

Suction cup holders ESH

FESTO



Type codes

001	Series
ESH	Suction cup complete holder

002	Retainer version
HA	Male thread, 2 nuts, connection on top
HB	Female thread, connection on the side
HC	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

003	Suction cup connection
1	Push-in connector 3 mm
2	Push-in connector 4 mm
3	M4
4	M6
5	M10
6	M20x2

004	Vacuum connection
QS	Push-in connector
PK	Barbed fitting connection
G	Threaded connection
M3	Threaded connection M3
M5	Threaded connection M5
G1/8	Threaded connection G1/8
G1/4	Threaded connection G1/4
M10X1	Threaded connection M10x1
M14X1	Threaded connection M14x1

Data sheet

ESH-HA

- Vacuum port on top
- Mounting with lock nut
- Without height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data

Design	Vacuum port on top
Type of mounting	With lock nut
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	3	0.239	6
	PK-3		2.5	0.090	3
Size 2	QS-6	O.D. 4 mm ¹⁾	2	0.501	12
	PK-4		2	0.169	7
Size 3	QS-6	M4	5	0.520	20
	PK-4		2.5	0.274	10
Size 4	QS-6	M6	5	0.719	30
	PK-4		2.5	0.668	23
Size 5	G1/8	M10	8	1.862	84
Size 6	G1/4	M20x2	10	7.234	200

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

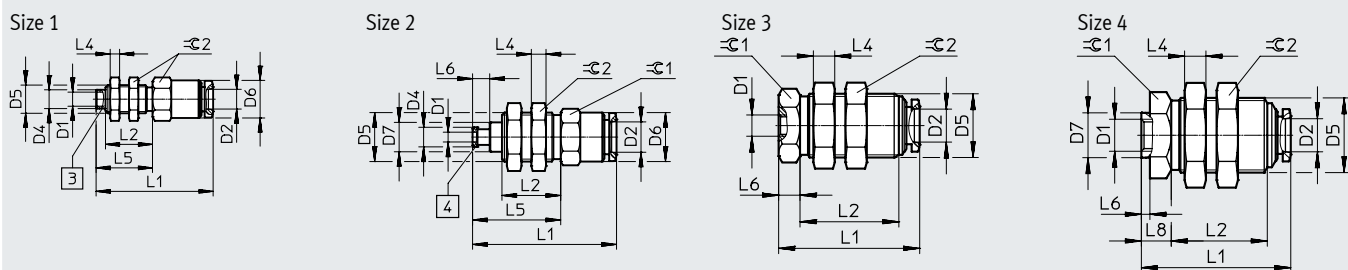
Materials

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	NBR	Steel, NBR	–
Note on materials	RoHS-compliant		

Data sheet

Dimensions

Push-in connector QS

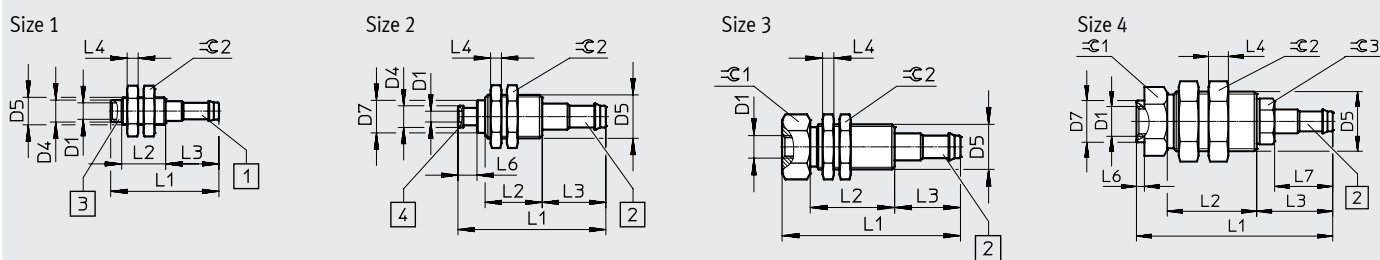


[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

∅	D1 ∅	D2 ∅	D4 ∅	D5	D6 ∅	D7 ∅	L1	L2	L4	L5	L6	L8	∅1	∅2
[mm]														
Size 1	3	4	4	M6x0.75	8	–	24.9	10	2	12	–	–	–	8
Size 2	2	6	4	M10x1	10	6	29.4	12	3	18	3.5	–	10	12
Size 3	M4	6	–	M12x1	–	–	26.4	18.5	–	–	4	–	12	14
Size 4	M6	6	–	M14x1	–	8.4	28	18	4	–	1.6	5.6	14	17

Barbed fitting connector PK



[1] Barbed connector PK-3 for plastic tubing

[2] Barbed connector PK-4 for plastic tubing

[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

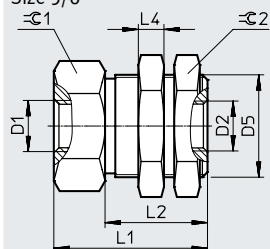
∅	D1 ∅	D4 ∅	D5	D7 ∅	L1	L2	L3	L4	L6	L7	∅1	∅2	∅3
[mm]													
Size 1	3	4	M5x0.5	–	19.7	8	9.7	2	–	–	–	8	–
Size 2	2	4	M8x0.75	65	27.2	10.5	11.7	2	3.5	–	–	10	–
Size 3	M4	–	M8x0.75	–	31.7	15	11.7	2	–	–	10	10	–
Size 4	M6	–	M12x1	8.4	39.5	18	15.3	4	1.6	11.7	12	14	5.5

Data sheet

Dimensions

Threaded connector G

Size 5/6



Ø	D1	D2	D5	L1	L2	L4	⌀ C 1	⌀ C 2
[mm]								
Size 5	M10	G1/8	M20x1	30	20	5	22	24
Size 6	M20x2	G1/4	M24x2	50	30	10	27	30

Ordering data

Allocation of suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connector	
		Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4	189193	ESH-HA-1-QS	–		–	
	PK-3	–		189194	ESH-HA-1-PK	–	
Size 2	QS-6	189195	ESH-HA-2-QS	–		–	
	PK-4	–		189196	ESH-HA-2-PK	–	
Size 3	QS-6	189197	ESH-HA-3-QS	–		–	
	PK-4	–		189198	ESH-HA-3-PK	–	
Size 4	QS-6	189199	ESH-HA-4-QS	–		–	
	PK-4	–		189200	ESH-HA-4-PK	–	
Size 5	G1/8	–		–		189201	ESH-HA-5-G
Size 6	G1/4	–		–		189202	ESH-HA-6-G

Data sheet

ESH-HB

- Vacuum port on side
- Mounting via female thread
- Without height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data

Design	Vacuum port on side
Type of mounting	With female thread
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	3	0.228	5
	PK-3		2.5	0.108	4
Size 2	QS-6	O.D. 4 mm ¹⁾	2	0.418	13
	PK-4		2	0.188	11
Size 3	QS-6	M4	3.3	0.539	29
	PK-4		2.5	0.313	27
Size 4	QS-6	M6	5	0.646	27
	PK-4		2.5	0.416	25
Size 5	G1/8	M10	8.5	1.921	91
Size 6	G1/4	M20x2	10	7.250	271

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials

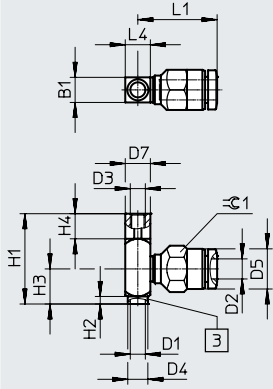
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	Steel, NBR	Steel, NBR	–
Note on materials	RoHS-compliant		

Data sheet

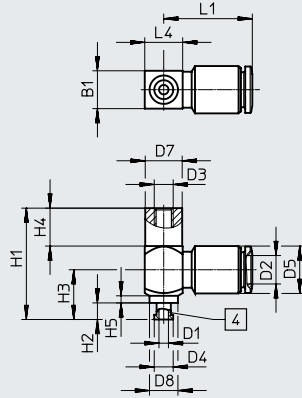
Dimensions

Push-in connector QS

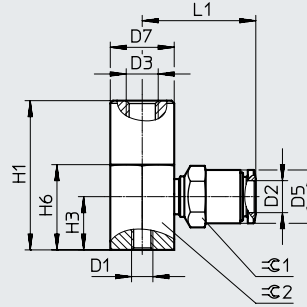
Size 1



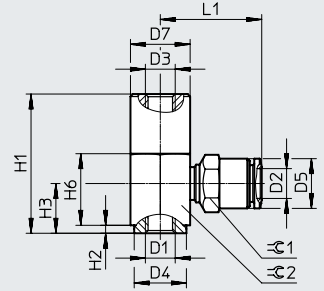
Size 2



Size 3



Size 4



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

∅	B1	D1	D2 ∅	D3	D4 ∅	D5 ∅	D7 ∅	D8 ∅	H1
[mm]									
Size 1	5	3	4	M3	4	8	5	–	18
Size 2	8	2	6	M4	4	10	8	6	23.5
Size 3	–	M4	6	M6	–	10	12	–	28
Size 4	–	M6	6	M6	10.5	10	12	–	28

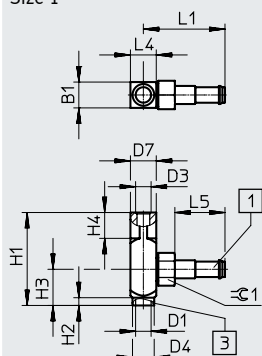
∅	H2	H3	H4	H6	L1	L4	∅ 1	∅ 2
[mm]								
Size 1	1.5	7	5	–	15.8	5	8	–
Size 2	3.5	10.5	8	–	18.7	8	–	–
Size 3	–	10	–	16	21.3	–	10	12
Size 4	1.6	10	–	14.4	20.4	–	10	12

Data sheet

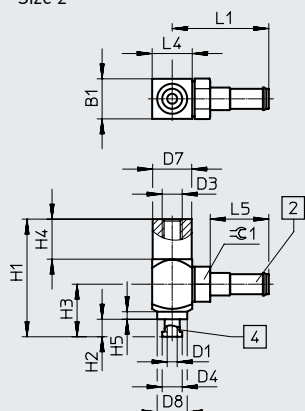
Dimensions

Barbed fitting connector PK

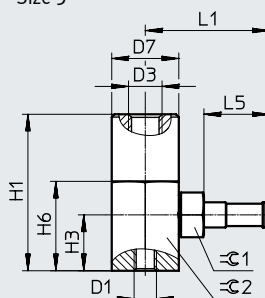
Size 1



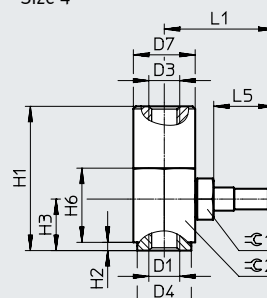
Size 2



Size 3



Size 4



[1] Barbed connector PK-3 for plastic tubing

[2] Barbed connector PK-4 for plastic tubing

[3] Drilled hole for suction cup

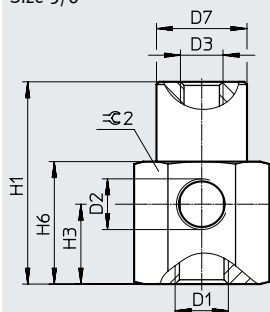
[4] Barbed connector for suction cup

ø	B1	D1	D3	D4 ø	D7 ø	D8 ø	H1	H2
[mm]								
Size 1	5	3	M3	4	5	–	18	1.5
Size 2	8	2	M4	4	8	6	23.5	3.5
Size 3	–	M4	M6	–	12	–	28	–
Size 4	–	M6	M6	10.5	12	–	28	1.6

ø	H3	H4	H5	H6	L1	L4	L5	∅ 1	∅ 2
[mm]									
Size 1	7	5	–	–	15.8	5	9.7	5.5	–
Size 2	10.5	8	1.5	–	19.3	8	11.7	7	–
Size 3	10	–	–	16	21.3	–	11.7	8	12
Size 4	10	–	–	14.4	21.3	–	11.7	8	12

Threaded connector G

Size 5/6



ø	D1	D2 ø	D3	D7 ø	H1	H3	H6	∅ 2
[mm]								
Size 5	M10	G1/8	M8	17	38	15	23	22
Size 6	M20x2	G1/4	M16	26	65	25	35	30

Data sheet

Ordering data							
Allocation of suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connector	
		Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4	189203	ESH-HB-1-QS	–		–	
	PK-3	–		189204	ESH-HB-1-PK	–	
Size 2	QS-6	189205	ESH-HB-2-QS	–		–	
	PK-4	–		189206	ESH-HB-2-PK	–	
Size 3	QS-6	189207	ESH-HB-3-QS	–		–	
	PK-4	–		189208	ESH-HB-3-PK	–	
Size 4	QS-6	189209	ESH-HB-4-QS	–		–	
	PK-4	–		189210	ESH-HB-4-PK	–	
Size 5	G1/8	–		–		189211	ESH-HB-5-G
Size 6	G1/4	–		–		189212	ESH-HB-6-G

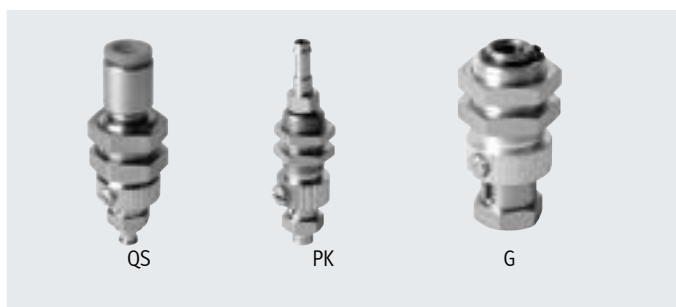
Data sheet

ESH-HC

- Vacuum port on top
- Mounting with lock nut
- With height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data

Design	Vacuum port on top, with height compensator
Type of mounting	With lock nut
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensator [mm]	Spring force (normal/ min. length) [N]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	2.4	3	Max. 1	0.385	17
	PK-3		1.2			0.117	8
Size 2	QS-6	O.D. 4 mm ¹⁾	2.2	3	Max. 1	0.551	18
	PK-4		1.2			0.192	8
Size 3	QS-6	M4	3.4	6	2/5	1.041	34
	PK-4		2.5			0.789	32
Size 4	QS-6	M6	3.4	6	5/10	1.153	33
	PK-4		2.5			0.911	31
Size 5	G1/8	M10	8.4	10	8/18	3.327	112
Size 6	G1/4	M20x2	10	20	1 2/22	11.537	472

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials

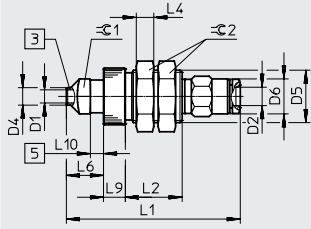
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	Steel, NBR	Steel, NBR	—
Note on materials	RoHS-compliant		

Data sheet

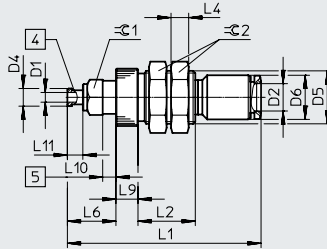
Dimensions

Push-in connector QS

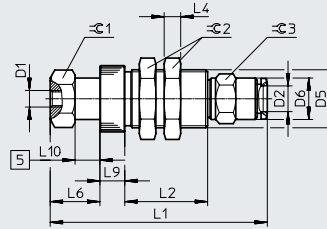
Size 1



Size 2



Size 3/4

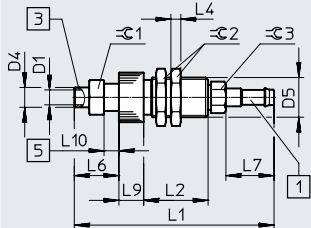


- [3] Drilled hole for suction cup
 [4] Barbed connector for suction cup
 [5] Stroke

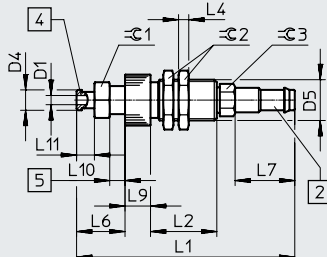
ø	D1	D2 ø	D4 ø	D5	D6	L1	L2	L4	L6	L9	L10	≈ 1	≈ 2	≈ 3
[mm]														
Size 1	3	4	4	M12x1	8	39.8	13	4	8.5	5	3	8	14	–
Size 2	2.2	6	4	M12x1	M10	43.9	13	4	11	5	3	8	14	–
Size 3	M4	6	–	M14x1	10	52.4	20	4	12	6	6	12	17	10
Size 4	M6	6	–	M14x1	10	52.4	20	4	12	6	6	12	17	10

Barbed fitting connector PK

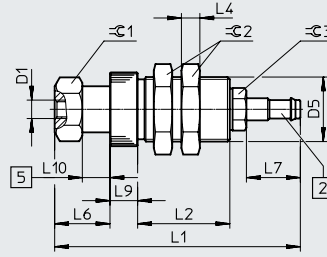
Size 1



Size 2



Size 3/4



- [1] Barbed connector PK-3 for plastic tubing
 [2] Barbed connector PK-4 for plastic tubing
 [3] Drilled hole for suction cup
 [4] Barbed connector for suction cup
 [5] Stroke

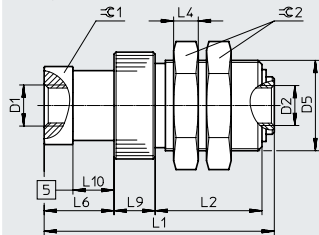
ø	D1	D4 ø	D5	L1	L2	L4	L6	L7	L9	L10	L11	≈ 1	≈ 2	≈ 3
[mm]														
Size 1	3	4	M8x0.75	40.3	13	2	9	9.7	5	3	–	7	10	5.5
Size 2	1.8	4	M8x0.75	42.8	13	2	9.5	11.7	5	3	3.5	7	10	5
Size 3	M4	–	M14x1	53.3	20	4	12	11.7	6	6	–	12	17	8
Size 4	M6	–	M14x1	53.3	20	4	12	11.7	6	6	–	12	17	8

Data sheet

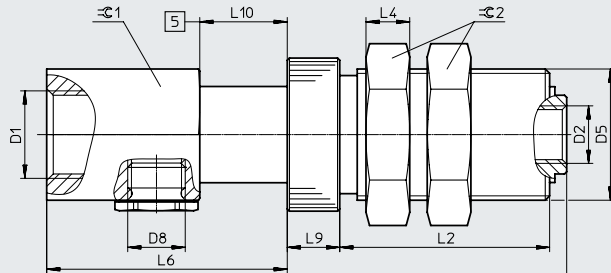
Dimensions

Threaded connector G

Size 5



Size 6



[5] Stroke

∅	D1	D2	D5	D8	L1	L2	L4	L6	L9	L10	∅ 1	∅ 2
[mm]												
Size 5	M10	G1/8	M22x1	–	56	26	6	17	10	10	19	27
Size 6	M20x2	G1/4	M30x2	G1/4	118.9	48	10	55	12	20	30	36

Ordering data

Allocation of suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connector	
		Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4	189213	ESH-HC-1-QS	–		–	
	PK-3	–		189214	ESH-HC-1-PK	–	
Size 2	QS-6	189215	ESH-HC-2-QS	–		–	
	PK-4	–		189216	ESH-HC-2-PK	–	
Size 3	QS-6	189217	ESH-HC-3-QS	–		–	
	PK-4	–		189218	ESH-HC-3-PK	–	
Size 4	QS-6	189219	ESH-HC-4-QS	–		–	
	PK-4	–		189220	ESH-HC-4-PK	–	
Size 5	G1/8	–		–		189221	ESH-HC-5-G
Size 6	G1/4	–		–		189222	ESH-HC-6-G

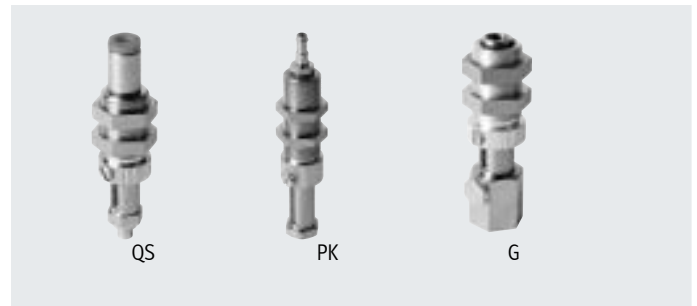
Data sheet

ESH-HCL

- Vacuum port on top
- Mounting with lock nut
- With long height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data

Design	Vacuum port on top, with height compensator
Type of mounting	With lock nut
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensator [mm]	Spring force (normal/ min. length) [N]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	2.8	10	Max. 1	0.489	20
	PK-3		1.9			0.360	19
Size 2	QS-6	O.D. 4 mm ¹⁾	2.2	10	Max. 1	0.519	20
	PK-4		2.2			0.398	19
Size 3	QS-6	M4	3.4	20	1/3	1.616	48
	PK-4		3			1.383	46
Size 4	QS-6	M6	3.4	20	1/9	1.780	47
	PK-4		3			1.535	45
Size 5	G1/8	M10	8.4	30	1 0/16	6.060	169
Size 6	G1/4	M20x2	10	40	1 5/32	16.325	560

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

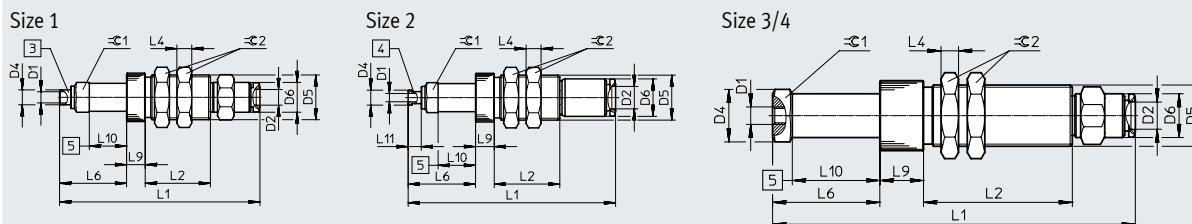
Materials

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	Steel, NBR	Steel, NBR	-
Note on materials	RoHS-compliant		

Data sheet

Dimensions

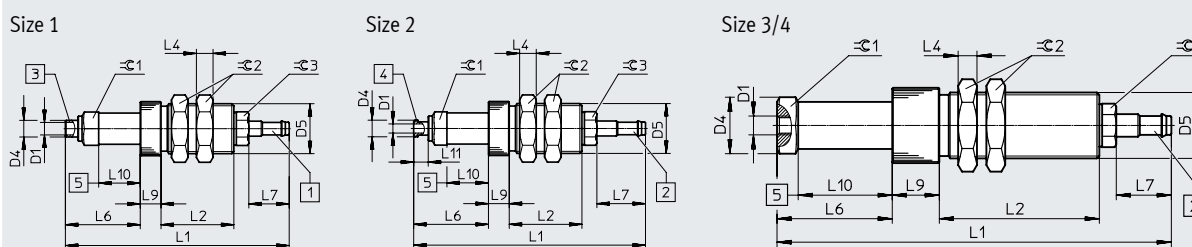
Push-in connector QS



- [3] Drilled hole for suction cup
 [4] Barbed connector for suction cup
 [5] Stroke

∅	D1	D2 ∅	D4 ∅	D5	D6 ∅	L1	L2	L4	L6	L9	L10	L11	∅ 1	∅ 2
[mm]														
Size 1	3	4	4	M12x1	8	53.8	17.5	4	18	5	10	–	8	14
Size 2	2.2	6	4	M12x1	6	55.4	17.5	4	18	5	10	3.5	8	14
Size 3	M4	6	10	M14x1	10	82.9	34	4	24.5	10	20	–	12	17
Size 4	M6	6	10	M14x1	10	82.9	34	4	24.5	10	20	–	12	17

Barbed fitting connector PK



- [1] Barbed connector PK-3 for plastic tubing
 [2] Barbed connector PK-4 for plastic tubing
 [3] Drilled hole for suction cup
 [4] Barbed connector for suction cup
 [5] Stroke

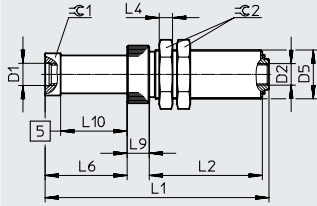
∅	D1	D4 ∅	D5	L1	L2	L4	L6	L7	L9	L10	L11	∅ 1	∅ 2	∅ 3
[mm]														
Size 1	3	4	M12x1	53.8	17.5	4	18	9.7	5	10	–	8	14	7
Size 2	2.2	4	M12x1	55.8	17.5	4	18	11.7	5	10	3.5	8	14	7
Size 3	M4	10	M14x1	83.8	34	4	24.5	11	10	20	–	12	17	8
Size 4	M6	10	M14x1	83.8	34	4	24.5	11	10	20	–	12	17	8

Data sheet

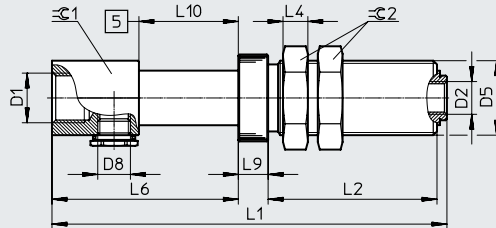
Dimensions

Threaded connector G

Size 5



Size 6



[5] Stroke

Ø	D1	D2	D5	L1	L2	L4	L6	L9	L10	⌀ 1	⌀ 2
[mm]											
Size 5	M10	G1/8	M22x1	101	51	6	37	10	M30	19	27
Size 6	M20x2	G1/4	M30x2	159	68	10	75	12	40	30	36

Ordering data

Allocation of suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connector	
		Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4	189223	ESH-HCL-1-QS	–	–	–	–
	PK-3	–	–	189224	ESH-HCL-1-PK	–	–
Size 2	QS-6	189225	ESH-HCL-2-QS	–	–	–	–
	PK-4	–	–	189226	ESH-HCL-2-PK	–	–
Size 3	QS-6	189227	ESH-HCL-3-QS	–	–	–	–
	PK-4	–	–	189228	ESH-HCL-3-PK	–	–
Size 4	QS-6	189229	ESH-HCL-4-QS	–	–	–	–
	PK-4	–	–	189230	ESH-HCL-4-PK	–	–
Size 5	G1/8	–	–	–	–	189231	ESH-HCL-5-G
Size 6	G1/4	–	–	–	–	189232	ESH-HCL-6-G

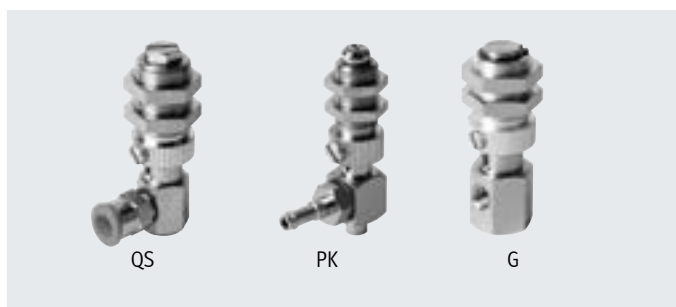
Data sheet

ESH-HD

- Vacuum port on side
- Mounting with lock nut
- With height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data	
Design	Vacuum port on side, with height compensator
Type of mounting	With lock nut
Mounting position	Vertical

Technical data							
Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensator [mm]	Spring force (normal/min. length) [N]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	3	3	Max. 1	0.241	13
	PK-3		1.9			0.120	11
Size 2	QS-6	O.D. 4 mm ¹⁾	1.8	3	Max. 1	0.417	15
	PK-4		1.8			0.183	12
Size 3	QS-6	M4	3.3	6	2/5	0.573	46
	PK-4		3			0.343	44
Size 4	QS-6	M6	5	6	5/10	0.678	45
	PK-4		3			0.449	43
Size 5	G1/8	M10	8.5	10	8/18	2.072	195
Size 6	G1/4	M20x2	10	20	1 2/22	13.171	472

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions			
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

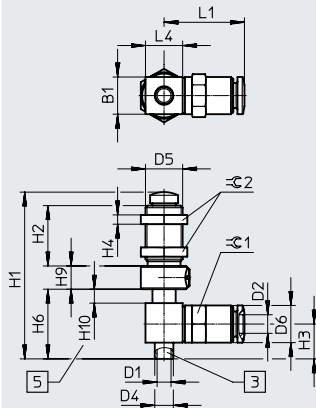
Materials			
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	Steel, NBR	Steel, NBR	—
Note on materials	RoHS-compliant		

Data sheet

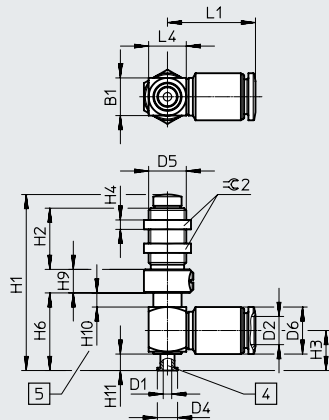
Dimensions

Push-in connector QS

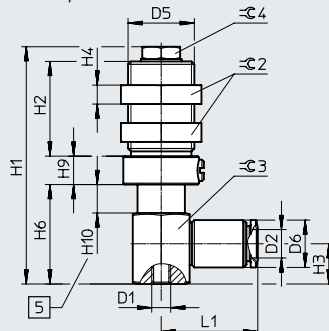
Size 1



Size 2



Size 3/4



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

ø	B1	D1	D2 ø	D4 ø	D5	D6 ø	H1	H2	H3	H4
[mm]										
Size 1	8	3	4	4	M8x0.75	8	35.9	13	7.5	2
Size 2	8	1.8	6	4.3	M8x0.75	10	37.4	13	8.5	2
Size 3	–	M4	6	–	M14x1	10	50.1	20	8.5	4
Size 4	–	M6	6	–	M14x1	10	50.1	20	8.5	4

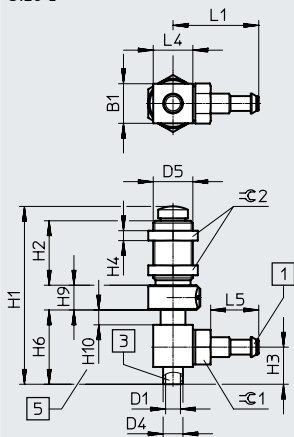
ø	H6	H9	H10	H11	L1	L4	≈G 1	≈G 2	≈G 3	≈G 4
[mm]										
Size 1	15	5	3	–	17.3	8	8	10	–	–
Size 2	16.5	5	3	3.5	18.7	8	–	10	–	–
Size 3	21	6	6	–	20.4	–	–	17	12	8
Size 4	21	6	6	–	20.4	–	–	17	12	8

Data sheet

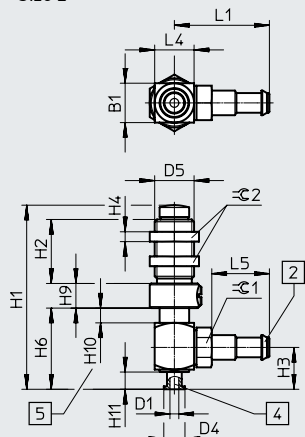
Dimensions

Barbed fitting connector PK

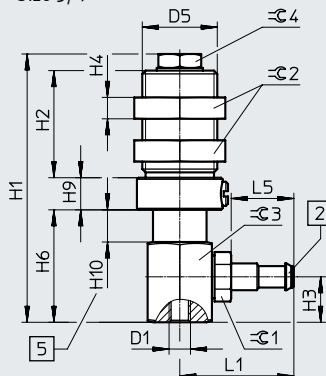
Size 1



Size 2



Size 3/4



[1] Barbed connector PK-3 for plastic tubing

[2] Barbed connector PK-4 for plastic tubing

[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

∅	B1	D1	D2 ∅	D4 ∅	D5	D6 ∅	H1	H2	H3	H4
[mm]										
Size 1	8	3	4	4	M8x0.75	8	35.9	13	7.5	2
Size 2	8	1.8	6	4.3	M8x0.75	10	37.4	13	8.5	2
Size 3	–	M4	6	–	M14x1	10	50.1	20	8.5	4
Size 4	–	M6	6	–	M14x1	10	50.1	20	8.5	4

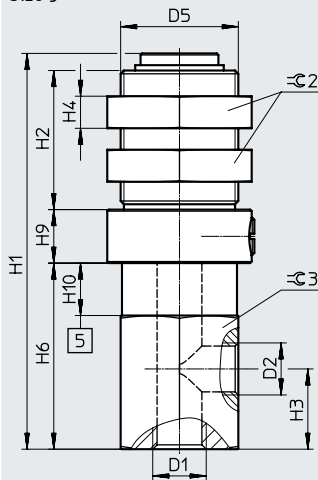
∅	H6	H9	H10	H11	L1	L4	∅ 1	∅ 2	∅ 3	∅ 4
[mm]										
Size 1	15	5	3	–	17.3	8	8	10	–	–
Size 2	16.5	5	3	3.5	18.7	8	–	10	–	–
Size 3	21	6	6	–	20.4	–	–	17	12	8
Size 4	21	6	6	–	20.4	–	–	17	12	8

Data sheet

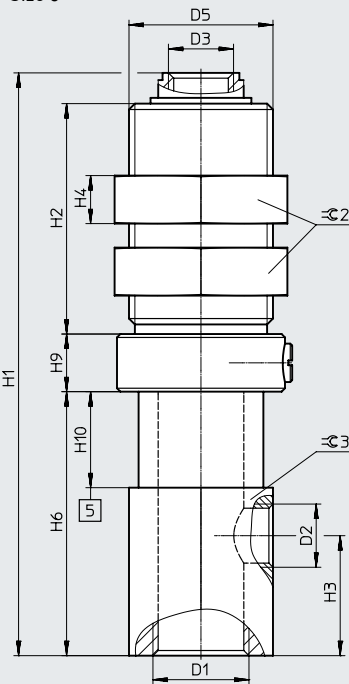
Dimensions

Threaded connector G

Size 5



Size 6



[5] Stroke

Ø	D1	D2	D3	D5	H1	H2	H3	H4	H6	H9	H10	≈ 2	≈ 3
[mm]													
Size 5	M10	G1/8	–	M22x1	74	26	15	6	34.8	10	9.8	27	22
Size 6	M20x2	G1/4	G1/4	M30x2	121.4	48	25	10	55	12	20	36	30

Ordering data

Allocation of suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connector	
		Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4	189233	ESH-HD-1-QS	–	–	–	–
	PK-3	–	–	189234	ESH-HD-1-PK	–	–
Size 2	QS-6	189235	ESH-HD-2-QS	–	–	–	–
	PK-4	–	–	189236	ESH-HD-2-PK	–	–
Size 3	QS-6	189237	ESH-HD-3-QS	–	–	–	–
	PK-4	–	–	189238	ESH-HD-3-PK	–	–
Size 4	QS-6	189239	ESH-HD-4-QS	–	–	–	–
	PK-4	–	–	189240	ESH-HD-4-PK	–	–
Size 5	G1/8	–	–	–	–	189241	ESH-HD-5-G
Size 6	G1/4	–	–	–	–	189242	ESH-HD-6-G

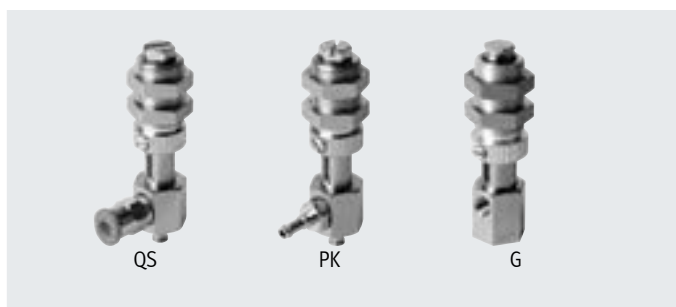
Data sheet

ESH-HDL

- Vacuum port on side
- Mounting with lock nut
- With long height compensator

Vacuum port:

- Push-in connector QS
- Barbed fitting connector PK
- Threaded connector G



General technical data

Design	Vacuum port on side, with height compensator
Type of mounting	With lock nut
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensator [mm]	Spring force (normal/min. length) [N]	Volume [cm ³]	Weight [g]
Size 1	QS-4	I.D. 3 mm ¹⁾	3	10	Max. 1	0.272	29
	PK-3		1.9			0.150	28
Size 2	QS-6	O.D. 4 mm ¹⁾	2.2	10	Max. 1	0.260	33
	PK-4		2.2			0.138	32
Size 3	QS-6	M4	3.3	20	1/3	0.474	65
	PK-4		3			0.252	63
Size 4	QS-6	M6	5	20	1/9	0.370	65
	PK-4		3			0.448	63
Size 5	G1/8	M10	8.5	30	1 0/16	1.667	273
Size 6	G1/4	M20x2	10	40	1 5/32	16.968	560

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:-:-]		
Ambient temperature [°C]	0 ... +60	-10 ... +60	-10 ... +60
Corrosion resistance class CRC ¹⁾	1		

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials

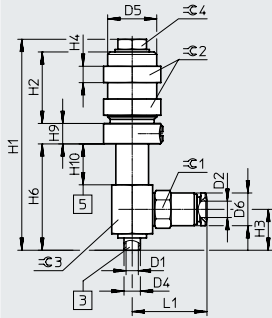
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connector G
Holder	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass
Seals	Steel, NBR	Steel, NBR	—
Note on materials	RoHS-compliant		

Data sheet

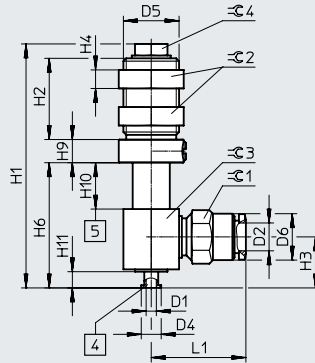
Dimensions

Push-in connector QS

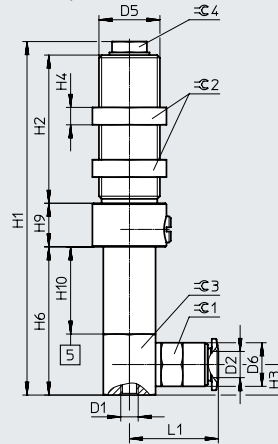
Size 1



Size 2



Size 3/4



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

\varnothing	D1	D2 \varnothing	D4 \varnothing	D5	D6 \varnothing	H1	H2	H3	H4
[mm]									
Size 1	3	4	4	M12x1	8	51.6	17.5	10	4
Size 2	2.2	6	4	M12x1	10	52.6	17.5	11	4
Size 3	M4	6	–	M14x1	10	81.1	34	7	4
Size 4	M6	6	–	M14x1	10	81.1	34	7	4

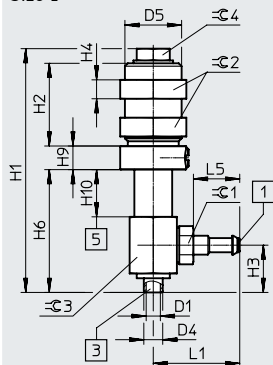
\varnothing	H6	H9	H10	H11	L1	$\varnothing 1$	$\varnothing 2$	$\varnothing 3$	$\varnothing 4$
[mm]									
Size 1	26	5	10	–	18.3	8	14	10	7
Size 2	27	5	10	3.5	20.4	8	14	12	7
Size 3	34	10	20	–	20.4	10	17	12	8
Size 4	34	10	20	–	20.4	10	17	12	8

Data sheet

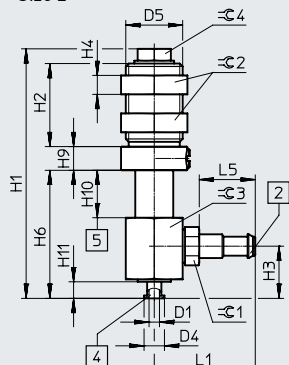
Dimensions

Barbed fitting connector PK

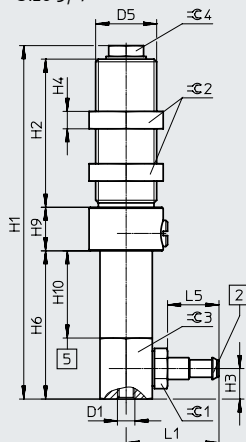
Size 1



Size 2



Size 3/4



[1] Barbed connector PK-3 for plastic tubing

[2] Barbed connector PK-4 for plastic tubing

[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

∅	D1	D4 ∅	D5	H1	H2	H3	H4	H6	H9
[mm]									
Size 1	3	4	M12x1	51.6	17.5	10	4	26	5
Size 2	2.2	4	M12x1	52.6	17.5	11	4	27	5
Size 3	M4	–	M14x1	81.1	34	7	4	34	10
Size 4	M4	–	M14x1	81.1	34	7	4	34	10

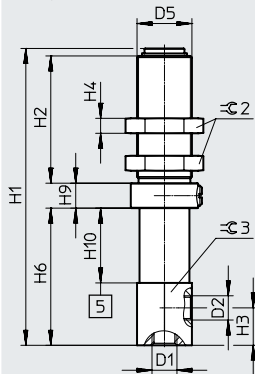
∅	H10	H11	L1	L5	∅ 1	∅ 2	∅ 3	∅ 4
[mm]								
Size 1	10	–	18.3	9.8	7	14	10	7
Size 2	10	3.5	21.3	11.8	7	14	12	7
Size 3	20	–	21.3	11.8	8	17	12	8
Size 4	20	–	21.3	11.8	8	17	12	8

Data sheet

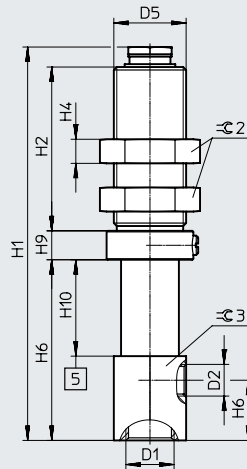
Dimensions

Threaded connector G

Size 5



Size 6



[5] Stroke

∅	D1	D2	D5	H1	H2	H3	H4	H6	H9	H10	≈ 2	≈ 3
[mm]												
Size 5	M10	G1/8	M22x1	119	51	15	6	55	10	30	27	22
Size 6	M20x2	G1/4	M30x2	163.3	68	25	10	75	12	40	36	30

Ordering data

Allocation of suction cup holders	Vacuum port		Push-in connector		Barbed fitting connector		Threaded connector	
			Part no.	Type	Part no.	Type	Part no.	Type
Size 1	QS-4		189243	ESH-HDL-1-QS	–		–	
	PK-3		–		189244	ESH-HDL-1-PK	–	
Size 2	QS-6		189245	ESH-HDL-2-QS	–		–	
	PK-4		–		189246	ESH-HDL-2-PK	–	
Size 3	QS-6		189247	ESH-HDL-3-QS	–		–	
	PK-4		–		189248	ESH-HDL-3-PK	–	
Size 4	QS-6		189249	ESH-HDL-4-QS	–		–	
	PK-4		–		189250	ESH-HDL-4-PK	–	
Size 5	G1/8		–		–		189251	ESH-HDL-5-G
Size 6	G1/4		–		–		189252	ESH-HDL-6-G

Data sheet

ESH-HE

- Vacuum port on top
- Mounting via threaded connection for direct screw-in
- Without height compensator

Vacuum port:

- Threaded connection M3 and M5
- Threaded connector G1/8 and G1/4

**General technical data**

Design	Vacuum port on top
Type of mounting	Via male thread, via vacuum port
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm³]	Weight [g]
Size 1	M3	I.D. 3 mm ¹⁾	1.2	0.040	1
Size 2	M5	O.D. 4 mm ¹⁾	2	0.036	3
Size 3	G1/8	M4	3	0.106	11
Size 4	G1/8	M6	4	0.289	11
Size 5	G1/4	M10	7	1.227	24

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:--:-]
Ambient temperature [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	1

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials

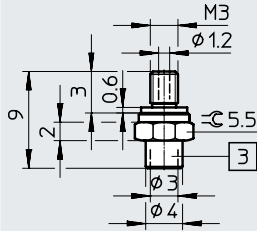
Holder	Tempered steel
Seals	Steel, NBR, wrought aluminium alloy, POM
Note on materials	RoHS-compliant

Data sheet

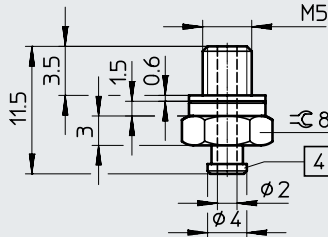
Dimensions

G and M thread

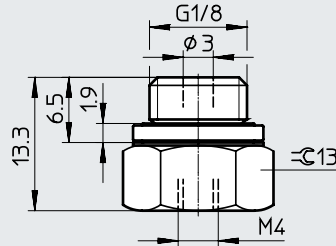
Size 1



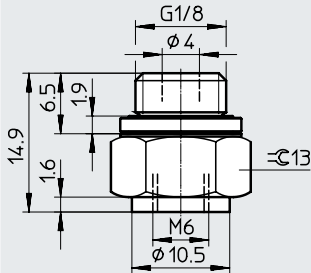
Size 2



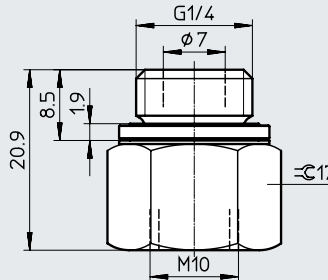
Size 3



Size 5



Size 6



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

Ordering data

Allocation of suction cup holders	Vacuum port	Part no.	Type
Size 1	M3	189253	ESH-HE-1-M3
Size 2	M5	189254	ESH-HE-2-M5
Size 3	G1/8	189255	ESH-HE-3-G1/8
Size 4	G1/8	189256	ESH-HE-4-G1/8
Size 5	G1/4	189257	ESH-HE-5-G1/4

Data sheet

ESH-HF

- Vacuum port on top
- Mounting via threaded connection for direct screw-in
- With height compensator

Vacuum port:

- Threaded connector M10x1 and M14x1

**General technical data**

Design	Vacuum port on top, with height compensator
Type of mounting	Via male thread, via vacuum port
Mounting position	Vertical

Technical data

Allocation of suction cup holders for suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensator [mm]	Spring force (normal/ min. length) [N]	Volume [cm ³]	Weight [g]
Size 1	M10x1	I.D. 3 mm ¹⁾	2	2.6	2/4	0.108	14
Size 2	M10x1	O.D. 4 mm ¹⁾	2			0.090	14
Size 3	M14x1	M4	3.3	6	6/12	0.400	54
Size 4	M14x1	M6	4			0.655	52

1) Suction cup ESS is pushed in or on.

Operating and environmental conditions

Operating medium	Atmospheric air based on ISO 8573-1:2010 [7:--:-]
Ambient temperature [°C]	-10 ... +60
Corrosion resistance class CRC ¹⁾	1

1) Corrosion resistance class CRC 1 to Festo standard FN 940070

Low corrosion stress. Dry indoor application or transport and storage protection. Also applies to parts behind coverings, in the non-visible interior area, and parts which are covered in the application (e.g. drive trunnions).

Materials

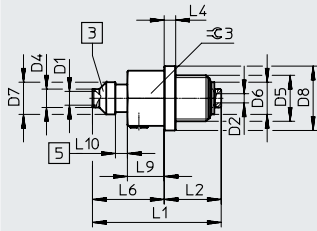
Holder	Tempered steel
Seals	NBR, POM
Note on materials	RoHS-compliant

Data sheet

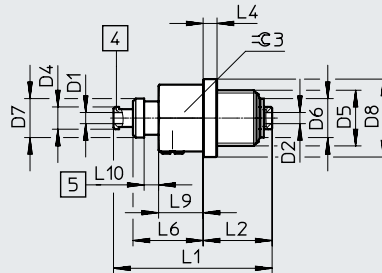
Dimensions

M thread

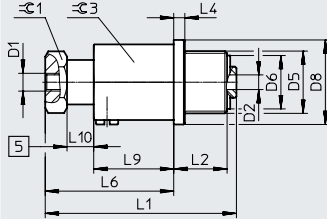
Size 1



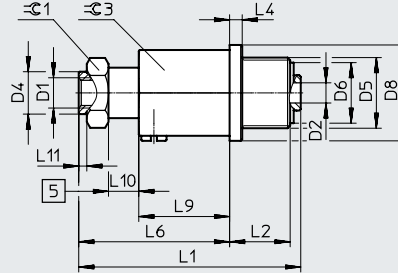
Size 2



Size 3



Size 4



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

∅	D1	D2 ∅	D4 ∅	D5	D6 ∅	D7	D8 ∅
[mm]							
Size 1	3	2	4	M10x1	7	7	14
Size 2	2	2	4	M10x1	7	7	14
Size 3	M4	3.3	–	M14x1	12	–	19
Size 4	M6	4	8.4	M14x1	12	–	19

∅	L1	L2	L4	L6	L9	L10	≈ 1	≈ 3
[mm]								
Size 1	28	12.4	2.5	15.6	8	2.6	–	12
Size 2	28.5	12.4	2.5	12.6	8	2.6	–	12
Size 3	43	12	2.5	28.9	18	6	12	17
Size 4	44	12	2.5	29.9	18	6	12	17

Ordering data

Allocation of suction cup holders	Vacuum port	Part no.	Type
Size 1	M10x1	189260	ESH-HF-1-M10x1
Size 2	M10x1	189261	ESH-HF-2-M10x1
Size 3	M14x1	189262	ESH-HF-3-M14x1
Size 4	M14x1	189263	ESH-HF-4-M14x1