cm <sup>3</sup> ]	0.370	0.448
	Height compensator	[mm]	20	20
	Spring force (normal/min. length)	[N]	1/9	1/9
	Ambient temperature	[°C]	0+60	-10 +60
	Weight	[g]	65	63
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
3 3	Note on materials		RoHS-compliant	RoHS-compliant
	der HE			Datasheets → Internet: esh
Vacuum port [1] HE – Vacuum port on top, with threaded	connection for direct screw-in, wi	ithout height (		Datasheets → Internet: esh
	connection for direct screw-in, wi	ithout height (	G1/8	Datasheets → Internet: esh
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3]		G1/8 M6	Datasheets → Internet: esh
	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	G1/8 M6 4	Datasheets → Internet: esh
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm <sup>3</sup> ]	G1/8           M6           4           0.289	Datasheets → Internet: esh
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm <sup>3</sup> ] [°C]	compensator           G1/8           M6           4           0.289           -10 +60	Datasheets → Internet: esh
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm] [cm <sup>3</sup> ]	compensator           G1/8           M6           4           0.289           -10 +60           11	Datasheets → Internet: esh
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm <sup>3</sup> ] [°C]	compensator           G1/8           M6           4           0.289           -10 +60           11           Tempered steel	
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials	[mm] [cm <sup>3</sup> ] [°C]	compensator G1/8 M6 4 0.289 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, P	
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm <sup>3</sup> ] [°C]	compensator           G1/8           M6           4           0.289           -10 +60           11           Tempered steel	
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials	[mm] [cm <sup>3</sup> ] [°C]	compensator G1/8 M6 4 0.289 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, P	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm <sup>3</sup> ] [°C] [g]	Compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm <sup>3</sup> ] [°C] [g]	Compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm <sup>3</sup> ] [°C] [g]	compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2]	[mm] [cm <sup>3</sup> ] [°C] [g] ith height com	compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         4         4         4	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3]	[mm] [cm <sup>3</sup> ] [°C] [g]	compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         M6	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm <sup>3</sup> ] [°C] [g] ith height com [mm] [cm <sup>3</sup> ] [mm]	compensator         G1/8         M6         4         0.289         -10 +60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         4         4         4	
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm <sup>3</sup> ] [°C] [g] ith height com [mm] [cm <sup>3</sup> ]	compensator         G1/8         M6         4         0.289         -10+60         11         Tempered steel         NBR, steel, wrought aluminium alloy, P         RoHS-compliant         M14x1         pensator         M14x1         Q         0.655	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm <sup>3</sup> ] [°C] [g] ith height com [mm] [cm <sup>3</sup> ] [mm]	Sompensator           G1/8           M6           4           0.289           -10+60           11           Tempered steel           NBR, steel, wrought aluminium alloy, P           RoHS-compliant           M14x1           pensator           M14x1           6	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length)	[mm] [cm <sup>3</sup> ] [°C] [g] ith height com [mm] [cm <sup>3</sup> ] [mm] [N]	Sompensator           G1/8           M6           4           0.289           -10+60           11           Tempered steel           NBR, steel, wrought aluminium alloy, P           RoHS-compliant           M14x1           pensator           M14x1           M6           4           0.655           6           6/12	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	Sompensator           G1/8           M6           4           0.289           -10+60           11           Tempered steel           NBR, steel, wrought aluminium alloy, P           RoHS-compliant           M14x1           M6           4           0.655           6           6/12           -10+60           52           Tempered steel	OM
HE – Vacuum port on top, with threaded	connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF connection for direct screw-in, wi Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min.length) Ambient temperature Weight	[mm] [cm <sup>3</sup> ] [°C] [g] th height com [mm] [cm <sup>3</sup> ] [mm] [N] [°C]	Sompensator           G1/8           M6           4           0.289           -10+60           11           Tempered steel           NBR, steel, wrought aluminium alloy, P           RoHS-compliant           M14x1           Pensator           M14x1           M6           4           0.655           6           6/12           -10+60           52	OM

Angle compensator ESWA			Datasheets → Internet: eswa
	Pneumatic connection		M6
	Design		Ball joint
	Angle compensator +/-	[°]	15
	Operating pressure	[bar]	-0.95 +4
	Ambient temperature	[°C]	0 +60
	Weight	[g]	19
	Housing materials		Aluminium, nickel-plated brass
	Seal materials		NBR
	Note on materials		RoHS-compliant

#### 1 filtor ESE

Vacuum filter ESF				Datasheets → Internet: esf	
			Suction cup Ø 20 mm, Suction cup size 4x10 10x30 mm	Suction cup Ø 30/40/50 mm	
Ē	Pneumatic connection		M6		
	Flow rate at vacuum pressure =-0.75 bar	[l/min]	260	270	
	Grade of filtration	[µm]	10		
	Operating pressure	[bar]	-0.95 +4		
	Ambient temperature	[°C]	0+60		
	Weight	[g]	19		
	Housing materials		Aluminium, nickel-plated brass		
	Filter materials		PVF		
	Seal materials		NBR		
	Note on materials		RoHS-compliant		

#### Suction-cup insert OASI

For round suction cup, bellows 3.5 convolutions Suction cup Ø [mm] 20 30 40 50 Plug-in Type of mounting Operating pressure [bar] -0.95 ... 0 Ambient temperature [°C] 5 ... +50 Food-safe As per manufacturer's declaration Weight [g] 0.6 2.1 2.9 5.9 Suction cup insert materials PE Note on materials **RoHS-compliant** 

#### Datasheets → Internet: oasi

#### Holder size 5

For suction cup Ø 60/80/100 mm and

suction cup size 15x45/20x60/ 25x75/30x90 mm

- Suction cup shape:
- Round, flat
- Round, extra-deep
- Round, bellows with 1.5 convolutions
- Round, deep
- Oval, flat



Datasheets  $\rightarrow$  Internet: ess

General technical data – Suction cup $S/E/B/G$
--

Suction cup shape			Suction cup Ø [mm]			
			60	80	100	
S – round, flat: n	naterial FPM, NBR, VMQ (silicone), PUR					
	Connection suction cup holder		M10	M10	M10	
	Nominal width	[mm]	6	6	6	
	Holding force at nominal operating pressure –0.7 bar	[N]	166.1	309.7	503.6	
	Suction cup volume	[cm <sup>3</sup> ]	3.953	19.312	29.779	
	Min. workpiece radius	[mm]	350	400	460	
	Weight	[g]	49	133	222	
– round, extra	deep: material FPM, NBR, VMQ (silicone), PUR					
	Connection suction cup holder		M10	M10	M10	
, S	Nominal width	[mm]	6	6	6	
	Holding force at nominal operating pressure –0.7 bar	[N]	162.5	275	440.8	
	Suction cup volume	[cm <sup>3</sup> ]	19.77	51.61	84.66	
	Min. workpiece radius	[mm]	120	160	200	
	Weight	[g]	48	141	228	
3 – round, bellov	ws 1.5 convolutions: material NBR, VMQ (silicone), PUR, V	ulkollan	® (technical values in brack	:kets)		
<u>A</u>	Connection suction cup holder		-	M10	-	
	Nominal width	[mm]	-	6 (2.5)	-	
	Holding force at nominal operating pressure –0.7 bar	[N]	-	213.6 (237)	-	
	Suction cup volume	[cm <sup>3</sup> ]	-	63.9 (59.1)	-	
	Min. workpiece radius	[mm]	-	430 (100)	-	
	Height compensator	[mm]	-	10 (10.5)	-	
	Weight	[g]	-	139 (84.5)	-	
i – round, deep:	material Vulkollan®					
	Connection suction cup holder		M10	M10	M10	
	Nominal width	[mm]	2.5	5.5	5.5	
	Holding force at nominal operating pressure –0.7 bar	[N]	134	245	375	
	Suction cup volume	[cm <sup>3</sup> ]	11.3	28.6	53.9	
	Min. workpiece radius	[mm]	75	100	135	
	Height compensator	[mm]	6	7.5	9	
	Weight	[g]	20	28	86.5	

### General technical data – Suction cup O

Suction cup shape			Suction cup size [mm]			
			15x45	20x60	25x75	30x90
0 – oval, flat: mater	ial NBR					
9	Connection suction cup holder		M10	M10	M10	M10
	Nominal width	[mm]	6	6	6	6
	Holding force at nominal operating pressure –0.7 bar	[N]	32	62.8	92.5	134.4
	Suction cup volume	[cm <sup>3</sup> ]	1.57	3.69	6.7	10.17
	Weight	[g]	23.8	30.8	46.8	55.3

<sup>®</sup> Registered trademark of the Bayer MaterialScience AG Group

# Suction gripper ESG, suction cup Ø 60/80/100 mm, oval

# Datasheet – Holder size 5

#### Material types – Suction cup

Material types – Suction cup							
Material		F	Ν	S	U	Т	
Shore hardness		60 ±5	60 ±5	50 ±5	60 ±5	72 ±5	
Suction cup		FPM	NBR	VMQ (silicone)	PUR	Vulkollan®	
		Colour: grey	Colour: black	Colour: transparent	Colour: blue	Colour: reddish brown	
Threaded plug for suction	60	Nickel-plated steel	Wrought aluminium				
cupø[mm]		Nickel-plated wroug	ht aluminium alloy			alloy	
		Galvanised and chro	ome-plated steel				
	80,100	Nickel-plated steel				Wrought aluminium	
		POM				alloy	
		Galvanised and chro	ome-plated steel				
Note on materials		RoHS-compliant				·	

### Operating and environmental conditions – Suction cup

Material	F	Ν	S	U	Т			
Operating medium	Atmospheric air based o	tmospheric air based on ISO 8573-1:2010 [7:-:-]						
Ambient temperature [°C]	-10 +200	-10 +70	-30 +180	-20 +60	-10 +80			
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion stress			~	2 - Moderate corrosion			
					stress			
Food-safe	-	-	As per manufacturer's	-	-			
			declaration					

1) More information: www.festo.com/x/topic/crc

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General technical data – Suction cup l	nolder HA/HB/HC/HCL		Datasheets -	Internet: esh
Vacuum port [1]			G1/8	
HA – Vacuum port on top, mounting w	ith lock nut, without height compensi	sator		
1	Mounting thread [2]		M20x1	
	Suction cup mounting [3]		M10	
	Nominal width	[mm]	8	
	Volume	[cm <sup>3</sup> ]	1.862	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	84	
	Materials of holder		Tempered steel, high-alloy steel	
3	Note on materials		RoHS-compliant	
HB – Vacuum port on the side, mounti	ng with female thread, without heig	t compensa	tor	
2	Mounting thread [2]	,	M8	
	Suction cup mounting [3]		M10	
	Nominal width	[mm]	8.5	
	Volume	[cm <sup>3</sup> ]	1.921	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	91	
	Materials of holder	.01	Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
HC – Vacuum port on top, mounting w		or	1	
1	Mounting thread [2]		M22x1	
	Suction cup mounting [3]		M10	
┍╨╤╾┼╼╤╙┓	Nominal width	[mm]	8.4	
	Volume	[cm <sup>3</sup> ]	3.327	
	Height compensator	[mm]	10	
	Spring force (normal/min. length)	[N]	8/18	
	Ambient temperature	[°C]	-10 +60	
┟─┼─┫	Weight	[g]	112	
	Materials of holder		Tempered steel, high-alloy steel	
3	Note on materials		RoHS-compliant	
HCL – Vacuum port on top, mounting v	vith lock nut, with long height comp	ensator		
1	Mounting thread [2]		M22x1	
Ā	Suction cup mounting [3]		M10	
	Nominal width	[mm]	8.4	
	Volume	[cm <sup>3</sup> ]	6.06	
	Height compensator	[mm]	30	
	Spring force (normal/min. length)	[N]	10/16	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	169	
	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
З				

General technical data – Suctio	on cup holder HD/HDI			Datasheets $\rightarrow$ Internet: es
Vacuum port [1]			G1/8	Datasheets → Internet: es
·	mounting with lock nut, with height compe	ensator	01/0	
1	Mounting thread [2]	insator	M22x1	
Ä	Suction cup mounting [3]		M10	
	Nominal width	[mm]	8.5	
	Volume	[cm <sup>3</sup> ]	2.072	
	Height compensator	[mm]	10	
	Spring force (normal/min. length)	[N]	8/18	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	195	
3	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
IDL – Vacuum port on the side	, mounting with lock nut, with long height	compensator	M22::1	
	Mounting thread [2]		M22x1	
	Suction cup mounting [3]		M10	
	Nominal width	[mm]	8.5	
	Volume	[cm <sup>3</sup> ]	1.667	
─┘└ <u>└</u> ┶╧╪╧┱ <mark>╓</mark>	Height compensator	[mm]	30	
└┰┼╌┲ <sup>₿</sup>	Spring force (normal/min.length)	[N] [°C]	10/16 -10 +60	
	Ambient temperature			
	Weight Materials of holder	[g]	273	
	Note on materials		Tempered steel, high-alloy steel RoHS-compliant	
3				
General technical data – Suctic /acuum port [1]	on cup holder HE		G1/4	Datasheets → Internet: es
• • •	threaded connection for direct screw-in, wi	thout height		
1 [1]	Mounting thread [2]	thout height t	G1/4	
	Suction cup mounting [3]		M10	
2	Nominal width	[mm]	7	
	Volume	[cm <sup>3</sup> ]	1.227	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	24	
	Materials of holder		Tempered steel	
3	Seal materials		NBR, steel, wrought aluminium alloy, POM	
	Note on materials		RoHS-compliant	
Angle compensator ESWA				Datasheets $\rightarrow$ Internet: esv
			M10	
Ē.	Pneumatic connection			
	Pneumatic connection Design		Ball joint	
		[°]	Ball joint 15	
	Design	[°] [bar]		
	Design Angle compensator +/-		15	
	Design Angle compensator +/– Operating pressure	[bar]	15 -0.95 +4	
	Design Angle compensator +/– Operating pressure Ambient temperature	[bar] [°C]	15 -0.95 +4 0 +60	
	Design Angle compensator +/– Operating pressure Ambient temperature Weight	[bar] [°C]	15 -0.95 +4 0 +60 57	

RoHS-compliant

Note on materials

For suction cup Ø 150/200 mm

Holder size 6

Suction cup shape: • Round, flat



Datasheets → Internet: ess

1

#### General technical data – Suction cup S

Suction cup shape			Suction cup Ø [mm]	
			150	200
S – round, flat: mat	erial FPM, NBR, VMQ (silicone), PUR			
	Connection suction cup holder		M20x2	M20x2
	Nominal width	[mm]	10	10
	Holding force at nominal operating pressure –0.7 bar	[N]	900	1610
	Suction cup volume	[cm <sup>3</sup> ]	173.826	245.454
	Min. workpiece radius	[mm]	480	680
	Weight	[g]	719	1198

### | Material types – Suction cup S

Material	F	N	S	U					
Shore hardness	60 ±5	50 ±5	50 ±5	60 ±5					
Suction cup	FPM	NBR	VMQ (silicone)	PUR					
	Colour: grey	Colour: black	Colour: transparent	Colour: blue					
Screwed plug	Nickel-plated steel	Nickel-plated steel							
	NBR								
	Galvanised and chron	Galvanised and chrome-plated steel							
Note on materials	RoHS-compliant								

#### Operating and environmental conditions – Suction cup S

Operating and environmental conditions	– Suction cup S			
Material	F	N	S	U
Operating medium	Atmospheric air based on ISO	8573-1:2010[7:-:-]		
Ambient temperature [°C]	-10 +200	-10 +70	-30 +180	-20 +60
Corrosion resistance class CRC <sup>1)</sup>	1 - Low corrosion stress			
Food-safe	-	-	As per manufacturer's declaration	-

1) More information: www.festo.com/x/topic/crc

General technical data – Suction	cup holder HA/HB/HC/HCL		Datasheets → Inte	rnet: es		
/acuum port [1]			G1/4			
IA – Vacuum port on top, mount	ing with lock nut, without height compen	sator				
1	Mounting thread [2]		M24x2			
	Suction cup mounting [3]		M20x2			
	Nominal width	[mm]	10			
	Volume	[cm <sup>3</sup> ]	7.234			
	Ambient temperature	[°C]	-10 +60			
	Weight	[g]	200			
	Materials of holder		Tempered steel, high-alloy steel			
З	Note on materials		RoHS-compliant	-		
HB – Vacuum port on the side. m	ounting with female thread, without heig	t compensa	tor			
2	Mounting thread [2]	,	M16			
	Suction cup mounting [3]		M20x2			
	Nominal width	[mm]	10			
	Volume	[cm <sup>3</sup> ]	7.250			
	Ambient temperature	[°C]	-10 +60			
	Weight	[g]	271			
	Materials of holder		Tempered steel, high-alloy steel			
	Note on materials		RoHS-compliant			
3						
	ing with lock nut, with height compensate	or	Magya			
	Mounting thread [2] Suction cup mounting [3]		M30x2 M20x2			
	Nominal width	[mm]	10			
	Volume	[cm <sup>3</sup> ]	11.537			
	Height compensator	[mm]	20			
ſĬŢŢŢŢŢ	Spring force (normal/min. length)	[N]	12/22			
Lb	Ambient temperature	[°C]	-10 +60			
	Weight	[g]	472			
	Materials of holder	151	Tempered steel, high-alloy steel			
3	Note on materials		RoHS-compliant			
HCL – Vacuum port on top, moun	ting with lock nut, with long height comp Mounting thread [2]	ensator	M30x2			
	Suction cup mounting [3]		M20x2			
	Nominal width	[mm]	10			
	Volume	[cm <sup>3</sup> ]	16.325			
∠↓→↓↓	Height compensator	[mm]	40			
	Spring force (normal/min. length)	[N]	15/32			
	Ambient temperature	[°C]	-10 +60			
	Weight	[g]	560			
	Materials of holder	191	Tempered steel, high-alloy steel			
	Note on materials		RoHS-compliant			
З						

General technical data – Suctio	on cup holder HD/HDL			Datasheets → Internet: esh
Vacuum port [1]			G1/4	
HD – Vacuum port on the side,	mounting with lock nut, with height compe	ensator		
1	Mounting thread [2]		M30x2	
A	Suction cup mounting [3]		M20x2	
	Nominal width	[mm]	10	
	Volume	[cm <sup>3</sup> ]	13.171	
L, Ì, J	Height compensator	[mm]	20	
┟┼┺	Spring force (normal/min. length)	[N]	12/22	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	472	
3	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
HDL – Vacuum port on the side,	, mounting with lock nut, with long height	compensator		
A	Mounting thread [2]		M30x2	
	Suction cup mounting [3]		M20x2	
ļ.	Nominal width	[mm]	10	
_ [_++]	Volume	[cm <sup>3</sup> ]	16.968	
	Height compensator	[mm]	40	
l i l	Spring force (normal/min. length)	[N]	15/32	
	Ambient temperature	[°C]	-10 +60	
	Weight	[g]	560	
ЦЦ	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
3				

Datasheet

Size	– Suction cup Ø	ø2	ø4	Ø6	Ø8	Ø 10	Ø 15	Ø 20	ø 30	Ø 40	Ø 50	Condi-	Code	Enter
Holder size		1	L 2 3 4								tions		code	
Module no.	:	189167	189168	189169	189170	189171	189172	189173	189174	189175	189176			
Gripper functio	n	Suction g	ripper					•					ESG	ESG
Suction cup Ø	[mm]	2	4	6	8	10	15	20	30	40	50			
Suction cup	Flat	FPM (fluc	ro rubber)						•				-SF	
shape/suction		NBR (nitrile rubber)											-SN	
cup material		BR (butadiene rubber), anti-static											-SNA	
		VMQ (silicone)											-SS	
		PUR (polyurethane)											-SU	
	Extra deep	-					FPM (fluc	oro rubber)	)				-EF	
		-					NBR (nitr	ile rubber)	)				-EN	
		-					VMQ (sili	cone)					-ES	
		-					PUR (polyurethane)						-EU	
	Bellows, 1.5	-			NBR	– NBR (nitrile rubber)						-BN		
convoluti	convolutions	-				VMQ	-	– VMQ (silicone)					-BS	
		-				PUR	-	PUR (pol	yurethane)				-BU	
		- Vulkollan®								-BT				
	Bellows, 3.5	-				NBR	-	NBR (nitr	ile rubber)				-CN	
	convolutions	-				VMQ	-	VMQ (sili	cone)				-CS	
	Deep	-				,		,	Vulkollan	®			-GT	
Suction cup ho	lder	Male thre	ead, 2 nuts	, connecti	on on top								-HA	
		Female th	nread, con	nection or	the side	9						-HB		
		Male thre	Male thread, 2 nuts, connection on top, height compensation									-HC		
		-	<ul> <li>Male thread, 2 nuts, connection on top, long height compensation</li> </ul>									-HCL		
		Male thre	Male thread, 2 nuts, connection on the side, height compensation										-HD	
		-	Male thre	ad, 2 nuts	s, connecti	on on the s	side, long l	height com	pensation				-HDL	
		External t	thread, poi	rt on top, s	screw-in th	read							-HE	
		Male thre	Male thread, connection at top, screw-in thread, height compensator									-HF		
Vacuum conne	ction		onnector f									[1]	-QS	
		Barbed fi	tting conn	ection for	plastic tub	ing						[1]	-PK	
Angle compens	ation	-				Universa	l joint with	30° defle	ction				-WA	
Vacuum filter		-				Vacuum f	filter						-F	
Suction cup ins	sert	-				PE	-	PE				[2]	-ES	

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Size		Ø 60	Ø 60 Ø 80 Ø 100 Ø 150 Ø 200						Enter
Holder size		5			6		tions		code
Module no.		189177	189177 189178 189179 189180 189181						
Gripper functio	n	Suction grippe	er					ESG	ESG
Suction cup Ø	[mm]	60	80	100	150	200			
Suction cup	Flat	FPM (fluoro ru	bber)					-SF	
shape/suction		NBR (nitrile ru	bber)					-SN	
cup material		VMQ (silicone)		-SS					
		PUR (polyuret	nane)					-SU	
	Extra deep	FPM (fluoro ru	bber)		-			-EF	
		NBR (nitrile ru	bber)		-			-EN	
		VMQ (silicone)	1		-			-ES	
		PUR (polyuret	nane)		-			-EU	
	Bellows, 1.5	-	NBR (nitrile rubber	) –				-BN	
	convolutions	-	VMQ (silicone)	-					
		-	PUR (polyure- thane)	-				-BU	
		_	Vulkollan®	-				-BT	
	Deep	Vulkollan®		•	-			-GT	
Suction cup ho	lder	Male thread, 2	nuts, connection on top					-HA	
		Female thread	, connection on the side					-HB	
		Male thread, 2	nuts, connection on top	, height compens	ation			-HC	
		Male thread, 2	nuts, connection on top	, long height com	pensation			-HCL	
Male thread, 2 nuts, connection on the side, height compensation								-HD	
		Male thread, 2	nuts, connection on the	side, long height	compensation			-HDL	
		External threa	d, port on top, screw-in tl	hread	-			-HE	
Vacuum conneo	ction	Threaded conr	nection				[3]	-G	
Angle compens	ation	Universal joint	with 30° deflection		_			-WA	

[1] QS, PKNot with suction cup holder HE, HF.

[3] G Cannot be combined with suction cup holder HE

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Size (suction cup	dimensions)	4x10	4x20	6x10	6x20	8x20	8x30	10x30	Condi-	Code	Enter
Holder size		4									code
Module no.		189182	9182 189183 189184 189185 189186 189187 189188								
Gripper function		Suction grip	per							ESG	ESG
Suction cup size	[mm]	4x10	4x20	6x10	6x20	8x20	8x30	10x30			
Suction cup shape/suction cup material	Flat	NBR (nitrile 1	rubber)							-ON	-ON
Suction cup hold	er	Male thread,	2 nuts, conne	ction on top						-HA	
		Female threa	id, connection	on the side						-HB	
		Male thread,	2 nuts, conne	ction on top,	height compen	sation				-HC	
		Male thread,	2 nuts, conne	ction on top,	long height coi	npensation				-HCL	
		Male thread,	2 nuts, conne	ction on the s	ide, height cor	npensation				-HD	
		Male thread,	2 nuts, conne	ction on the s	ide, long heigh	nt compensatio	on			-HDL	1
		External thre	ad, port on top	o, screw-in th	read					-HE	
		Male thread,	connection at	top, screw-in	thread, height	compensator				-HF	
Vacuum connecti	on	Push-in conr	ector for plast	ic tubing					[1]	-QS	
		Barbed fittin	g connection f	or plastic tubi	ng				[1]	-PK	
Vacuum filter		Vacuum filte	r							-F	

[1] QS, PKNot with suction cup holder HE, HF.

### Ordering table – Suction cup dimensions 15x45 ... 30x90 mm

Size (suction cup dimensions)		15x45	20x60	25x75	30x90	Condi- tions	Code	Enter code
Holder size		5						
Module no.		189189	189190	189191	189192			
Gripper function		Suction gripper					ESG	ESG
Suction cup size	[mm]	15x45	ix45 20x60 25x75 30x90					
Suction cup shape/suction cup material	Flat	NBR (nitrile rubbe	er)		-ON	-ON		
Suction cup holde	er	Male thread, 2 nu	its, connection on top				-HA	
		Female thread, co	nnection on the side				-HB	
		Male thread, 2 nu	its, connection on top, he	ight compensation			-HC	
	Male thread, 2 nuts, connection on top, long height compensation						-HCL	
		Male thread, 2 nu	its, connection on the sid		-HD			
		Male thread, 2 nu	its, connection on the sid	e, long height compensat	ion		-HDL	
		External thread, p	ort on top, screw-in threa	ıd			-HE	
Connection		Threaded connec	tion				-G	