Vacuum suction grippers ESG

FESTO

Suction grippers ESG

Key features

Product overview

Festo suction grippers offer outstanding functionality and quality.

An extensive, modular range of suction cups with connection attachments, in different shapes, materials and sizes, plus a wide selection of suction cup holders, angle and height compensators and vacuum filters within the modular suction gripper system, provide users with a huge range of possible combinations for a wide variety of applications.

Suction grippers ESG

→ 7

Modular products with over 2000 variants

- The ideal solution for the transport of workpieces of different weights, surfaces and shapes
- Choose from:
  - 15 suction cup diameters
  - 6 different materials – including antistatic types
  - 6 suction cup shapes
  - Numerous suction cup holders
  - Optional accessories (vacuum filters and angle compensators)
- Wide range of variants
- A suitable solution for every task
- 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 ESG

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Suction gripper made of individual components

Suction cup holder ESH

+

Angle compensator ESWA (optional)

+

Vacuum filter ESF (optional)

+

Suction cup with connection attachments ESS

Suction cup ESV (optional)

Suction grippers ESG

Key features

Suction cups VAS/VASB Technical data ➔ Internet: vas

Sturdy and reliable

- The ideal solution for the transport of workpieces of different weights, surfaces and shapes
- Choose from:
  - 11 suction cup diameters
  - 2 suction cup shapes: round and bellows design
  - 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

Suction grippers ESG

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.
Additionally, all components included in the modular range are easily and quickly interchangeable in the event that 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 replaced easily (wearing part)
- Reduced warehousing
- Long service life
- Low investment costs
- Large range – including industry-related 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 connectors 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

Technical data ➔ Internet: 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

Suction cup ESS

Technical data ➔ Internet: 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 connector for every holder size
- 2 suction cup shapes
- 6 suction cup designs
- 6 suction cup materials

Accessories

Vacuum filter ESF

Technical data ➔ Internet: esf

- For protecting vacuum generators from contamination or damage

Angle compensator ESWA

Technical data ➔ Internet: eswa

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

Suction cup insert OASI

Technical data ➔ Internet: oasi

- For conveying unstable and fragile workpieces

Suction grippers ESG

Product range overview

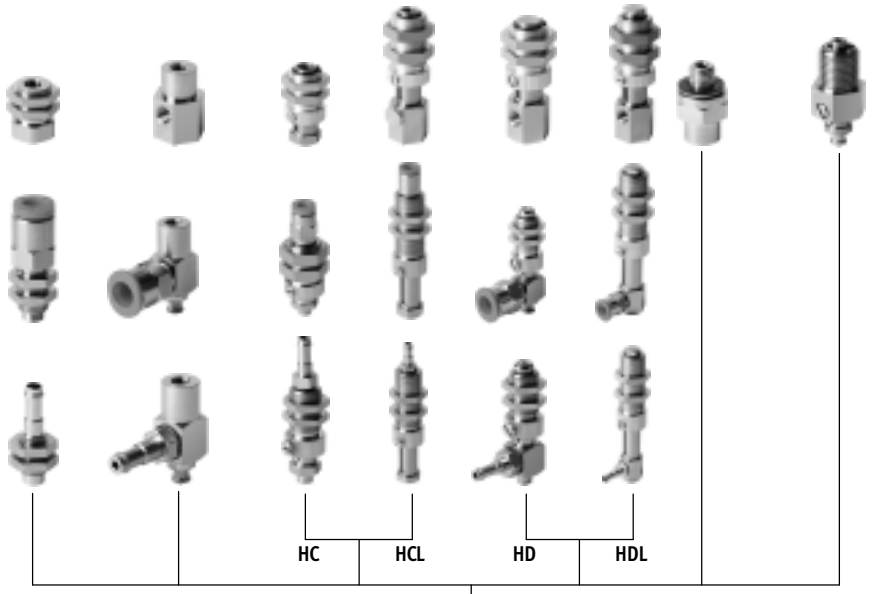
FESTO

Suction cup holders

Connection with G thread
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

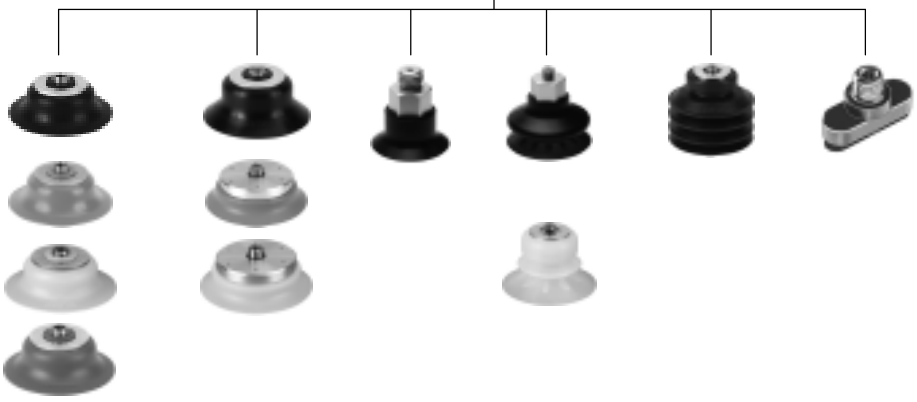


Holder type	HA	HB	HC	HCL	HD	HDL	HE	HF
For suction cup ∅ [mm]	2 ... 200	2 ... 200	2 ... 200	4 ... 200	2 ... 200	4 ... 200	2 ... 100	2 ... 50
For suction cup size [mm]	4x10 ... 30x90	4x10 ... 30x90	4x10 ... 30x90		4x10 ... 30x90		4x10 ... 30x90	4x10 ... 10x30

Angle compensator
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 cups with connection attachments
Materials:
- FPM (fluoro elastomer)
  for suction cup ∅ 2 ... 200 mm
- NBR (nitrile rubber)
  for suction cup ∅ 2 ... 200 mm
- BR (butadiene rubber)
  anti-static
  for suction cup ∅ 2 ... 50 mm
- VMQ (silicone)
  for suction cup ∅ 2 ... 200 mm
- PUR (polyurethane)
  for suction cup ∅ 2 ... 200 mm
- Vulkollan®
  for suction cup ∅ 30 ... 100 mm



Suction cup shape	Round, flat	Round, extra deep	Round, deep	Round, bellows 1.5 convolutions	Round, bellows 3.5 convolutions	Oval, flat
For suction cup ∅ [mm]	2 ... 200	15 ... 100	30 ... 100	10 ... 80	10 ... 50	4x10 ... 30x90

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Suction grippers ESG

Type code

ESG	–	20	–	S	N	–	HC	–	QS

Type	
ESG	Suction gripper

Suction cup with connection attachments, round/oval	
Suction cup ∅ [mm]	
	2, 4, 6, 8, 10, 15, 20, 30, 40, 50, 60, 80, 100, 150, 200
Suction cup size [mm]	
	4x10, 4x20, 6x10, 6x20, 8x20, 8x30, 10x30, 15x45, 20x60, 25x75, 30x90

Suction cup shape	
S	Round, flat
E	Round, extra deep
B	Round, bellows with 1.5 convolutions
C	Round, bellows with 3.5 convolutions
G	Round, deep
O	Oval, flat

Materials	
F	FPM (fluoro elastomer)
N	NBR (nitrile rubber)
NA	BR (butadiene rubber), anti-static
S	VMQ (silicone)
U	PUR (polyurethane)
T	Vulkollan®

Suction cup holder	
HA	Vacuum port on top, without height compensator
HB	Vacuum port on side, without height compensator
HC	Vacuum port on top, with height compensator
HCL	Vacuum port on top, with long height compensator
HD	Vacuum port on side, with height compensator
HDL	Vacuum port on side, with long height compensator
HE	Vacuum port on top, with threaded connection for direct screw-in, without height compensator
HF	Vacuum port on top, with threaded connection for direct screw-in, with height compensator

Vacuum port	
QS	Push-in connector QS
PK	Barbed fitting connection
G	Threaded connection

Note

Possible combinations can be found in the ordering data.

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Suction grippers ESG, suction cup ∅ 2/4 mm

Technical data holder size 1

Holder size 1
For suction cup ∅ 2/4 mm

Suction cup shape:
- Round, flat

General technical data – Suction cup S				Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]	
			2	4
S – round, flat: material FPM, NBR, BR, VMQ (silicone), PUR				
	Connection suction cup holder		O.D 3 mm[1)]	O.D 3 mm[1)]
	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^3]	0.002	0.008
	Min. workpiece radius	[mm]	10	10
	Weight	[g]	0.1	0.1

1) Is inserted into the suction cup holder.

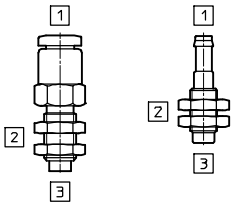
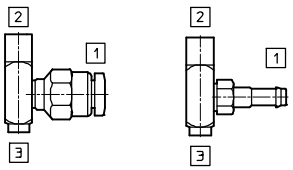
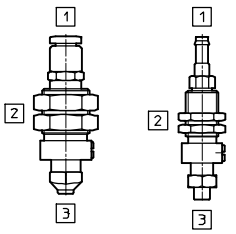
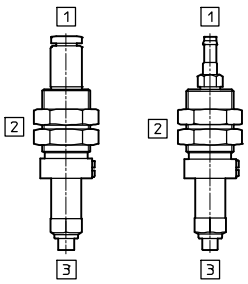
Material types – Suction cup S					
Material	F	N	NA	S	U
Shore hardness	60 ±5	50 ±5	50 ±5	50 ±5	60 ±5
Suction cup	FPM Colour: grey	NBR Colour: black	BR Colour: black/white dot	VMQ (silicone) Colour: transparent	PUR Colour: blue
Threaded plug	Nickel-plated brass				
Note on materials	RoHS-compliant				
	Free of copper and PTFE				
	–			Contains PWIS (paint-wetting impairment substances)	

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[1)]	1				
Special characteristics	–	–	Anti-static	–	–
Suitable for use in the food industry	–	–	–	As per manufacturer's declaration	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

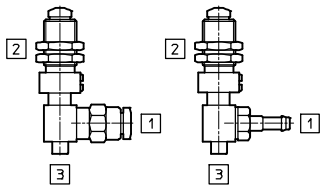
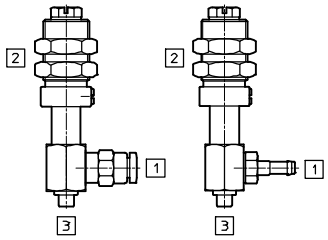
Suction grippers ESG, suction cup ∅ 2/4 mm

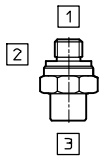
Technical data holder size 1

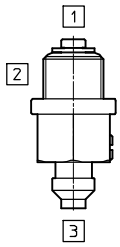
General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh
Vacuum port 1		QS-4	PK-3
HA – Vacuum port on top, mounting with lock nut, without height compensator			
	Mounting thread 2	M6x0.75	M5x0.5
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	3	2.5
	Volume [cm³]	0.239	0.09
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	6	3
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator			
	Mounting thread 2	M3	M3
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	3	2.5
	Volume [cm³]	0.228	0.108
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	5	4
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator			
	Mounting thread 2	M12x1	M8x0.75
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	2.4	1.2
	Volume [cm³]	0.385	0.117
	Height compensator [mm]	3	3
	Spring force (normal/min. length) [N]	Max. 1	Max. 1
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	17	8
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator			
	Mounting thread 2	M12x1	M12x1
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	2.8	1.9
	Volume [cm³]	0.489	0.36
	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-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

Suction grippers ESG, suction cup ∅ 2/4 mm

Technical data holder size 1

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1		QS-4	PK-3
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2	M8x0.75	M8x0.75
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	3	1.9
	Volume [cm³]	0.241	0.12
	Height compensator [mm]	3	3
	Spring force (normal/min. length) [N]	Max. 1	Max. 1
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	13	11
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2	M12x1	M12x1
	Suction cup mounting 3	∅ 3 mm	∅ 3 mm
	Nominal width [mm]	3	1.9
	Volume [cm³]	0.272	0.15
	Height compensator [mm]	10	10
	Spring force (normal/min. length) [N]	Max. 1	Max. 1
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	29	28
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

General technical data – Suction cup holder HE			Technical data ➔ Internet: esh
Vacuum port 1		M3	
HE – Vacuum port on top, with threaded connection for direct screw-in, without height compensator			
	Mounting thread 2	M3	
	Suction cup mounting 3	∅ 3 mm	
	Nominal width [mm]	1.2	
	Volume [cm³]	0.04	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	1	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, steel, wrought aluminium alloy, POM	
	Note on materials	RoHS-compliant	

General technical data – Suction cup holder HF			Technical data ➔ Internet: esh
Vacuum port 1		M10x1	
HF – Vacuum port on top, with threaded connection for direct screw-in, with height compensator			
	Mounting thread 2	M10x1	
	Suction cup mounting 3	∅ 3 mm	
	Nominal width [mm]	2	
	Volume [cm³]	0.108	
	Height compensator [mm]	2.6	
	Spring force (normal/min. length) [N]	2/4	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	14	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, POM	
	Note on materials	RoHS-compliant	

Suction grippers ESG, suction cup ∅ 6/8 mm

Technical data holder size 2

Holder size 2
For suction cup ∅ 6/8 mm

Suction cup shape:
- Round, flat

General technical data – Suction cup S				Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]	
			6	8
S – round, flat: material FPM, NBR, BR, VMQ (silicone), PUR				
	Connection suction cup holder		I.D. 4 mm[1)]	I.D. 4 mm[1)]
	Nominal size	[mm]	2	2
	Holding force at nominal operating pressure –0.7 bar	[N]	1.1	2.3
	Suction cup volume	[cm^3]	0.015	0.030
	Min. workpiece radius	[mm]	15	20
	Weight	[g]	0.2	0.2

1) Is fitted into the suction cup holder.

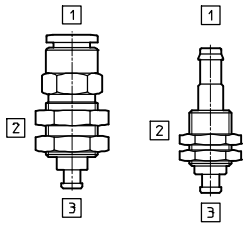
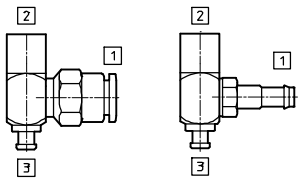
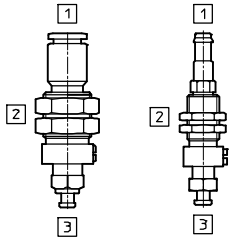
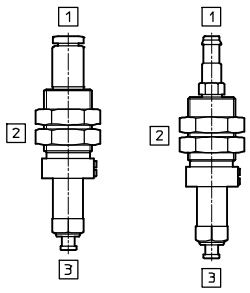
Material types – Suction cup S					
Material	F	N	NA	S	U
Shore hardness	60 ±5	50 ±5	50 ±5	50 ±5	60 ±5
Suction cup	FPM Colour: grey	NBR Colour: black	BR Colour: black/white dot	VMQ (silicone) Colour: transparent	PUR Colour: blue
Threaded plug	Nickel-plated brass				
Note on materials	RoHS-compliant				
	Free of copper and PTFE				
	–			Contains PWIS (paint-wetting impairment substances)	

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[1)]	1				
Special characteristics	–	–	Anti-static	–	–
Suitable for use in the food industry	–	–	–	As per manufacturer's declaration	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

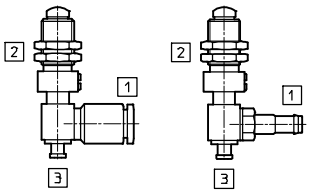
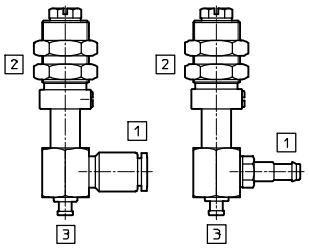
Suction grippers ESG, suction cup ∅ 6/8 mm

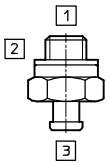
Technical data holder size 2

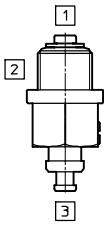
General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh	
Vacuum port 1			QS-6	PK-4
HA – Vacuum port on top, mounting with lock nut, without height compensator				
	Mounting thread 2		M10x1	M8x0.75
	Suction cup mounting 3		∅ 4 mm	∅ 4 mm
	Nominal width	[mm]	2	2
	Volume	[cm³]	0.501	0.169
	Ambient temperature	[°C]	0 … +60	–10 … +60
	Weight	[g]	12	7
	Materials-holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals		NBR	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator				
	Mounting thread 2		M4	M4
	Suction cup mounting 3		∅ 4 mm	∅ 4 mm
	Nominal width	[mm]	2	2
	Volume	[cm³]	0.418	0.188
	Ambient temperature	[°C]	0 … +60	–10 … +60
	Weight	[g]	13	11
	Materials-holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator				
	Mounting thread 2		M12x1	M8x0.75
	Suction cup mounting 3		∅ 4 mm	∅ 4 mm
	Nominal width	[mm]	2.2	1.2
	Volume	[cm³]	0.551	0.192
	Height compensator	[mm]	3	3
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
	Ambient temperature	[°C]	0 … +60	–10 … +60
	Weight	[g]	18	8
	Materials-holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator				
	Mounting thread 2		M12x1	M12x1
	Suction cup mounting 3		∅ 4 mm	∅ 4 mm
	Nominal width	[mm]	2.2	2.2
	Volume	[cm³]	0.519	0.398
	Height compensator	[mm]	10	10
	Spring force (normal/min. length)	[N]	Max. 1	Max. 1
	Ambient temperature	[°C]	0 … +60	–10 … +60
	Weight	[g]	20	19
	Materials-holder		Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals		NBR, steel	NBR, steel
	Note on materials		RoHS-compliant	RoHS-compliant

Suction grippers ESG, suction cup ∅ 6/8 mm

Technical data holder size 2

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1		QS-6	PK-4
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2	M8x0.75	M8x0.75
	Suction cup mounting 3	∅ 4 mm	∅ 4 mm
	Nominal width [mm]	1.8	1.8
	Volume [cm³]	0.417	0.183
	Height compensator [mm]	3	3
	Spring force (normal/min. length) [N]	Max. 1	Max. 1
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	15	12
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2	M12x1	M12x1
	Suction cup mounting 3	∅ 4 mm	∅ 4 mm
	Nominal width [mm]	2.2	2.2
	Volume [cm³]	0.26	0.138
	Height compensator [mm]	10	10
	Spring force (normal/min. length) [N]	Max. 1	Max. 1
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	33	32
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

General technical data – Suction cup holder HE			Technical data ➔ Internet: esh
Vacuum port 1		M5	
HE – Vacuum port on top, with threaded connection for direct screw-in, without height compensator			
	Mounting thread 2	M5	
	Suction cup mounting 3	∅ 4 mm	
	Nominal width [mm]	2	
	Volume [cm³]	0.036	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	3	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, steel, wrought aluminium alloy, POM	
	Note on materials	RoHS-compliant	

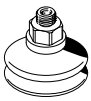
General technical data – Suction cup holder HF			Technical data ➔ Internet: esh
Vacuum port 1		M10x1	
HF – Vacuum port on top, with threaded connection for direct screw-in, with height compensator			
	Mounting thread 2	M10x1	
	Suction cup mounting 3	∅ 4 mm	
	Nominal width [mm]	2	
	Volume [cm³]	0.09	
	Height compensator [mm]	2.6	
	Spring force (normal/min. length) [N]	2/4	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	14	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, POM	
	Note on materials	RoHS-compliant	

Suction grippers ESG, suction cup ∅ 10/15 mm

Technical data holder size 3

Holder size 3
For suction cup ∅ 10/15 mm

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

General technical data – Suction cup S/E/B/C				Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]	
			10	15
S – round, flat: 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^3]	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				
	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^3]	–	0.35
	Min. workpiece radius	[mm]	–	20
	Weight	[g]	–	1.9
B – round, bellows 1.5 convolutions: material NBR, VMQ (silicone), PUR				
	Connection suction cup holder		M4	–
	Nominal size	[mm]	2	–
	Holding force at nominal operating pressure –0.7 bar	[N]	4.7	–
	Suction cup volume	[cm^3]	0.38	–
	Min. workpiece radius	[mm]	20	–
	Height compensator	[mm]	4	–
	Weight	[g]	1.8	–
C – round, bellows 3.5 convolutions: material NBR, VMQ (silicone)				
	Connection suction cup holder		M4	–
	Nominal size	[mm]	2	–
	Holding force at nominal operating pressure –0.7 bar	[N]	3.9	–
	Suction cup volume	[cm^3]	0.29	–
	Min. workpiece radius	[mm]	25	–
	Height compensator	[mm]	3.3	–
	Weight	[g]	1.6	–

Suction grippers ESG, suction cup ∅ 10/15 mm

Technical data holder size 3

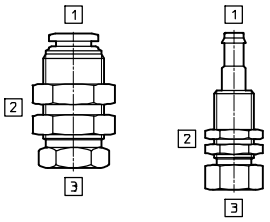
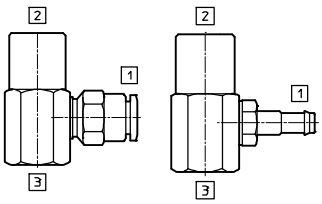
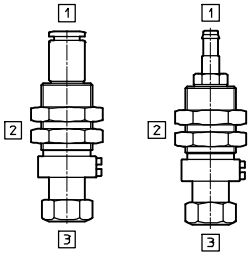
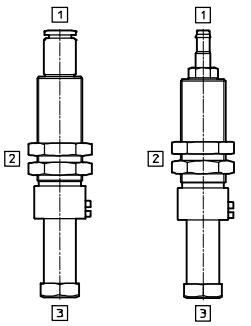
Material types – Suction cup					
Material	F	N	NA	S	U
Shore hardness	60 ±5	60 ±5	50 ±5	50 ±5	60 ±5
Suction cup	FPM Colour: grey	NBR Colour: black	BR Colour: black/white dot	VMQ (silicone) Colour: transparent	PUR Colour: blue
Threaded plug	Nickel-plated brass				
Note on materials	RoHS-compliant				
	Free of copper and PTFE				
	–			Contains PWIS (paint-wetting impairment substances)	

Operating and environmental conditions – Suction cup					
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[1)]	1				
Special characteristics	–	–	Anti-static	–	–
Suitable for use in the food industry	–	–	–	As per manufacturer's declaration	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

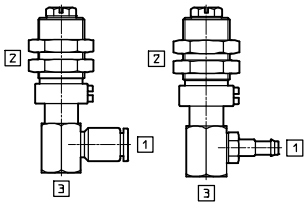
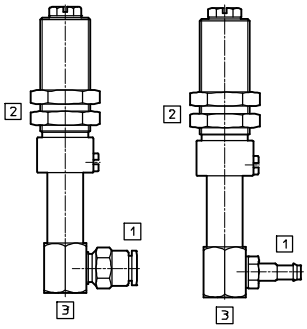
Suction grippers ESG, suction cup ∅ 10/15 mm

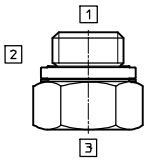
Technical data holder size 3

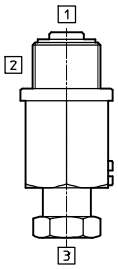
General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh
Vacuum port 1		QS-6	PK-4
HA – Vacuum port on top, mounting with lock nut, without height compensator			
	Mounting thread 2	M12x1	M8x0.75
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	5	2.5
	Volume [cm³]	0.52	0.274
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	20	10
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator			
	Mounting thread 2	M6	M6
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	3.3	2.5
	Volume [cm³]	0.539	0.313
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	29	27
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	3.4	2.5
	Volume [cm³]	1.041	0.789
	Height compensator [mm]	6	6
	Spring force (normal/min. length) [N]	2/5	2/5
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	34	32
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	3.4	3
	Volume [cm³]	1.616	1.383
	Height compensator [mm]	20	20
	Spring force (normal/min. length) [N]	1/3	1/3
	Ambient temperature [°C]	0 ... +60	–10 ... +60
	Weight [g]	48	46
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

Suction grippers ESG, suction cup ∅ 10/15 mm

Technical data holder size 3

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1		QS-6	PK-4
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	3.3	3
	Volume [cm³]	0.573	0.343
	Height compensator [mm]	6	6
	Spring force (normal/min. length) [N]	2/5	2/5
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	46	44
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M4	M4
	Nominal width [mm]	3.3	3
	Volume [cm³]	0.474	0.252
	Height compensator [mm]	20	20
	Spring force (normal/min. length) [N]	1/3	1/3
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	65	63
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

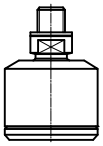
General technical data – Suction cup holder HE			Technical data ➔ Internet: esh
Vacuum port 1		G1/8	
HE – Vacuum port on top, with threaded connection for direct screw-in, without height compensator			
	Mounting thread 2	G1/8	
	Suction cup mounting 3	M4	
	Nominal width [mm]	3	
	Volume [cm³]	0.106	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	11	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, steel, wrought aluminium alloy, POM	
	Note on materials	RoHS-compliant	

General technical data – Suction cup holder HF			Technical data ➔ Internet: esh
Vacuum port 1		M14x1	
HF – Vacuum port on top, with threaded connection for direct screw-in, with height compensator			
	Mounting thread 2	M14x1	
	Suction cup mounting 3	M4	
	Nominal width [mm]	3.3	
	Volume [cm³]	0.40	
	Height compensator [mm]	6	
	Spring force (normal/min. length) [N]	6/12	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	54	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, POM	
	Note on materials	RoHS-compliant	

Suction grippers ESG, suction cup ∅ 10/15 mm

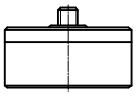
Technical data holder size 3

Angle compensator ESWA — Technical data ➔ Internet: eswa



Pneumatic connection		M4
Design		Ball joint
Angle compensation +/–	[°]	15
Operating pressure	[bar]	–0.95 ... +4
Ambient temperature	[°C]	0 ... +60
Weight	[g]	9
Materials - housing		Aluminium, nickel-plated brass
Materials-seals		NBR
Note on materials		RoHS-compliant

Vacuum filter ESF — Technical data ➔ 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
Materials - housing		Aluminium, nickel-plated brass
Materials-filter		PVF
Materials-seals		NBR
Note on materials		RoHS-compliant

Suction cup insert OASI — Technical data ➔ Internet: oasi

For suction cup shape round, bellows 3.5 convolutions

		Suction cup ∅ [mm]
		10
Type of mounting		Plug-in
Operating pressure	[bar]	–0.95 ... 0
Ambient temperature	[°C]	5 ... +50
Suitable for use in the food industry		As per manufacturer's declaration
Weight	[g]	0.1
Materials-suction cup insert		PE
Note on materials		RoHS-compliant

Suction grippers ESG, suction cup ∅ 20/30/40/50 mm, oval

Technical data holder size 4

Holder size 4
For suction cup ∅ 20/30/40/50 mm and suction cup size 4x10/4x20/6x10/6x20/8x20/8x30/10x30 mm

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

General technical data – Suction cup S/E/B/C/G						Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]			
			20	30	40	50
S – round, flat: material FPM, NBR, BR, VMQ (silicone), PUR						
	Connection suction cup holder		M6	M6	M6	M6
	Nominal width	[mm]	3	3	3	3
	Holding force at nominal operating pressure –0.7 bar	[N]	16.3	40.8	69.6	105.8
	Suction cup volume	[cm^3]	0.318	0.867	1.566	2.387
	Min. workpiece radius	[mm]	60	110	230	330
	Weight	[g]	6.4	9	16.3	22
E – round, extra deep: material FPM, NBR, VMQ (silicone), PUR						
	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^3]	0.84	2.12	4.04	7.9
	Min. workpiece radius	[mm]	30	50	80	100
	Weight	[g]	6.4	9.2	16.9	23.4
B – round, bellows 1.5 convolutions: material NBR, VMQ (silicone), PUR, Vulkollan® (technical values 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^3]	1.6	4.07	8.87 (9.8)	14.23 (17.6)
	Min. workpiece radius	[mm]	40	80	90 (35)	150 (40)
	Height compensator	[mm]	6	8	9.5 (9)	11 (10)
	Weight	[g]	6.7	9.9	18.7 (18)	24.7 (24)
C – round, bellows 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^3]	2.75	9.47	19.72	38.92
	Min. workpiece radius	[mm]	50	80	100	180
	Height compensator	[mm]	7	10.5	12.8	17.5
	Weight	[g]	6.9	12.2	21.9	32.1
G – round, deep: material Vulkollan®						
	Connection suction cup holder		–	M6	M6	M6
	Nominal width	[mm]	–	2.5	2.5	2.5
	Holding force at nominal operating pressure –0.7 bar	[N]	–	36	64	97
	Suction cup volume	[cm^3]	–	2.4	5.4	11.2
	Min. workpiece radius	[mm]	–	26	35	40
	Height compensator	[mm]	–	3.5	5.5	8
	Weight	[g]	–	12	14	17

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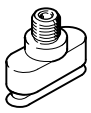
Suction grippers ESG, suction cup ∅ 20/30/40/50 mm, oval

Technical data holder size 4

General technical data – Suction cup O									
Suction cup shape			Suction cup size [mm]						
			4x10	4x20	6x10	6x20	8x20	8x30	10x30
O – oval, flat: material NBR									
	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^3]	0.064	0.112	0.106	0.196	0.256	0.376	0.35
	Weight	[g]	2	2.5	2	2.5	2.5	3	2.9

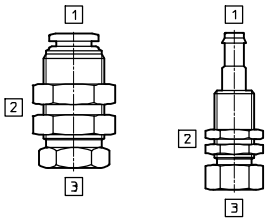
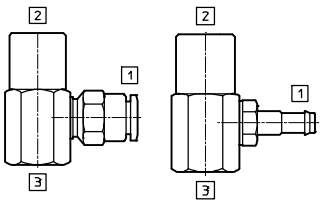
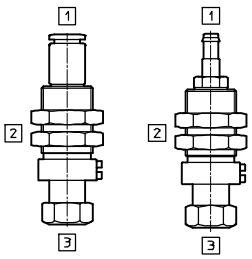
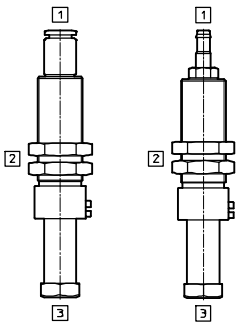
Material types – Suction cup							
Material		F	N	NA	S	U	T
Shore hardness		60 ±5	60 ±5	50 ±5	50 ±5	60 ±5	72 ±5
Suction cup		FPM Colour: grey	NBR Colour: black	BR Colour: black/ white dot	VMQ (silicone) Colour: transparent	PUR Colour: blue	Vulkollan® Colour: reddish brown
Threaded plug for suction cup ∅ [mm]	20, 30	Nickel-plated brass					Wrought aluminium alloy
		Galvanised and chrome-plated steel					
	40, 50	Nickel-plated brass					Wrought aluminium alloy
		Nickel-plated wrought aluminium alloy					
		Galvanised and chrome-plated steel					
Note on materials		RoHS-compliant					
		Free of copper and PTFE					
		–			Contains PWIS (paint-wetting impairment substances)		–

Operating and environmental conditions – Suction cup							
Material		F	N	NA	S	U	T
Operating medium		Atmospheric air based on ISO 8573-1:2010 [7:–:–]					
Ambient temperature	[°C]	–10 … +200	–10 … +70	–10 … +70	–30 … +180	–20 … +60	–10 … +80
Corrosion resistance class CRC[1)]		1					2
Special characteristics		–	–	Anti-static	–	–	–
Suitable for use in the food industry		–	–	–	As per manufacturer's declaration	–	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

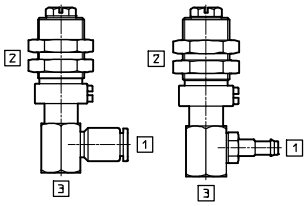
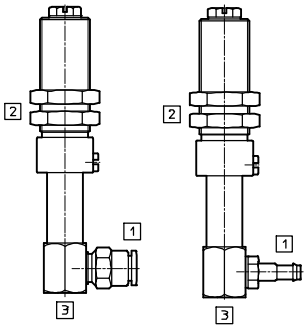
Suction grippers ESG, suction cup ∅ 20/30/40/50 mm, oval

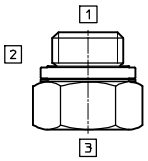
Technical data holder size 4

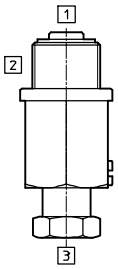
General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh
Vacuum port 1		QS-6	PK-4
HA – Vacuum port on top, mounting with lock nut, without height compensator			
	Mounting thread 2	M14x1	M12x1
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	5	2.5
	Volume [cm³]	0.719	0.668
	Ambient temperature [°C]	0 ... +60	−10 ... +60
	Weight [g]	30	23
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator			
	Mounting thread 2	M6	M6
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	5	2.5
	Volume [cm³]	0.646	0.416
	Ambient temperature [°C]	0 ... +60	−10 ... +60
	Weight [g]	27	25
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	3.4	2.5
	Volume [cm³]	1.153	0.911
	Height compensator [mm]	6	6
	Spring force (normal/min. length) [N]	5/10	5/10
	Ambient temperature [°C]	0 ... +60	−10 ... +60
	Weight [g]	33	31
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	3.4	3
	Volume [cm³]	1.78	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-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

Suction grippers ESG, suction cup ∅ 20/30/40/50 mm, oval

Technical data holder size 4

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1		QS-6	PK-4
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	5	3
	Volume [cm³]	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
	Weight [g]	45	43
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2	M14x1	M14x1
	Suction cup mounting 3	M6	M6
	Nominal width [mm]	5	3
	Volume [cm³]	0.37	0.448
	Height compensator [mm]	20	20
	Spring force (normal/min. length) [N]	1/9	1/9
	Ambient temperature [°C]	0 … +60	–10 … +60
	Weight [g]	65	63
	Materials-holder	Tempered steel, high-alloy steel, POM	Tempered steel, high-alloy steel
	Materials-seals	NBR, steel	NBR, steel
	Note on materials	RoHS-compliant	RoHS-compliant

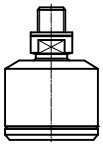
General technical data – Suction cup holder HE			Technical data ➔ Internet: esh
Vacuum port 1		G⅛	
HE – Vacuum port on top, with threaded connection for direct screw-in, without height compensator			
	Mounting thread 2	G⅛	
	Suction cup mounting 3	M6	
	Nominal width [mm]	4	
	Volume [cm³]	0.289	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	11	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, steel, wrought aluminium alloy, POM	
	Note on materials	RoHS-compliant	

General technical data – Suction cup holder HF			Technical data ➔ Internet: esh
Vacuum port 1		M14x1	
HF – Vacuum port on top, with threaded connection for direct screw-in, with height compensator			
	Mounting thread 2	M14x1	
	Suction cup mounting 3	M6	
	Nominal width [mm]	4	
	Volume [cm³]	0.655	
	Height compensator [mm]	6	
	Spring force (normal/min. length) [N]	6/12	
	Ambient temperature [°C]	–10 … +60	
	Weight [g]	52	
	Materials-holder	Tempered steel	
	Materials-seals	NBR, POM	
	Note on materials	RoHS-compliant	

Suction grippers ESG, suction cup ∅ 20/30/40/50 mm, oval

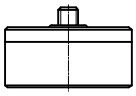
Technical data holder size 4

Angle compensator ESWA — Technical data ➔ Internet: eswa



Pneumatic connection		M6
Design		Ball joint
Angle compensation +/–	[°]	15
Operating pressure	[bar]	–0.95 ... +4
Ambient temperature	[°C]	0 ... +60
Weight	[g]	19
Materials - housing		Aluminium, nickel-plated brass
Materials-seals		NBR
Note on materials		RoHS-compliant

Vacuum filter ESF — Technical data ➔ Internet: esf



		Suction cup ∅ 20 mm, Suction cup size 4x10 ... 10x30 mm	Suction cup ∅ 30/40/50 mm
Pneumatic connection		M6	
Flow rate at vacuum pressure =–0.75 bar	[l/min]	260	270
Grade of filtration	[µm]	10	
Operating pressure	[bar]	–0.95 ... +4	
Ambient temperature	[°C]	0 ... +60	
Weight	[g]	19	
Materials - housing		Aluminium, nickel-plated brass	
Materials-filter		PVF	
Materials-seals		NBR	
Note on materials		RoHS-compliant	

Suction cup insert OASI — Technical data ➔ Internet: oasi

For suction cup shape round, bellows 3.5 convolutions

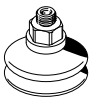
		Suction cup ∅ [mm]			
		20	30	40	50
Type of mounting		Push-in			
Operating pressure	[bar]	–0.95 ... 0			
Ambient temperature	[°C]	5 ... +50			
Suitable for use in the food industry		As per manufacturer's declaration			
Weight	[g]	0.6	2.1	2.9	5.9
Materials-suction cup insert		PE			
Note on materials		RoHS-compliant			

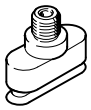
Suction grippers ESG, suction cup ∅ 60/80/100 mm, oval

Technical data holder size 5

Holder size 5
For suction cup ∅ 60/80/100 mm
and suction cup size
15x45/20x60/25x75/30x90 mm

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

General technical data – Suction cup S/E/B/G					Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]		
			60	80	100
S – round, flat: 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]	166.1	309.7	503.6
	Suction cup volume	[cm^3]	3.953	19.312	29.779
	Min. workpiece radius	[mm]	350	400	460
	Weight	[g]	49	133	222
E – round, extra 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^3]	19.77	51.61	84.66
	Min. workpiece radius	[mm]	120	160	200
	Weight	[g]	48	141	228
B – round, bellows 1.5 convolutions: material NBR, VMQ (silicone), PUR, Vulkollan® (technical values in brackets)					
	Connection suction cup holder		–	M10	–
	Nominal size	[mm]	–	6 (2.5)	–
	Holding force at nominal operating pressure –0.7 bar	[N]	–	213.6 (237)	–
	Suction cup volume	[cm^3]	–	63.9 (59.1)	–
	Min. workpiece radius	[mm]	–	430 (100)	–
	Height compensator	[mm]	–	10 (10.5)	–
	Weight	[g]	–	139 (84.5)	–
G – round, deep: material Vulkollan®					
	Connection suction cup holder		M10	M10	M10
	Nominal width	[mm]	2.5	5.5	5.5
	Holding force at nominal operating pressure –0.7 bar	[N]	134	245	375
	Suction cup volume	[cm^3]	11.3	28.6	53.9
	Min. workpiece radius	[mm]	75	100	135
	Height compensator	[mm]	6	7.5	9
	Weight	[g]	20	28	86.5

General technical data – Suction cup O						
Suction cup shape			Suction cup size [mm]			
			15x45	20x60	25x75	30x90
O – oval, flat: material NBR						
	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^3]	1.57	3.69	6.7	10.17
	Weight	[g]	23.8	30.8	46.8	55.3

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Suction grippers ESG, suction cup ∅ 60/80/100 mm, oval

Technical data holder size 5

Material types – Suction cup						
Material		F	N	S	U	T
Shore hardness		60 ±5	60 ±5	50 ±5	60 ±5	72 ±5
Suction cup		FPM Colour: grey	NBR Colour: black	VMQ (silicone) Colour: transparent	PUR Colour: blue	Vulkollan® Colour: reddish brown
Threaded plug for suction cup ∅ [mm]	60	Steel, nickel-plated				Wrought aluminium alloy
		Nickel-plated wrought aluminium alloy				
		Galvanised and chrome-plated steel				
	80, 100	Steel, nickel-plated				Wrought aluminium alloy
		POM				
		Galvanised and chrome-plated steel				
Note on materials		RoHS-compliant				
		Free of copper and PTFE				
		–		Contains PWIS (paint-wetting impairment substances)		–

Operating and environmental conditions – Suction cup						
Material		F	N	S	U	T
Operating medium		Atmospheric air based on ISO 8573-1:2010 [7:–:–]				
Ambient temperature	[°C]	–10 … +200	–10 … +70	–30 … +180	–20 … +60	–10 … +80
Corrosion resistance class CRC[1)]		1				2
Suitable for use in the food industry		–	–	As per manufacturer's declaration	–	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).
Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

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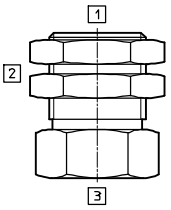
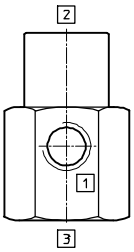
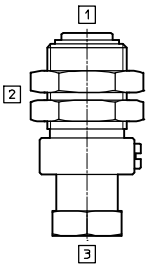
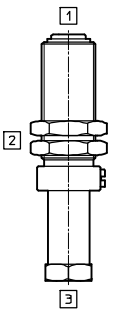
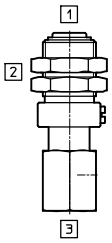
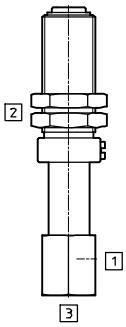
Suction grippers ESG, suction cup ∅ 60/80/100 mm, oval

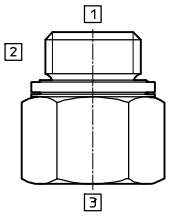
Technical data holder size 5

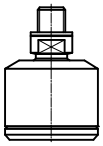
General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh
Vacuum port 1			G⅛
HA – Vacuum port on top, mounting with lock nut, without height compensator			
	Mounting thread 2		M20x1
	Suction cup mounting 3		M10
	Nominal width	[mm]	8
	Volume	[cm³]	1.862
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	84
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator			
	Mounting thread 2		M 8
	Suction cup mounting 3		M10
	Nominal width	[mm]	8.5
	Volume	[cm³]	1.921
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	91
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator			
	Mounting thread 2		M22x1
	Suction cup mounting 3		M10
	Nominal width	[mm]	8.4
	Volume	[cm³]	3.327
	Height compensator	[mm]	10
	Spring force (normal/min. length)	[N]	8/18
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	112
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator			
	Mounting thread 2		M22x1
	Suction cup mounting 3		M10
	Nominal width	[mm]	8.4
	Volume	[cm³]	6.06
	Height compensator	[mm]	30
	Spring force (normal/min. length)	[N]	10/16
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	169
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant

Suction grippers ESG, suction cup ∅ 60/80/100 mm, oval

Technical data holder size 5

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1			G⅛
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2		M22x1
	Suction cup mounting 3		M10
	Nominal width	[mm]	8.5
	Volume	[cm³]	2.072
	Height compensator	[mm]	10
	Spring force (normal/min. length)	[N]	8/18
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	195
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2		M22x1
	Suction cup mounting 3		M10
	Nominal width	[mm]	8.5
	Volume	[cm³]	1.667
	Height compensator	[mm]	30
	Spring force (normal/min. length)	[N]	10/16
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	273
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant

General technical data – Suction cup holder HE			Technical data ➔ Internet: esh
Vacuum port 1			G¼
HE – Vacuum port on top, with threaded connection for direct screw-in, without height compensator			
	Mounting thread 2		G¼
	Suction cup mounting 3		M10
	Nominal width	[mm]	7
	Volume	[cm³]	1.227
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	24
	Materials-holder		Tempered steel
	Materials-seals		NBR, steel, wrought aluminium alloy, POM
	Note on materials		RoHS-compliant

Angle compensator ESWA			Technical data ➔ Internet: eswa
	Pneumatic connection		M10
	Design		Ball joint
	Angle compensation +/–	[°]	15
	Operating pressure	[bar]	–0.95 … +4
	Ambient temperature	[°C]	0 … +60
	Weight	[g]	57
	Materials - housing		Aluminium, nickel-plated brass
	Materials-seals		NBR
	Note on materials		RoHS-compliant

Suction grippers ESG, suction cup ∅ 150/200 mm

Technical data holder size 6

Holder size 6
For suction cup ∅ 150/200 mm

Suction cup shape:
- Round, flat

General technical data – Suction cup S				Technical data ➔ Internet: ess
Suction cup shape			Suction cup ∅ [mm]	
			150	200
S – round, flat: material FPM, NBR, VMQ (silicone), PUR				
	Connection suction cup holder		M20x2	M20x2
	Nominal size	[mm]	10	10
	Holding force at nominal operating pressure –0.7 bar	[N]	900	1610
	Suction cup volume	[cm^3]	173.826	245.454
	Min. workpiece radius	[mm]	480	680
	Weight	[g]	719	1198

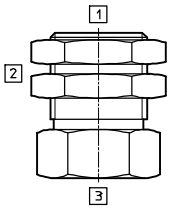
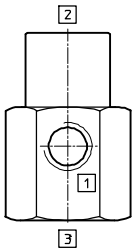
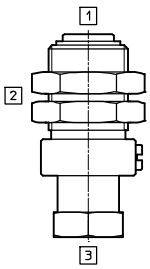
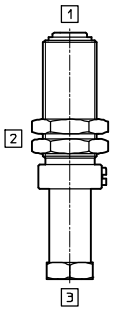
Material types – Suction cup S				
Material	F	N	S	U
Shore hardness	60 ±5	50 ±5	50 ±5	60 ±5
Suction cup	FPM Colour: grey	NBR Colour: black	VMQ (silicone) Colour: transparent	PUR Colour: blue
Threaded plug	Steel, nickel-plated			
	NBR			
	Galvanised and chrome-plated steel			
Note on materials	RoHS-compliant			
	Free of copper and PTFE			
	–		Contains PWIS (paint-wetting impairment substances)	

Operating and environmental conditions – Suction cup S				
Material	F	N	S	U
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:–:–]			
Ambient temperature [°C]	–10 … +200	–10 … +70	–30 … +180	–20 … +60
Corrosion resistance class CRC[1)]	1			
Suitable for use in the food industry	–	–	As per manufacturer's declaration	–

1) Corrosion resistance class CRC 1 to Festo standard FN 940070
Low corrosion stress. For dry indoor applications or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

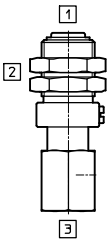
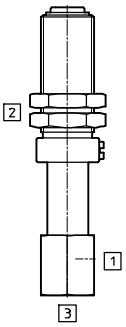
Suction grippers ESG, suction cup ∅ 150/200 mm

Technical data holder size 6

General technical data – Suction cup holder HA/HB/HC/HCL			Technical data ➔ Internet: esh
Vacuum port 1			G¼
HA – Vacuum port on top, mounting with lock nut, without height compensator			
	Mounting thread 2		M24x2
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	7.234
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	200
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HB – Vacuum port on side, mounting with female thread, without height compensator			
	Mounting thread 2		M16
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	7.25
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	271
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HC – Vacuum port on top, mounting with lock nut, with height compensator			
	Mounting thread 2		M30x2
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	11.537
	Height compensator	[mm]	20
	Spring force (normal/min. length)	[N]	12/22
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	472
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HCL – Vacuum port on top, mounting with lock nut, with long height compensator			
	Mounting thread 2		M30x2
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	16.325
	Height compensator	[mm]	40
	Spring force (normal/min. length)	[N]	15/32
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	560
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant

Suction grippers ESG, suction cup ∅ 150/200 mm

Technical data holder size 6

General technical data – Suction cup holder HD/HDL			Technical data ➔ Internet: esh
Vacuum port 1			G¼
HD – Vacuum port on side, mounting with lock nut, with height compensator			
	Mounting thread 2		M30x2
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	13.171
	Height compensator	[mm]	20
	Spring force (normal/min. length)	[N]	12/22
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	472
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant
HDL – Vacuum port on side, mounting with lock nut, with long height compensator			
	Mounting thread 2		M30x2
	Suction cup mounting 3		M20x2
	Nominal size	[mm]	10
	Volume	[cm³]	16.968
	Height compensator	[mm]	40
	Spring force (normal/min. length)	[N]	15/32
	Ambient temperature	[°C]	–10 … +60
	Weight	[g]	560
	Materials-holder		Tempered steel, high-alloy steel
	Note on materials		RoHS-compliant

Suction grippers ESG – round design

Ordering data – Modular products

FESTO

M **Mandatory data** ➔

Holder size	Module no.	Gripper function		Suction cup ∅		Suction cup shape/suction cup material
1	189167	ESG		2		SF, SN, SNA, SS, SU
	189168			4		EN, EU, ES, EF
2	189169			6		BN, BU, BS, BT
	189170			8		CN, CS
3	189171			10		GT
	189172			15		
4	189173			20		
	189174			30		
	189175			40		
	189176			50		
5	189177			60		
	189178			80		
	189179			100		
6	189180			150		
	189181			200		
	Ordering example					
	189167	**ESG**	–	**2**	–	**SN**

Ordering table – Suction cup ∅ 2 … 50 mm

Size		∅ 2	∅ 4	∅ 6	∅ 8	∅ 10	∅ 15	∅ 20	∅ 30	∅ 40	∅ 50	Condi-tions	Code	Entry code
Holder size		1		2		3		4						
M	Module no.	**189167**	**189168**	**189169**	**189170**	**189171**	**189172**	**189173**	**189174**	**189175**	**189176**			
	Gripper function	Suction gripper											**ESG**	ESG
	Suction cup ∅ [mm]	2	4	6	8	10	15	20	30	40	50		-...	
	Suction cup shape/ suction cup material: Flat	FPM (fluoro elastomer)											**-SF**	
		NBR (nitrile rubber)											**-SN**	
		BR (butadiene rubber), anti-static											**-SNA**	
		VMQ (silicone)											**-SS**	
		PUR (polyurethane)											**-SU**	
	Extra deep	–					FPM (fluoro elastomer)						**-EF**	
		–					NBR (nitrile rubber)						**-EN**	
		–					VMQ (silicone)						**-ES**	
		–					PUR (polyurethane)						**-EU**	
	Bellows, 1.5 convolutions	–				NBR	–	NBR (nitrile rubber)					**-BN**	
		–				VMQ	–	VMQ (silicone)					**-BS**	
		–				PUR	–	PUR (polyurethane)					**-BU**	
		–								Vulkollan®			**-BT**	
	Bellows, 3.5 convolutions	–				NBR	–	NBR (nitrile rubber)					**-CN**	
		–				VMQ	–	VMQ (silicone)					**-CS**	
	Deep	–							Vulkollan®				**-GT**	
	Suction cup holder	Male thread, 2 nuts, port on top											**-HA**	
		Female thread, port on side											**-HB**	
		Male thread, 2 nuts, port on top, height compensator											**-HC**	
		–	Male thread, 2 nuts, port on top, long height compensator										**-HCL**	
		Male thread, 2 nuts, port on side, height compensator											**-HD**	
		–	Male thread, 2 nuts, port on side, long height compensator										**-HDL**	
		External thread, port on top, screw-in thread											**-HE**	
		External thread, port on top, screw-in thread, height compensator											**-HF**	
	Vacuum port	Push-in connector for plastic tubing										1	**-QS**	
		Barbed fitting connection for plastic tubing										1	**-PK**	
O	Angle compensator	–				Universal joint with 30° deflection							**-WA**	
	Vacuum filter	–				Vacuum filter							**-F**	
	Suction cup insert	–				PE	–	PE				2	**-ES**	

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Suction grippers ESG – round design

Ordering data – Modular products

FESTO

M Mandatory data			O Options		
Suction cup holder	**Vacuum port**		**Angle compensator**	**Vacuum filter**	**Suction cup insert**
HA	QS		WA	F	ES
HB	PK				
HC	G				
HCL					
HD					
HDL					
HE					
HF					
– **HA**	– **QS**	–		–	–

Ordering table – Suction cup ∅ 60 … 200 mm

Size		∅ 60	∅ 80	∅ 100	∅ 150	∅ 200	Condi-tions	Code		Entry code
Holder size		5			6					
M Module no.		**189177**	**189178**	**189179**	**189180**	**189181**				
Gripper function		Suction gripper						**ESG**		ESG
Suction cup ∅ [mm]		60	80	100	150	200		**-...**		
Suction cup shape/ suction cup material	Flat	FPM (fluoro elastomer)						**-SF**		
		NBR (nitrile rubber)						**-SN**		
		VMQ (silicone)						**-SS**		
		PUR (polyurethane)						**-SU**		
	Extra deep	FPM (fluoro elastomer)			–			**-EF**		
		NBR (nitrile rubber)			–			**-EN**		
		VMQ (silicone)			–			**-ES**		
		PUR (polyurethane)			–			**-EU**		
	Bellows, 1.5 convo-lutions	–	NBR (nitrile rubber)	–				**-BN**		
		–	VMQ (silicone)	–				**-BS**		
		–	PUR (polyurethane)	–				**-BU**		
		–	Vulkollan®	–				**-BT**		
	Deep	Vulkollan®			–			**-GT**		
Suction cup holder		Male thread, 2 nuts, port on top						**-HA**		
		Female thread, port on side						**-HB**		
		Male thread, 2 nuts, port on top, height compensator						**-HC**		
		Male thread, 2 nuts, port on top, long height compensator						**-HCL**		
		Male thread, 2 nuts, port on side, height compensator						**-HD**		
		Male thread, 2 nuts, port on side, long height compensator						**-HDL**		
		External thread, port on top, screw-in thread			–			**-HE**		
Vacuum port		Threaded connection					3	**-G**		
O Angle compensator		Universal joint with 30° deflection			–			**-WA**		

1 **QS, PK** Not with suction cup holder HE, HF.

2 **ES** Can only be selected in combination with suction cup shape/suction cup material CN, CS

3 **G** Cannot be combined with suction cup holder HE

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Suction grippers ESG – oval design

Ordering data – Modular products

FESTO

	M Mandatory data						→
Holder size	**Module no.**	**Gripper function**		**Suction cup size**		**Suction cup shape/material**	
4	189182	ESG		4x10		ON	
	189183			4x20			
	189184			6x10			
	189185			6x20			
	189186			8x20			
	189187			8x30			
	189188			10x30			
5	189189			15x45			
	189190			20x60			
	189191			25x75			
	189192			30x90			
	Ordering example						
		ESG	–		–	**ON**	

Ordering table – Suction cup dimensions 4x10 … 10x30 mm

Size (suction cup dimensions)		4x10	4x20	6x10	6x20	8x20	8x30	10x30	Condi-tions	Code		Entry code
Holder size		4										
M	Module no.	**189182**	**189183**	**189184**	**189185**	**189186**	**189187**	**189188**				
	Gripper function	Suction gripper								**ESG**		ESG
	Suction cup size [mm]	4x10	4x20	6x10	6x20	8x20	8x30	10x30		**-...**		
	Suction cup shape/ suction cup material: Flat	NBR (nitrile rubber)								**-ON**		-ON
	Suction cup holder	Male thread, 2 nuts, port on top								**-HA**		
		Female thread, port on side								**-HB**		
		Male thread, 2 nuts, port on top, height compensator								**-HC**		
		Male thread, 2 nuts, port on top, long height compensator								**-HCL**		
		Male thread, 2 nuts, port on side, height compensator								**-HD**		
		Male thread, 2 nuts, port on side, long height compensator								**-HDL**		
		External thread, port on top, screw-in thread								**-HE**		
		External thread, port on top, screw-in thread, height compensator								**-HF**		
	Vacuum port	Push-in connector for plastic tubing							1	**-QS**		
		Barbed fitting connection for plastic tubing							1	**-PK**		
O	Vacuum filter	Vacuum filter								**-F**		

1 **QS, PK** Not with suction cup holder HE, HF.

Transfer order code

	ESG	–		–	**ON**	

Suction grippers ESG – oval design

Ordering data – Modular products

FESTO

M Mandatory data	O Options

	Suction cup holder		Port		Vacuum filter
	HA		QS		F
	HB		PK		
	HC		G		
	HCL				
	HD				
	HDL				
	HE				
	HF				
–		–		–	

Ordering table – Suction cup dimensions 15x45 … 30x90 mm

							Condi-tions	Code		Entry code
Size (suction cup dimensions)			15x45	20x60	25x75	30x90				
Holder size			5							
M	Module no.		**189189**	**189190**	**189191**	**189192**				
	Gripper function		Suction gripper					**ESG**		ESG
	Suction cup size [mm]		15x45	20x60	25x75	30x90		**-...**		
	Suction cup shape/ suction cup material	Flat	NBR (nitrile rubber)					**-ON**		-ON
	Suction cup holder		Male thread, 2 nuts, port on top					**-HA**		
			Female thread, port on side					**-HB**		
			Male thread, 2 nuts, port on top, height compensator					**-HC**		
			Male thread, 2 nuts, port on top, long height compensator					**-HCL**		
			Male thread, 2 nuts, port on side, height compensator					**-HD**		
			Male thread, 2 nuts, port on side, long height compensator					**-HDL**		
			External thread, port on top, screw-in thread					**-HE**		
	Port		Threaded connection					**-G**		

Transfer order code

–		–		–	