# **Vacuum suction grippers ESG**





### Key features

#### **Product overview**

Suction grippers from Festo offer outstanding functionality and quality.

An extensive, modular range of suction cups with connection attachments, in different shapes, materials and sizes, plus a selection 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.

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#### **Vacuum suction grippers ESG**

Modular products with over 2000 variants

- The ideal solution for transporting workpieces with a wide range of weights, surfaces and shapes
- Choose from:
  - 15 suction cup diameters
  - 6 different materials including antistatic ones
  - 6 suction cup shapes
  - Numerous suction cup holders
  - Optional accessories (vacuum filters and angle compensators)
- Wide range of variants
- A suitable solution for every
- 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

Suction gripper as a complete solution

Suction gripper made of individual components



Vacuum suction grippers ESG





Suction cup holder ESH



Angle compensator ESWA (Optional)



Vacuum filter ESF (Optional)



Vacuum suction cup ESS





Suction cup ESV (Optional)



Datasheets → Internet: vas

### 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





#### 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

- Numerous suction cup holders:
  - With and without height compensators
  - With various tubing connections: push-in connector, barbed connector, thread
- Optional accessories: vacuum filters, angle compensators and suction cup inserts

Even extremely small workpieces, e.g. in the electronics industry, can be conveyed gently and accurately.

All parts of the modular range can also be replaced quickly and easily if requirements change.
Suction grippers can be ordered complete, or as individual components.

#### Cost savings thanks to:

- Modular range
- The low-cost suction cup can be easily replaced (wearing part)
- · Reduced warehousing
- · Long service life
- Low investment costs
- Large range including industry-specific solutions

#### 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.

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



#### 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. The benefit to you:

By adding individual components you can create new areas of application for your suction gripper ESG.

#### Suction cup holder ESH

The area of application determines which is the right suction cup holder to use.

The suction cup or accessory is attached directly to the suction cup holder.

- 6 holder sizes
- 8 holder types
- 3 tubing connector options

#### Datasheets → Internet: esh



#### Vacuum suction cup ESS

The suction cup consists of the suction cup itself, plus the support plate with mounting. Here too, the area of application of the suction gripper determines which is the right suction cup to use.

- 6 connection sizes: a tubing connection for every holder size
- 2 suction cup shapes
- 6 suction cup designs
- 6 suction cup materials

#### Accessories

Vacuum filter ESF

For protecting vacuum generators from contamination or damage



#### Datasheets → Internet: esf

net: esf Angle compensator ESWA

 The angle compensator ensures maximum suction cup grip for materials with uneven surfaces.



Datasheets → Internet: ess



#### Suction-cup insert OASI

 For conveying unstable and fragile workpieces



#### Datasheets → Internet: oasi

### 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

### Suction cup with connector

Materials:

- FPM (fluoro rubber) for suction cup @ 2 ... 200 mm
- NBR (nitrile rubber) for suction cup @ 2 ... 200 mm
- BR (butadiene rubber) antistatic for suction cup @ 2 ... 50 mm
- VMQ (silicone) for suction cup @ 2 ... 200 mm
- PUR (polyurethane) for suction cup @ 2 ... 200 mm
- Vulkollan<sup>®</sup> for suction cup @ 30 ... 100 mm

#### Suction cup shape

For suction cup @ [mm]

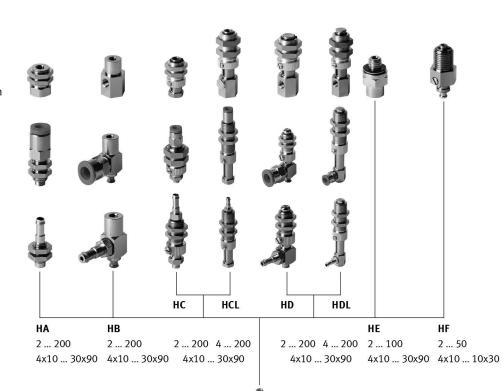
Round, flat Round, extra deep Round, flat 2 ... 200 15 ... 100

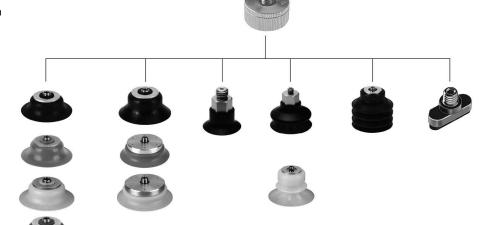
30 ... 100

Round, bellows 1.5 convolutions 3.5 convolutions Oval, flat 10 ... 80

Round, bellows 10 ... 50

4x10 ... 30x90





Registered trademark of the Bayer Material Science AG Group

### Type codes

### ESG, round design

2       2 mm diameter         4       4 mm diameter         6       6 mm diameter         8       8 mm diameter         10       10 mm diameter         15       15 mm diameter         20       20 mm diameter         30       30 mm diameter         40       40 mm diameter         50       50 mm diameter         60       60 mm diameter         80       80 mm diameter         100       100 mm diameter         150       150 mm diameter         200       200 mm diameter         003       Standard suction cup	O02   Suction cup size	001	Series	
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6 6 mm diameter 8 8 mm diameter 10 10 mm diameter 15 15 mm diameter 20 20 mm diameter 30 30 mm diameter 40 40 mm diameter 50 50 mm diameter 60 60 mm diameter 80 80 mm diameter 100 100 mm diameter 150 150 mm diameter 200 200 mm diameter	6 6 mm diameter  8 8 mm diameter  10 10 mm diameter  15 15 mm diameter  20 20 mm diameter  30 30 mm diameter  40 40 mm diameter  50 50 mm diameter  60 60 mm diameter  80 80 mm diameter  100 100 mm diameter  150 150 mm diameter  200 200 mm diameter  5 mm diameter	2	2 mm diameter	
8     8 mm diameter       10     10 mm diameter       15     15 mm diameter       20     20 mm diameter       30     30 mm diameter       40     40 mm diameter       50     50 mm diameter       60     60 mm diameter       80     80 mm diameter       100     100 mm diameter       150     150 mm diameter       200     200 mm diameter       None     None	8         8 mm diameter           10         10 mm diameter           15         15 mm diameter           20         20 mm diameter           30         30 mm diameter           40         40 mm diameter           50         50 mm diameter           60         60 mm diameter           80         80 mm diameter           100         100 mm diameter           200         200 mm diameter           003         Standard suction cup           None           SF         FPM (fluoro rubber)           SN         NBR (nitrile rubber)	4	4 mm diameter	
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100         100 mm diameter           150         150 mm diameter           200         200 mm diameter           003         Standard suction cup           None	100         100 mm diameter           150         150 mm diameter           200         200 mm diameter           003         Standard suction cup           None         SF           FPM (fluoro rubber)           SN         NBR (nitrile rubber)	60	60 mm diameter	
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003 Standard suction cup None	003   Standard suction cup	150	150 mm diameter	
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	SF FPM (fluoro rubber) SN NBR (nitrile rubber)	003	Standard suction cup	
SF FPM (fluoro rubber)	SN NBR (nitrile rubber)			
			None	
		SF		
			FPM (fluoro rubber)  NBR (nitrile rubber)	
SU PUR (polyurethane)	SU PUR (polyurethane)	SN	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)	
SNA BR (butadiene rubber), anti-static	SNA BR (butadiene rubber), anti-static	SN SS	FPM (fluoro rubber)  NBR (nitrile rubber)	
		SN SS SU	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)	
O04 Suction cup with connector extra deep	004 Suction cup with connector extra deep	SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static	
004 Suction cup with connector extra deep  None		SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep	
None	None	SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None	
None  EF FPM (fluoro rubber)	None  EF FPM (fluoro rubber)	SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None  FPM (fluoro rubber)	
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None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)  EU PUR (polyurethane)  005 Bellows, 1.5 convolutions  None	None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)  EU PUR (polyurethane)  005 Bellows, 1.5 convolutions  None	SN SS SU SNA 004 EF EN ES EU	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None  FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  Bellows, 1.5 convolutions  None	
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SNA BR (butadiene rubber), anti-static	SNA BR (butadiene rubber), anti-static	SN SS	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)	
on (butagiene lubber), anti-static	SNA BK (butadiene lubber), anti-static	SN SS SU	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)	
		SN SS SU	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)	
		SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static	
		SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep	
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None	None	SN SS SU SNA	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None	
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None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)	None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)	SN SS SU SNA 004 EF EN ES	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None  FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)	
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None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)  EU PUR (polyurethane)  005 Bellows, 1.5 convolutions  None  BN NBR (nitrile rubber)  BS VMQ (silicone)	None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)  EU PUR (polyurethane)  005 Bellows, 1.5 convolutions  None  BN NBR (nitrile rubber)  BS VMQ (silicone)	SN SS SU SNA  004  EF EN ES EU  005	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None  FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  Bellows, 1.5 convolutions  None  NBR (nitrile rubber)  VMQ (silicone)  VMQ (silicone)	
None  EF FPM (fluoro rubber)  EN NBR (nitrile rubber)  ES VMQ (silicone)  EU PUR (polyurethane)  005 Bellows, 1.5 convolutions  None  BN NBR (nitrile rubber)  BS VMQ (silicone)	None	SN SS SU SNA  004  EF EN ES EU  005  BN BS BT	FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  BR (butadiene rubber), anti-static  Suction cup with connector extra deep  None  FPM (fluoro rubber)  NBR (nitrile rubber)  VMQ (silicone)  PUR (polyurethane)  Bellows, 1.5 convolutions  None  NBR (nitrile rubber)  VMQ (silicone)  VMQ (silicone)  VMQ (silicone)  VMQ (silicone)  VMQ (silicone)  Vulkollan®	

006	Bellows, 3.5 convolutions
	None
CN	NBR (nitrile rubber)
CS	VMQ (silicone)
007	Suction cup with connector, deep
	None
GT	Vulkollan®
008	Suction cup holder
НА	Male thread, 2 nuts, connection on top
НВ	Female thread, connection on side
НС	Male thread, 2 nuts, connection on top, height compensation
HCL	Male thread, 2 nuts, connection on top, long height compensa- tion
HD	Male thread, 2 nuts, connection on the side, height compensa- tion
HDL	Male thread, 2 nuts, connection on the side, long height com- pensation
HE	Male screw-in thread, connection on top
HF	Male screw-in thread, connection on top, height compensation
009	Vacuum connection
	None
G	Threaded connection
PK	Barbed fitting connection
QS	Push-in connector
010	Angle compensator
	None
WA	Ball joint with 30° deflection
011	Filters
	None
F	Filters
012	Suction cup insert
	None

 $<sup>^{\</sup>circledR}$  Registered trademark of the Bayer Material Science 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)

004	Suction cup holder	
НА	Male thread, 2 nuts, connection on top	
НВ	Female thread, connection on side	
НС	Male thread, 2 nuts, connection on top, height compensation	
HCL	Male thread, 2 nuts, connection on top, long height compensation	
HD	Male thread, 2 nuts, connection on the side, height compensation	
HDL	Male thread, 2 nuts, connection on the side, long height compensation	
HE	Male screw-in thread, connection on top	
HF	Male screw-in thread, connection on top, height compensation	

005	Vacuum connection	
	None	
G	Threaded connection	
PK	Barbed fitting connection	
QS	Push-in connector	

006	Filters	
	None	
F	Filters	

#### Holder size 1

Suction cup shape:

For suction cup Ø 2/4 mm

• Round, flat



General techr	nical data – Suction cup S			Datasheets → Internet: ess
Suction cup s	hape		Suction cup Ø [mm]	
			2	4
S – round, fla	t: material FPM, NBR, BR, VMQ (silicone), PUR			
P	Connection suction cup holder		O.D. 3 mm <sup>1)</sup>	O.D. 3 mm <sup>1)</sup>
121	Nominal width	[mm]	0.6	1.2
	Holding force at nominal operating pressure –0.7 bar	[N]	0.1	0.46
	Suction cup volume	[cm <sup>3</sup> ]	0.002	0.008
	Min. workpiece radius	[mm]	10	10
	Weight	[g]	0.1	0.1

<sup>1)</sup> Is inserted into the suction cup holder.

Material types – Suction cup S							
Material	F	N	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	Operating and environmental conditions – Suction cup S							
Material	F	N	NA	S	U			
Operating medium 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	_			

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

General technical data – Suction cup	holder HA/HB/HC/HCL			Datasheets → Internet: esh
Vacuum port [1]			QS-4	PK-3
HA – Vacuum port on top, mounting w	vith lock nut, without height compens	sator		
1 1	Mounting thread [2]		M6x0.75	M5x0.5
	Suction cup mounting [3]	,	Ø 3 mm	ø3 mm
ГГ	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
IB – Vacuum port on the side, mount	ing with female thread, without heig	ht compensa	tor	
2 2	Mounting thread [2]		M3	M3
	Suction cup mounting [3]	,	Ø 3 mm	ø 3 mm
H H	Nominal width	[mm]	3	2.5
¦#AANA I! <del>Baa</del> na	Volume	[cm <sup>3</sup> ]	0.228	0.108
	Ambient temperature	[°C]	0+60	-10 +60
3 3	Weight	[g]	5	4
2 2	Materials of holder	107	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 w		or	Tues	140 0 75
	Mounting thread [2]		M12x1	M8x0.75
	Suction cup mounting [3]		Ø 3 mm	Ø 3 mm
<del></del>	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
[3] [3]	Weight	[g]	17	8
	Materials of holder		Tempered steel, high-alloy steel, POM	
	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
CL – Vacuum port on top, mounting v	with lock nut, with long height comp	ensator		
1 1	Mounting thread [2]		M12x1	M12x1
<del>                                      </del>	Suction cup mounting [3]		Ø 3 mm	ø3 mm
	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
ы — — Н — Н	Seal materials		NBR, steel	NBR, steel
3	Note on materials		RoHS-compliant	RoHS-compliant

General technical data – Suction cup hol	der HD/HDL			Datasheets → Internet: esh
Vacuum port [1]			QS-4	PK-3
HD – Vacuum port on the side, mounting	with lock nut, with height compens	ator		
# #	Mounting thread [2]		M8x0.75	M8x0.75
	Suction cup mounting [3]		ø 3 mm	ø 3 mm
	Nominal width	[mm]	3	1.9
│ <u>┗╁╁</u> ┛ <u>┌</u> <u>┗╁╁</u> ┛	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
UDI Verrore and and the state of the				
HDL – Vacuum port on the side, mountin		npensator	I Maga	1442.4
	Mounting thread [2]		M12x1	M12x1
2 2 2	Suction cup mounting [3]	f 3	Ø 3 mm	Ø 3 mm
	Nominal width	[mm]	3	1.9
│ ┖ <del>┐┆╒</del> ┚ │	Volume	[cm <sup>3</sup> ]	0.272	0.150
	Height compensator	[mm]	10	10
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
	7tinbient temperature	[°C]	0 +60	-10 +60
] ]	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
General technical data – Suction cup hol	der HE			Datasheets → Internet: esh
General technical data – Suction cup hol Vacuum port [1]	der HE		M3	Datasheets → Internet: esh
•		out height co		Datasheets → Internet: esh
Vacuum port [1]		out height co		Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, witho	out height co	ompensator	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2]	out height co	ompensator M3	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3]		mpensator M3 Ø 3 mm	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	mpensator M3 Ø 3 mm 1.2	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm]	M3	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm³] [°C]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm] [cm³] [°C]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1	
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials	[mm] [cm³] [°C]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel	
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm³] [°C]	mpensator  M3 Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P	
Vacuum port [1]  HE – Vacuum port on top, with threaded	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials	[mm] [cm³] [°C]	mpensator  M3 Ø 3 mm  1.2 0.04 -10 +60 1 Tempered steel NBR, steel, wrought aluminium alloy, P ROHS-compliant	
Vacuum port [1]  HE – Vacuum port on top, with threaded  1 2 3	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials	[mm] [cm³] [°C]	mpensator  M3 Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  2  3  General technical data – Suction cup hol Vacuum port [1]	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm³] [°C] [g]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P  ROHS-compliant	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  2  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with	[mm] [cm³] [°C] [g]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P  ROHS-compliant	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  2  3  General technical data – Suction cup hol Vacuum port [1]	connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm³] [°C] [g]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P  ROHS-compliant  M10x1  ensator	OM
Wacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2]	[mm] [cm³] [°C] [g]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P  ROHS-compliant  M10x1  pensator  M10x1	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  2  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3]	[mm] [cm³] [°C] [g] height comp	mpensator  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	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³] [°C] [g]  height comp	mpensator  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	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm³] [°C] [g]  height comp [mm] [cm³] [mm]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P RoHS-compliant  M10x1  ensator  M10x1  Ø 3 mm  2  0.108  2.6	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length)	[mm] [cm³] [°C] [g]  height comp  [mm] [cm³] [mm] [N]	mpensator  M3  Ø 3 mm  1.2  0.04  -10 +60  1  Tempered steel  NBR, steel, wrought aluminium alloy, P RoHS-compliant  M10x1  ensator  M10x1  Ø 3 mm  2  0.108  2.6  2/4	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature	[mm] [cm³] [°C] [g]  height comp  [mm] [cm³] [mm] [N] [°C]	mpensator  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	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  3  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature Weight	[mm] [cm³] [°C] [g]  height comp  [mm] [cm³] [mm] [N]	M3	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature Weight Materials of holder	[mm] [cm³] [°C] [g]  height comp  [mm] [cm³] [mm] [N] [°C]	M3	OM
Vacuum port [1]  HE – Vacuum port on top, with threaded  3  General technical data – Suction cup hol Vacuum port [1]  HF – Vacuum port on top, with threaded	connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature Weight	[mm] [cm³] [°C] [g]  height comp  [mm] [cm³] [mm] [N] [°C]	M3	OM

#### Holder size 2

Suction cup shape:

For suction cup Ø 6/8 mm

• Round, flat



General techr	General technical data – Suction cup S  Datasheets → Int				
Suction cup s	hape		Suction cup Ø [mm]		
			6	8	
S – round, fla	t: material FPM, NBR, BR, VMQ (silicone), PUR				
<u> </u>	Connection suction cup holder		I.D. 4 mm <sup>1)</sup>	I.D. 4 mm <sup>1)</sup>	
	Nominal width	[mm]	2	2	
9	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	

<sup>1)</sup> Is fitted into the suction cup holder.

Material types – Suction cup S						
Material	F	N	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	5				
Note on materials	RoHS-compliant					

Operating and environmental conditions – Suction cup S						
Material	F	N	NA	S	U	
Operating medium	Atmospheric air based 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					
Special characteristics	_	_	Antistatic	-	-	
Food-safe	_	- As per manufacturer's declaration				

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

General technical data – Suction cu	p holder 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 compen	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
\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\\	Materials of holder	101	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
			· ·	
_	nting with female thread, without heig	tht compensa		T
2	Mounting thread [2]		M4	M4
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
H	Nominal width	[mm]	2	2
▎┆ <i>┼</i> ╟ <u>═</u> ┾╌╫╽Ώ┈╽┆ <del>┈</del> ╏═╚═╫	Volume	[cm <sup>3</sup> ]	0.418	0.188
	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
HC – Vacuum port on top, mounting	with lock nut, with height compensate	or		
<u> </u>	Mounting thread [2]		M12x1	M8x0.75
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	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
┕ <del>┰┊┰</del> ┚ ┖┰ <u>┆┰</u> Ҍ	Ambient temperature	[°C]	0+60	-10 +60
果 吊	Weight	[g]	18	8
3 3	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
<del>_</del>	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HCL Vacuum nart on ton married	which look must with loom beliebs	ancate:	*	
	with lock nut, with long height comp  Mounting thread [2]	ensalur	M12x1	M12x1
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	Nominal width	[mm]		2.2
_ <u></u>		[mm]	2.2	
	Volume Height compensator	[cm <sup>3</sup> ]	0.519	0.398
		[mm]		
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
<sup>┗</sup> ┰┼┰┛ ┖┰┼┰┛	Ambient temperature	[°C]	0 +60	-10 +60
<u> </u>	Weight	[g]	ZO	19
₩ ₩	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
in the table of the table of the table of the table of ta	Seal materials		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant

General technical data - Suction cup hole	der HD/HDL			Datasheets → Internet: esh
Vacuum port [1]			QS-6	PK-4
HD – Vacuum port on the side, mounting	with lock nut, with height compens	ator		
Ф Ф	Mounting thread [2]		M8x0.75	M8x0.75
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
	Nominal width	[mm]	1.8	1.8
│ ┖ <u>┼</u> ┼┛ <u></u>	Volume	[cm <sup>3</sup> ]	0.417	0.183
	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]	15	12
	Materials of holder	191	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials	-	RoHS-compliant	RoHS-compliant
			- North Compliant	None compliant
HDL – Vacuum port on the side, mounting		npensator		
	Mounting thread [2]		M12x1	M12x1
	Suction cup mounting [3]		Ø 4 mm	Ø 4 mm
2	Nominal width	[mm]	2.2	2.2
	Volume	[cm <sup>3</sup> ]	0.260	0.138
	Height compensator	[mm]	10	10
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
▎ <del>┖</del> ╬╫┸╢╚╵┖╬╂	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	33	32
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Seal materials		NBR, steel	NBR, steel
	Note on materials		D 110 11 1	D. HC
General technical data – Suction cup hol			RoHS-compliant	RoHS-compliant  Datasheets → Internet: esh
General technical data – Suction cup hole Vacuum port [1]  HE – Vacuum port on top, with threaded	der HE connection for direct screw-in, witho	out height c	M5 pmpensator	·
Vacuum port [1]	der HE  connection for direct screw-in, without Mounting thread [2]	out height c	M5 pmpensator M5	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, withounting thread [2] Suction cup mounting [3]		M5  mpensator  M5  Ø 4 mm	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, withounting thread [2] Suction cup mounting [3] Nominal width	[mm]	M5  mpensator  M5  Ø 4 mm  2	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, withounting thread [2] Suction cup mounting [3]	[mm]	M5  mpensator  M5  Ø 4 mm	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm³] [°C]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm]	M5  mpensator  M5  Ø 4 mm  2  0.036	·
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm³] [°C]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm] [cm³] [°C]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel  NBR, steel, wrought aluminium alloy, P	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm³] [°C]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	der HE  connection for direct screw-in, without Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials	[mm] [cm³] [°C]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel  NBR, steel, wrought aluminium alloy, P	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	der HE  connection for direct screw-in, withouting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm³] [°C] [g]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel  NBR, steel, wrought aluminium alloy, P  RoHS-compliant	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	der HE  connection for direct screw-in, withouting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder Seal materials Note on materials der HF	[mm] [cm³] [°C] [g]	M5  mpensator  M5  Ø 4 mm  2  0.036  -10 +60  3  Tempered steel  NBR, steel, wrought aluminium alloy, P  RoHS-compliant	Datasheets → Internet: esh
Wacuum port [1]  HE – Vacuum port on top, with threaded of the second of	der HE  connection for direct screw-in, without 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, with	[mm] [cm³] [°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: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with leading thread [2]	[mm] [cm³] [°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  M10x1	Datasheets → Internet: esh
Wacuum port [1]  HE – Vacuum port on top, with threaded of the second of	der HE  connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3]	[mm] [cm³] [°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  censator  M10x1  Ø 4 mm	Datasheets → Internet: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width	[mm] [cm³] [°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  censator  M10x1  Ø 4 mm  2	Datasheets → Internet: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with 1 Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm³] [°C] [g]  height comp	M5  pmpensator  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	Datasheets → Internet: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with 1 Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³] [oC] [g]  height comp [mm] [cm³] [mm]	M5  mpensator  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: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with it is mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length)	[mm] [cm³] [°C] [g]  height comp [mm] [cm³] [mm] [N] [°C]	M5  mpensator  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	Datasheets → Internet: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length) Ambient temperature	[mm] [cm³] [°C] [g]  height comp [mm] [cm³] [mm]	M5  mpensator  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: esh
General technical data – Suction cup hole Vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port [1]  HF – Vacuum port on top, with threaded of the vacuum port on top, with the vacuum port on top, with threaded of the vacuum port on top, with the vacuum port	der HE  connection for direct screw-in, without 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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min, length) Ambient temperature Weight	[mm] [cm³] [°C] [g]  height comp [mm] [cm³] [mm] [N] [°C]	M5    M5	Datasheets → Internet: esh

Note on materials

RoHS-compliant

#### 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



	al data – Suction cup S/E/B/C		1	Datasheets → Internet: ess
Suction cup shap	pe		Suction cup Ø [mm]	
			10	15
S – round, flat: r	material 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	deep: material FPM, NBR, VMQ (silicone), PUR			
<b>(</b>	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, bello	ws 1.5 convolutions: material NBR, VMQ (silicone), PUR		,	
<u></u>	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, bello	ws 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	N	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					
Note on materials	RoHS-compliant					

Operating and environmental conditions – Suction cup						
Material	F	N	NA	S	U	
Operating medium	Atmospheric air based o	Atmospheric air based 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					
Special characteristics	-	- Antistatic				
Food-safe	-	-	-	As per manufacturer's	-	
				declaration		

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

General technical	l data – Suction cup he	older HA/HB/HC/HCL			Datasheets → Internet: esh
Vacuum port [1]	•			QS-6	PK-4
HA – Vacuum port	t on top, mounting wit	th lock nut, without height compen	sator		
1	[1]	Mounting thread [2]		M12x1	M8x0.75
==	<u></u>	Suction cup mounting [3]		M4	M4
	Щ	Nominal width	[mm]	5	2.5
		Volume	[cm <sup>3</sup> ]	0.520	0.274
2		Ambient temperature	[°C]	0 +60	-10 +60
	2	Weight	[g]	20	10
للنك		Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
[3]	Щ	Seal materials		NBR	NBR, steel
	3	Note on materials		RoHS-compliant	RoHS-compliant
HB – Vacuum por	t on the side, mountin	g 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
	لللل	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	t on top, mounting wit	th lock nut, with height compensate	or		
[1]	1	Mounting thread [2]		M14x1	M14x1
— ➡	<del> </del>	Suction cup mounting [3]		M4	M4
	Д	Nominal width	[mm]	3.4	2.5
	<b>^</b>	Volume	[cm <sup>3</sup> ]	1.041	0.789
	2	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
اتا	a T	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
길	[2]	Seal materials		NBR, steel	NBR, steel
		Note on materials		RoHS-compliant	RoHS-compliant
HCL – Vacuum po	rt on top, mounting w	ith lock nut, with long height comp	ensator		
1	1	Mounting thread [2]		M14x1	M14x1
鬥	Ħ	Suction cup mounting [3]		M4	M4
	$\blacksquare$	Nominal width	[mm]	3.4	3
		Volume	[cm <sup>3</sup> ]	1.616	1.383
		Height compensator	[mm]	20	20
2	2	Spring force (normal/min. length)	[N]	1/3	1/3
_ FF		Ambient temperature	[°C]	0 +60	-10 +60
		Weight	[g]	48	46
		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

General technical data – Suction cup hold	der HD/HDL			Datasheets → Internet: esh
Vacuum port [1]			QS-6	PK-4
HD – Vacuum port on the side, mounting	with lock nut, with height compensa	itor		
THE THE	Mounting thread [2]		M14x1	M14x1
│┌ <del>┞┆</del> ╀╮	Suction cup mounting [3]	1	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
3	Weight	[g]	46	44
	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
UDI Vasuum nort on the side mounting	with last nut with lang haight son	noncator		
HDL – Vacuum port on the side, mounting		ipensator	M14x1	M14x1
	Mounting thread [2] Suction cup mounting [3]		M4	M4
	Nominal width	[mm]	3.3	3
│ <sub>┍</sub> ╇┼╇	Volume	[mm]	0.474	0.252
		[cm <sup>3</sup> ]	20	20
	Height compensator	[mm] [N]	1/3	1/3
│ ┕┰┼┰ <b>╊</b> ┕┰┼┰ <b>╊</b>	Spring force (normal/min. length)  Ambient temperature	[°C]	0+60	-10 +60
	Weight		65	63
	Materials of holder	[g]	-	
	Seal materials		Tempered steel, high-alloy steel, POM NBR, steel	Tempered steel, high-alloy steel NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
3	Note on materials		Kons-compliant	Kons-compliant
Congral technical data. Suction cun hole	dor UE			Datachasts > Internet, ach
General technical data – Suction cup hold	der HE		G1/8	Datasheets → Internet: esh
Vacuum port [1]	:		G1/8	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, witho	ut height co	ompensator	Datasheets → Internet: esh
Vacuum port [1]	connection for direct screw-in, witho Mounting thread [2]	ut height co	ompensator G1/8	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]		ompensator G1/8 M4	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, witho Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	mpensator G1/8 M4	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	Connection for direct screw-in, witho Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm]	mpensator G1/8 M4 3 0.106	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm³] [°C]	mpensator G1/8 M4 3 0.106 -10 +60	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of	connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight	[mm]	mpensator  G1/8  M4  3  0.106  -10 +60  11	Datasheets → Internet: esh
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  Mounting thread [2] Suction cup mounting [3] Nominal width  Volume Ambient temperature  Weight Materials of holder	[mm] [cm³] [°C]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel	
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials	[mm] [cm³] [°C]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, Properties of the steel of th	
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  Mounting thread [2] Suction cup mounting [3] Nominal width  Volume Ambient temperature  Weight Materials of holder	[mm] [cm³] [°C]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel	
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials	[mm] [cm³] [°C]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, Properties of the steel of th	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials	[mm] [cm³] [°C]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Portion of the compliant	
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	Connection for direct screw-in, witho  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder  Seal materials  Note on materials  der HF	[mm] [cm³] [°C] [g]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, Properties of the compliant M14x1	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	connection for direct screw-in, witho  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, with head and the sc	[mm] [cm³] [°C] [g]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, Properties of the compliant M14x1 ensator	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	connection for direct screw-in, witho  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, with head [2]	[mm] [cm³] [°C] [g]	mpensator G1/8 M4 3 0.106 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, Prediction of the compliant M14x1 ensator M14x1	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	connection for direct screw-in, witho  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, with head [2]  Suction cup mounting [3]	[mm] [cm³] [°C] [g]	mpensator G1/8 M4 3 0.106 -10+60 11 Tempered steel NBR, steel, wrought aluminium alloy, Prediction of the compliant M14x1 ensator M14x1 M4	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  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, with h Mounting thread [2] Suction cup mounting [3] Nominal width	[mm] [cm³] [°C] [g]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Properties of the compliant  M14x1  ensator  M14x1  M4  3.3	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	Connection for direct screw-in, witho  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, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³] [°C] [g]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Portion of the compliant  M14x1  ensator  M14x1  M4  3.3  0.400	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second of	Connection for direct screw-in, witho  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, with Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Height compensator	[mm] [cm³] [°C] [g]  eight comp [mm] [cm³] [mm]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Portion of the compliant  M14x1  ensator  M14x1  M4  3.3  0.400  6	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second se	Connection for direct screw-in, witho  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, with harmonic mounting [3]  Suction cup mounting [3]  Nominal width  Volume  Height compensator  Spring force (normal/min. length)	[mm] [cm³] [°C] [g]  meight comp [mm] [cm³] [mm] [N]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, PR  ROHS-compliant  M14x1  ensator  M14x1  M4  3.3  0.400  6  6/12	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second se	Connection for direct screw-in, witho  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, with harmonic mounting [3]  Suction cup mounting [3]  Nominal width  Volume  Height compensator  Spring force (normal/min. length)  Ambient temperature	[mm] [cm³] [°C] [g]  meight comp [mm] [cm³] [mm] [N] [°C]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, PR  ROHS-compliant  M14x1  ensator  M14x1  M4  3.3  0.400  6  6/12  -10 +60	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second se	Connection for direct screw-in, witho  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, with had a mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Height compensator  Spring force (normal/min. length)  Ambient temperature  Weight	[mm] [cm³] [°C] [g]  meight comp [mm] [cm³] [mm] [N]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Properties of the p	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the second se	Connection for direct screw-in, witho  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, with harmonic mounting [3]  Nominal width  Volume  Height compensator  Spring force (normal/min. length)  Ambient temperature  Weight  Materials of holder	[mm] [cm³] [°C] [g]  meight comp [mm] [cm³] [mm] [N] [°C]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Properties of the p	DM
Vacuum port [1]  HE – Vacuum port on top, with threaded of the control of the con	Connection for direct screw-in, witho  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, with had a mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Height compensator  Spring force (normal/min. length)  Ambient temperature  Weight	[mm] [cm³] [°C] [g]  meight comp [mm] [cm³] [mm] [N] [°C]	mpensator  G1/8  M4  3  0.106  -10 +60  11  Tempered steel  NBR, steel, wrought aluminium alloy, Properties of the p	DM

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 =-0.75 bar	[l/min]	100
	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				Datasheets → Internet: oasi
For round suction cup, bellows 3.5 convol	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	

#### Holder size 4

For suction cup Ø 20/30/40/50 mm

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



Suction cup shap	e		Suction cup Ø [mm]				
			20	30	40	50	
S – round, flat: m	naterial FPM, NBR, BR, VMQ (silicone), PUR						
(9)	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	
– round, extra	deep: material FPM, NBR, 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]	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	
- round, bellow	vs 1.5 convolutions: material NBR, VMQ (silicone), PUR, V	ulkollar	® (technical va	lues in brackets)	•		
	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)	
- round, bellov	vs 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	
- round, deep:	material Vulkollan®						
<b>3</b>	Connection suction cup holder		_	M6	M6	M6	
	Nominal width	[mm]	_	2.5	2.5	2.5	
	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	

Registered trademark of the Bayer MaterialScience AG Group

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

General technic	al data – Suction cup O								
Suction cup shape				Suction cup size [mm]					
			4x10	4x20	6x10	6x20	8x20	8x30	10x30
O – oval, flat: m	aterial NBR								
<b>Q</b>	Connection suction 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 nominal operating pressure -0.7 bar	[N]	2	3.4	2.9	5.9	8	10.9	15.2
	Suction cup volume	[cm <sup>3</sup> ]	0.064	0.112	0.106	0.196	0.256	0.376	0.350
<u> </u>	Weight	[g]	2	2.5	2	2.5	2.5	3	2.9

Material types – Suction cup								
Material		F	N	NA	S	U	Т	
Shore hardness		60 ±5	60 ±5	50 ±5	50 ±5	60 ±5	72 ±5	
Suction cup		FPM	NBR	BR	VMQ (silicone)	PUR	Vulkollan®	
		Colour: grey	Colour: black	Colour: black/ white dot	Colour: transparent	Colour: blue	Colour: reddish brown	
Threaded plug for suction	20, 30	Nickel-plated brass					Wrought	
cup Ø [mm]		Galvanised and chro	ome-plated steel				aluminium alloy	
	40, 50	Nickel-plated brass					Wrought	
		Nickel-plated wroug	Nickel-plated wrought aluminium alloy					
		Galvanised and chro	ome-plated steel				1	
Note on materials		RoHS-compliant						

Operating and environmental conditions – Suction cup							
Material	F	N	NA	S	U	Т	
Operating medium	Atmospheric air bas	sed on ISO 8573-1:20	010 [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	ress				2 - Moderate corrosion stress	
Special characteristics	_	_	Antistatic	_	_	_	
Food-safe	-	-	-	As per manufac- turer's declaration	-	_	

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

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

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]	·	M14x1	M12x1
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	5	2.5
│ <sub>─</sub> ┌ <sup>┸┯┼┯┸</sup> ┐ ┟┼ <del>╽</del>	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
HB – Vacuum port on the side, mounting	with female thread, without heigh	nt compensa	tor	
2 2	Mounting thread [2]	, , , ,	M6	M6
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	5	2.5
╽┟┰┼┰┪┢═╾╖╶┟┰┼┰╏╍╾┈╶	Volume	[cm <sup>3</sup> ]	0.646	0.416
<del>┃</del> ┃┃┆┞╫╬═ <u>┟</u> ╫╵╝┃┃┆┼╠ <del>╏═╘═</del> ╫╵╝	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
HC – Vacuum port on top, mounting with	lock nut, with height compensator	<u> </u>		
1 1	Mounting thread [2]		M14x1	M14x1
	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	3.4	2.5
│ <b>┟</b> ╧╤┷┐ <b>┟</b> ┷┷┷┪	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
│ <del>┌┼</del> ╀╮ <del>┌┼</del> ╀╮	Weight	[g]	33	31
	Materials of holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
3	Seal materials		NBR, steel	NBR, steel
	Note on materials	,	RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting witl	h lock nut, with long height compe	ensator		
1 1	Mounting thread [2]		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
	Spring force (normal/min. length)	[N]	1/9	1/9
	Ambient temperature	[°C]	0 +60	-10 +60
	Weight	[g]	47	45
	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				

ieneral technical data – Suction cup hold	ler HD/HDL			Datasheets → Internet: e
acuum port [1]			QS-6	PK-4
ID – Vacuum port on the side, mounting v	with lock nut, with height compen	sator		
	Mounting thread [2]		M14x1	M14x1
╶╀┼╀	Suction cup mounting [3]		M6	M6
	Nominal width	[mm]	5	3
	Volume	[cm <sup>3</sup> ]	0.678	0.449
	Height compensator	[mm]	6	6
	Spring force (normal/min. length)	[N]	5/10	5/10
	Ambient temperature	[°C]	0+60	-10 +60
3	Weight	[g]	45	43
	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
DL – Vacuum port on the side, mounting		ompensator	Tana a	
	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
				Tempered steel, high-alloy stee
+++	Materials of holder		Tempered steel, high-alloy steel, POM	rempered steet, mgn-alloy stee
	Materials of holder Seal materials		Tempered steel, high-alloy steel, POM NBR, steel	NBR, steel
├ <del>┊</del> ╁ <sub>───</sub>	Seal materials Note on materials		NBR, steel RoHS-compliant	
eneral technical data – Suction cup hold	Seal materials  Note on materials  ler HE		NBR, steel RoHS-compliant G1/8	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold acuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials ler HE onnection for direct screw-in, with	hout height c	NBR, steel RoHS-compliant G1/8 ompensator	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold acuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Her HE  Connection for direct screw-in, with Mounting thread [2]	hout height c	NBR, steel RoHS-compliant  G1/8  ompensator G1/8	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Her HE  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3]	hout height c	NBR, steel RoHS-compliant  G1/8  ompensator G1/8 M6	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold cuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Her HE  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold cuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Ier HE  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold cuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Her HE  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width	[mm]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold cuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Ier HE  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  ler HE  onnection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature	[mm] [cm³] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60	NBR, steel RoHS-compliant
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  ler HE  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight	[mm] [cm³] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11	NBR, steel RoHS-compliant  Datasheets → Internet:
eneral technical data – Suction cup hold accum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  ler HE  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Ambient temperature Weight Materials of holder	[mm] [cm³] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11 Tempered steel	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold acuum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Ider HE  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	[mm] [cm³] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11  Tempered steel NBR, steel, wrought aluminium alloy, P	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold accum port [1]  E – Vacuum port on top, with threaded co	Seal materials Note on materials  Ider HE  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	[mm] [cm³] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11  Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold acuum port [1]  E – Vacuum port on top, with threaded compared to the suction cup hold acuum port [1]	Seal materials Note on materials  ler HE  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	[mm] [cm³] [°C] [g]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11  Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant	NBR, steel RoHS-compliant  Datasheets → Internet: €
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded company to the	Seal materials Note on materials  Ier HE  onnection 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  Ier HF  onnection for direct screw-in, with	[mm] [cm³] [°C] [g]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6  4  0.289  -10 +60  11  Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant  M14x1  pensator	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded company to the	Seal materials Note on materials  ler HE  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  ler HF  connection for direct screw-in, with Mounting thread [2]	[mm] [cm³] [°C] [g]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant  M14x1  pensator M14x1	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold icuum port [1]  E – Vacuum port on top, with threaded coum port [1]  eneral technical data – Suction cup hold icuum port [1]  F – Vacuum port on top, with threaded coum port [1]	Seal materials Note on materials  ler HE  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 ler HF  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3]	[mm] [cm³] [°C] [g]	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant  M14x1  pensator M14x1 M6	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold icuum port [1]  E – Vacuum port on top, with threaded coum port [1]  eneral technical data – Suction cup hold icuum port [1]  F – Vacuum port on top, with threaded coum port [1]	Seal materials Note on materials  ler HE  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 ler HF  connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width	[mm] [cm³] [°C] [g]  h height com	NBR, steel RoHS-compliant  G1/8  ompensator G1/8  M6 4 0.289 -10 +60 11 Tempered steel NBR, steel, wrought aluminium alloy, P RoHS-compliant  M14x1  pensator M14x1 M6 4	NBR, steel RoHS-compliant  Datasheets → Internet: €
eneral technical data – Suction cup hold accuum port [1]  E – Vacuum port on top, with threaded compared technical data – Suction cup hold accuum port [1]  F – Vacuum port on top, with threaded compared technical data – Suction cup hold accuum port [1]	Seal materials Note on materials  Ier HE  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 Ier HF  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume	[mm] [cm³] [°C] [g]  h height com [mm] [cm³]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold iccuum port [1]  E – Vacuum port on top, with threaded company is a suction cup hold iccuum port [1]  Eneral technical data – Suction cup hold iccuum port [1]  F – Vacuum port on top, with threaded company is a suction cup hold iccuum port [1]	Seal materials Note on materials  Ier HE  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 Ier HF  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator	[mm] [cm³] [°C] [g]  h height com [mm] [cm³] [mm]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold cuum port [1]  E – Vacuum port on top, with threaded cumport [1]  Eneral technical data – Suction cup hold cuum port [1]  F – Vacuum port on top, with threaded coumport [1]	Seal materials  Note on materials  Iter HE  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  Iter HF  Connection for direct screw-in, with Mounting thread [2] Suction cup mounting [3] Nominal width Volume Height compensator Spring force (normal/min. length)	[mm] [cm³] [°C] [g]  h height com [mm] [cm³] [mm] [N]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet:   OM
eneral technical data – Suction cup hold focus port [1]  E – Vacuum port on top, with threaded compared technical data – Suction cup hold focus port [1]  F – Vacuum port on top, with threaded compared to the compared technical data – Suction cup hold focus port [1]	Seal materials  Note on materials  Ier HE  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  Ier HF  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] [cm³] [°C] [g]  h height com [mm] [cm³] [mm]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet:   OM
eneral technical data – Suction cup hold accum port [1]  E – Vacuum port on top, with threaded compared technical data – Suction cup hold accum port [1]  F – Vacuum port on top, with threaded compared technical data – Suction cup hold accum port [1]	Seal materials  Note on materials  Ider HE  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  Ider HF  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] [cm³] [°C] [g]  h height com [mm] [cm³] [mm] [N]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet: 6
eneral technical data – Suction cup hold acuum port [1]  E – Vacuum port on top, with threaded compared technical data – Suction cup hold acuum port [1]  F – Vacuum port on top, with threaded compared technical data – Suction cup hold acuum port [1]	Seal materials  Note on materials  Ier HE  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  Ier HF  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] [cm³] [°C] [g]  h height com  [mm] [cm³] [mm] [N] [°C]	NBR, steel RoHS-compliant  G1/8  ompensator 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	NBR, steel RoHS-compliant  Datasheets → Internet: €

RoHS-compliant

Note on materials

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

Vacuum filter ESF				Datasheets → Internet: esf
			Suction cup Ø 20 mm,	Suction cup Ø 30/40/50 mm
			Suction cup size 4x10 10x30 mm	
	Pneumatic connection		M6	
	Flow rate at vacuum pressure	[l/min]	260	270
	=-0.75 bar			
	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					Datashee	ets → Internet: oasi
For round suction cup, bellows 3.5 convo	lutions		Suction cup Ø [m	m]		
			20	30	40	50
	Type of mounting		Plug-in			
	Operating pressure	[bar]	-0.95 0			
	Ambient temperature	[°C]	5 +50			
	Food-safe		As per manufactu	rer's declaration		
	Weight	[g]	0.6	2.1	2.9	5.9
	Suction cup insert materials		PE			
	Note on materials		RoHS-compliant			

#### 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



Suction cup sha	cal data – Suction cup S/E/B/G ape		Suction cup Ø [mm]		
			60	80	100
S – round, flat:	material FPM, NBR, VMQ (silicone), PUR		•	<u>'</u>	'
	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
E – round, extra	a deep: material 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]	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
B – round, bell	ows 1.5 convolutions: material NBR, VMQ (silicone), PUR, V	ulkollan	® (technical values in	brackets)	
	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)	-
G – round, deep	p: 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 technica	ıl data – Suction cup O					
Suction cup shape Suction cup size [mm]						
			15x45	20x60	25x75	30x90
O – oval, flat: ma	iterial NBR					
<u></u>	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 Material Science AG Group

Material types – Suction cup	)							
Material		F	N	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 stee	Wrought aluminium					
cupø[mm]		Nickel-plated wrou	alloy					
		Galvanised and ch						
	80, 100	Nickel-plated stee		Wrought al				
		POM	alloy					
		Galvanised and ch	Galvanised and chrome-plated steel					
Note on materials		RoHS-compliant						

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

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

Registered trademark of the Bayer MaterialScience AG Group

General technical data – Suction cup	holder HA/HB/HC/HCL			Datasheets → Internet: esh	
Vacuum port [1]			G1/8		
HA – Vacuum port on top, mounting v	with lock nut, without height compen	sator			
1	Mounting thread [2]		M20x1		
	Suction cup mounting [3]	,	M10		
2	Nominal width	[mm]	8		
	Volume	[cm <sup>3</sup> ]	1.862		
<u> </u>	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, moun	ting with female thread without heig	rht component	Or .		
2	Mounting thread [2]	in compensar	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	[5]	Tempered steel, high-alloy steel		
	Note on materials		RoHS-compliant		
3	Note on materials		Koris compliant		
٦					
HC - Vacuum port on top, mounting v		or	_		
1	Mounting thread [2]		M22x1		
	Suction cup mounting [3]		M10		
<del></del>	Nominal width	[mm]	8.4		
	Volume	[cm <sup>3</sup> ]	3.327		
	Height compensator	[mm]	10		
[ ] R	Spring force (normal/min. length)	[N]	8/18		
4 + + +	Ambient temperature	[°C]	-10 +60		
<del>                                     </del>	Weight	[g]	112		
	Materials of holder		Tempered steel, high-alloy steel		
3	Note on materials		RoHS-compliant		
HCL - Vacuum port on top, mounting	with lock nut, with long height comp	ensator			
1	Mounting thread [2]	1	M22x1		
	Suction cup mounting [3]		M10		
	Nominal width	[mm]	8.4		
	Volume	[cm <sup>3</sup> ]	6.06		
	Height compensator	[mm]	30		
2	Spring force (normal/min. length)	[N]	10/16		
	Ambient temperature	[°C]	-10 +60		
	Weight	[g]	169		
	Materials of holder	,	Tempered steel, high-alloy steel		
<b></b>	Note on materials		RoHS-compliant		
3					
면					

General technical data – Suctio	n cup holder HD/HDL		Datasheets → Intern
Vacuum port [1]			G1/8
HD – Vacuum port on the side,	mounting with lock nut, with height compe	nsator	
1	Mounting thread [2]		M22x1
	Suction cup mounting [3]		M10
2	Nominal width	[mm]	8.5
	Volume	[cm <sup>3</sup> ]	2.072
Ĺ <sub>ŢŢ</sub> ₿	Height compensator	[mm]	10
<del>                                     </del>	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
HDI - Vacuum nort on the side	, mounting with lock nut, with long height	compensator	
TIDE - Vacuum port on the side,	Mounting thread [2]	compensator	M22x1
	Suction cup mounting [3]		M10
	Nominal width	[mm]	8.5
	Volume	[cm <sup>3</sup> ]	1.667
2	Height compensator	[mm]	30
	Spring force (normal/min. length)	[N]	10/16
<del>ᠳ</del>	Ambient temperature	[°C]	-10 +60
	Weight	[g]	273
		101	Tempered steel, high-alloy steel
<u> </u>	Materials of holder		i Tempereu Sieel, mgn-anov Sieel
	Materials of holder  Note on materials		
			RoHS-compliant
1			
3	Note on materials		
3 General technical data – Suctio	Note on materials		RoHS-compliant
3  General technical data – Suctio  Vacuum port[1]	Note on materials	thout height	RoHS-compliant  Datasheets → Intern
3  General technical data – Suctio  Vacuum port[1]	Note on materials on cup holder HE threaded connection for direct screw-in, wi	thout height	RoHS-compliant  Datasheets → Intern
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  on cup holder HE  threaded connection for direct screw-in, wi  Mounting thread [2]	thout height	RoHS-compliant  Datasheets → Intern  G1/4  compensator
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials on cup holder HE threaded connection for direct screw-in, wi	thout height	RoHS-compliant  Datasheets → Intern  G1/4  compensator  G1/4
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  on cup holder HE  threaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]	[mm]	Datasheets → Intern  G1/4  compensator  G1/4  M10
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  on cup holder HE  threaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]  Nominal width		Datasheets → Intern  G1/4  compensator  G1/4  M10  7
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  In cup holder HE  Chreaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature	[mm] [cm³] [°C]	RoHS-compliant  Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227
3  General technical data – Suctio  Vacuum port [1]  HE – Vacuum port on top, with t	Note on materials  on cup holder HE  threaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume	[mm]	Datasheets → Intern    G1/4     Compensator     G1/4     M10     7     1.227     -10 +60
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  In cup holder HE  Chreaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight	[mm] [cm³] [°C]	Datasheets → Intern    G1/4     Compensator     G1/4     M10     7     1.227     -10 +60     24     Tempered steel
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  on cup holder HE  threaded connection for direct screw-in, wi  Mounting thread [2]  Suction cup mounting [3]  Nominal width  Volume  Ambient temperature  Weight  Materials of holder	[mm] [cm³] [°C]	Datasheets → Intern    G1/4     Compensator     G1/4     M10     7     1.227     -10 +60     24
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  In cup holder HE  Ithreaded 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] [cm³] [°C]	Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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] [cm³] [°C]	Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM
General technical data – Suctio Vacuum port [1] HE – Vacuum port on top, with t	Note on materials  In cup holder HE  Ithreaded 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] [cm³] [°C]	Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  ROHS-compliant
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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] [cm³] [°C]	RoHS-compliant  Datasheets → Intern  G1/4  Compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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  Pneumatic connection	[mm] [cm³] [°C]	RoHS-compliant  Datasheets → Intern  G1/4  Compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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  Pneumatic connection Design	[mm] [cm³] [°C] [g]	RoHS-compliant  Datasheets → Intern  G1/4  Compensator  G1/4  M10  7  1.227  —10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet  M10  Ball joint
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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  Pneumatic connection Design Angle compensator +/-	[mm] [cm³] [°C] [g]	RoHS-compliant  Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet  M10  Ball joint  15
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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  Pneumatic connection Design Angle compensator +/- Operating pressure	[mm] [cm³] [°C] [g]	RoHS-compliant  Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet  M10  Ball joint  15  -0.95 +4
General technical data – Suction Vacuum port [1]  HE – Vacuum port on top, with to the succession of the success	Note on materials  In cup holder HE  Ithreaded 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  Pneumatic connection Design Angle compensator +/- Operating pressure Ambient temperature	[mm] [cm³] [°C] [g]	Datasheets → Intern  G1/4  compensator  G1/4  M10  7  1.227  -10 +60  24  Tempered steel  NBR, steel, wrought aluminium alloy, POM  RoHS-compliant  Datasheets → Internet  M10  Ball joint  15  -0.95 +4  0 +60
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#### Holder size 6

Suction cup shape:

For suction cup Ø 150/200 mm

• Round, flat



General technical d	ata – Suction cup S			Datasheets → Internet: ess		
Suction cup shape			Suction cup Ø [mm]			
		150 200				
S – round, flat: mate	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	5									
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									
	NBR	NBR								
	Galvanised and chron	Galvanised and chrome-plated steel								
Note on materials	RoHS-compliant									

Operating and environmental conditions	Operating and environmental conditions – Suction cup S									
Material	F	N	S	U						
Operating medium	Atmospheric air based on ISO	ntmospheric 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	_						

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

General technical data – Suction cup	holder HA/HB/HC/HCL	er HA/HB/HC/HCL		
Vacuum port [1]			G1/4	
HA - Vacuum port on top, mounting v	with lock nut, without height compen	sator		
1	Mounting thread [2]		M24x2	
	Suction cup mounting [3]		M20x2	
2	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	
3	Note on materials		RoHS-compliant	
HB – Vacuum port on the side. moun	ting with female thread, without heig	tht 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	
<del>(+)</del>	Weight	[g]	271	
	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
3				
· · · · · · -	with lock nut, with height compensate	or		
	Mounting thread [2]		M30x2	
	Suction cup mounting [3]		M20x2	
	Nominal width	[mm]	10	
	Volume	[cm <sup>3</sup> ]	11.537	
	Height compensator	[mm]	20	
	Spring force (normal/min. length)	[N]	12/22	
	Ambient temperature	[°C]	-10 +60	
<del>                                     </del>	Weight	[g]	472	
	Materials of holder		Tempered steel, high-alloy steel	
3	Note on materials		RoHS-compliant	
HCL - Vacuum port on top, mounting	with lock nut, with long height comp	ensator		
1	Mounting thread [2]		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	
TIT	Weight	[g]	560	
	Materials of holder		Tempered steel, high-alloy steel	
	Note on materials		RoHS-compliant	
[3]				
크				

General technical data – Suction cu	ıp holder HD/HDL			Datasheets → Internet: esh		
Vacuum port [1]			G1/4			
HD – Vacuum port on the side, mou	unting with lock nut, with height compe	ensator				
1	Mounting thread [2]	,	M30x2			
	Suction cup mounting [3]		M20x2			
2	Nominal width	[mm]	10			
<sup></sup>	Volume	[cm <sup>3</sup> ]	13.171			
│ <u>└</u> ,	Height compensator	[mm]	20			
<u> </u>	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, mo	ounting with lock nut, with long height	compensator				
	Mounting thread [2]	· ·	M30x2			
	Suction cup mounting [3]		M20x2			
	Nominal width	[mm]	10			
│ <sub>─</sub> ┌╨ <del>┼</del> ┼╨┐	Volume	[cm <sup>3</sup> ]	16.968			
	Height compensator	[mm]	40			
l Light	Spring force (normal/min. length)	[N]	15/32			
	Ambient temperature	[°C]	-10 +60			
	Weight	[g]	560			
<u>                                   </u>	Materials of holder		Tempered steel, high-alloy steel			
	Note on materials		RoHS-compliant			
3						

Datasheet

Size		ø 2   ø 4   ø 6   ø 8   ø 10   ø 15   ø 20   ø 30   ø 40   ø 50								Ø 50	Condi-	Code	Enter	
Holder size		1		2		3		4	,	1	•	tions		code
Module no.		189167	189167   189168   189169   189170   189171   189172   189173   189174   189175   189176				189176							
Gripper functio	n	Suction	ouction gripper										ESG	ESG
Suction cup Ø	[mm]	2	4	6	8	10	15	20	30	40	50			
Suction cup	Flat	FPM (fluo	oro rubber)	)									-SF	
shape/suction		NBR (nitr	rile rubber)										-SN	
cup material		BR (butadiene rubber), anti-static									-SNA			
		VMQ (silicone)									-SS			
		PUR (polyurethane)										-SU		
	Extra deep	-					FPM (fluo	oro rubber)	)				-EF	
		-					NBR (nitr	ile rubber)	)				-EN	
		-					VMQ (sili	cone)					-ES	
		-					PUR (polyurethane)				-EU			
	Bellows, 1.5	-				NBR	-	NBR (nitr	ile rubber)				-BN	
	convolutions	_				VMQ	_	VMQ (sili	icone)				-BS	
		_				PUR	-	PUR (pol	yurethane)	)			-BU	
		_						•		Vulkollan	®		-BT	
	Bellows, 3.5	-				NBR	– NBR (nitrile rubber)				-CN			
	convolutions	_				VMQ	- VMQ (silicone)				-CS			
	Deep	_							Vulkollar	l®			-GT	
Suction cup ho	lder	Male thre	ead, 2 nuts	, connecti	on on top								-HA	
		Female t	hread, con	nection on	the side								-HB	
		Male thre	ead, 2 nuts	, connecti	on on top,	height co	eight compensation				-HC			
		_	Male thread, 2 nuts, connection on top, long height compensation									-HCL		
		Male thre	ead, 2 nuts	, connecti	on on the s	side, heigh	nt compens	sation					-HD	
		_	Male thre	ead, 2 nuts	, connecti	on on the	side, long	height con	npensation	1			-HDL	
External thread, port on top, screw-in thread									-HE					
		Male thre	Male thread, connection at top, screw-in thread, height compensator								-HF			
/acuum connec	ction	Push-in o	Push-in connector for plastic tubing							[1]	-QS			
		Barbed f	arbed fitting connection for plastic tubing								[1]	-PK		
Angle compens	ation	-	– Universal joint with 30° deflection							-WA				
Vacuum filter		-				Vacuum	filter						-F	
Suction cup ins	ert	-				PE	-	PE				[2]	-ES	

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Ordering table	– Suction cup Ø	60 200 mm							
Size		ø 60	ø60   ø80   ø100   ø150   ø200						Enter
Holder size		5			6		tions		code
Module no.		189177	89177 189178 189179 189180 189181						
Gripper functio	n	Suction gripper	n gripper						ESG
Suction cup Ø	[mm]	60	80	100	150	200			
Suction cup	Flat	FPM (fluoro rubbe	r)					-SF	
shape/suction		NBR (nitrile rubbe	r)					-SN	
cup material		VMQ (silicone)		,				-SS	
		PUR (polyurethan	e)					-SU	
	Extra deep	FPM (fluoro rubbe	r)		_			-EF	
		NBR (nitrile rubbe	r)		-			-EN	
		VMQ (silicone)			_			-ES	
		PUR (polyurethane	e)		-			-EU	
	Bellows, 1.5	-	NBR (nitrile rubber)	_				-BN	
	convolutions	-	VMQ (silicone)	_				-BS	
		-	PUR (polyure-	_				-BU	
			thane)						
		-	Vulkollan®	-				-BT	
	Deep	Vulkollan®			_			-GT	
Suction cup ho	lder	Male thread, 2 nu	ts, connection on top					-HA	
		Female thread, co	nnection on the side					-HB	
		Male thread, 2 nu	Male thread, 2 nuts, connection on top, height compensation						
		Male thread, 2 nu	Male thread, 2 nuts, connection on top, long height compensation					-HCL	
		Male thread, 2 nuts, connection on the side, height compensation						-HD	
		Male thread, 2 nu	ale thread, 2 nuts, connection on the side, long height compensation						
		External thread, p	kternal thread, port on top, screw-in thread						
Vacuum conne	ction	Threaded connect	ion				[3]	-G	
Angle compens	sation	Universal joint wit	h 30° deflection		_			-WA	

<sup>[1]</sup> QS, PKNot with suction cup holder HE, HF.

<sup>[2]</sup> ES Can only be selected in combination with suction cup shape/suction cup material CN, CS

<sup>[3]</sup> G Cannot be combined with suction cup holder HE

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### Suction grippers ESG – Oval design

Size (suction cup dimensions)	4x10	4x20	6x10	6x20	8x20	8x30	10x30	Condi-	Code	Enter		
Holder size	4	,						tions		code		
Module no.	189182	182         189183         189184         189185         189186         189187         189188										
Gripper function	Suction grip	uction gripper							ESG	ESG		
Suction cup size [mm]	4x10	4x20	6x10	6x20	8x20	8x30	10x30					
Suction cup Flat shape/suction cup material	NBR (nitrile	R (nitrile rubber)							-ON	-ON		
Suction cup holder	Male thread	le thread, 2 nuts, connection on top							-HA			
	Female thre	ad, connection	on the side						-HB	.		
	Male thread	l, 2 nuts, conn	ection on top, l	height compen	sation				-HC	.		
	Male thread	l, 2 nuts, conn	ection on top, l	long height cor	npensation				-HCL	.		
	Male thread	l, 2 nuts, conn	ection on the s	ide, height con	npensation				-HD	.		
	Male thread	l, 2 nuts, conn	ection on the s	ide, long heigh	t compensatio	n			-HDL	.		
	External thr	xternal thread, port on top, screw-in thread							-HE	.		
	Male thread	Male thread, connection at top, screw-in thread, height compensator							-HF	.		
Vacuum connection	Push-in con	Push-in connector for plastic tubing							-QS			
	Barbed fitti	ng connection	for plastic tubi	ng	_			[1]	-PK	.		
Vacuum filter	Vacuum filte	or .										

<sup>[1]</sup> QS, PKNot with suction cup holder HE, HF.

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	ction gripper					ESG
Suction cup size [mm]	15x45	20x60	25x75	30x90			
Suction cup shape/suction cup material	NBR (nitrile rubbo	IBR (nitrile rubber)					-ON
Suction cup holder	Male thread, 2 nu	its, connection on top				-HA	
	Female thread, co	onnection on the side				-HB	
	Male thread, 2 nu	its, connection on top, he	ight compensation			-HC	
	Male thread, 2 nu	its, connection on top, lo		-HCL			
	Male thread, 2 nu	its, connection on the sid		-HD			
	Male thread, 2 nu	its, connection on the sid		-HDL			
	External thread, p	ort on top, screw-in threa	nd	·		-HE	
Connection	Threaded connec	tion				-G	