

## Suction cup holders ESH

**FESTO**



## Type codes

001	Series
<b>ESH</b>	Suction cup complete holder
002	Retainer version
<b>HA</b>	Male thread, 2 nuts, connection on top
<b>HB</b>	Female thread, connection on the side
<b>HC</b>	Male thread, 2 nuts, connection on top, height compensation
<b>HCL</b>	Male thread, 2 nuts, connection on top, long height compensation
<b>HD</b>	Male thread, 2 nuts, connection on the side, height compensation
<b>HDL</b>	Male thread, 2 nuts, connection on the side, long height compensation
<b>HE</b>	Male screw-in thread, connection on top
<b>HF</b>	Male screw-in thread, connection on top, height compensation

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

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

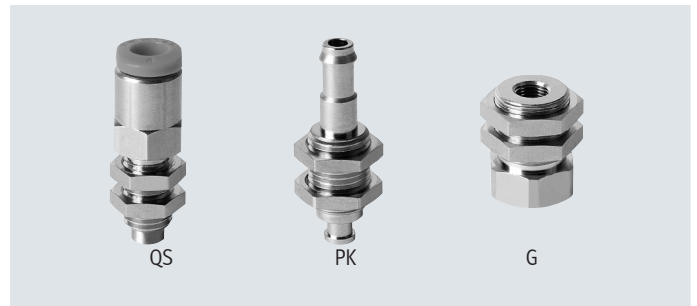
## Datasheet

### ESH-HA

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

### Vacuum port:

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



General technical data	
Design	Vacuum port on top
Type of mounting	With lock nut
Mounting position	Optional

Technical data					
Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm <sup>3</sup> ]	Weight [g]
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	3	0.239	6
	PK-3		2.5	0.090	3
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

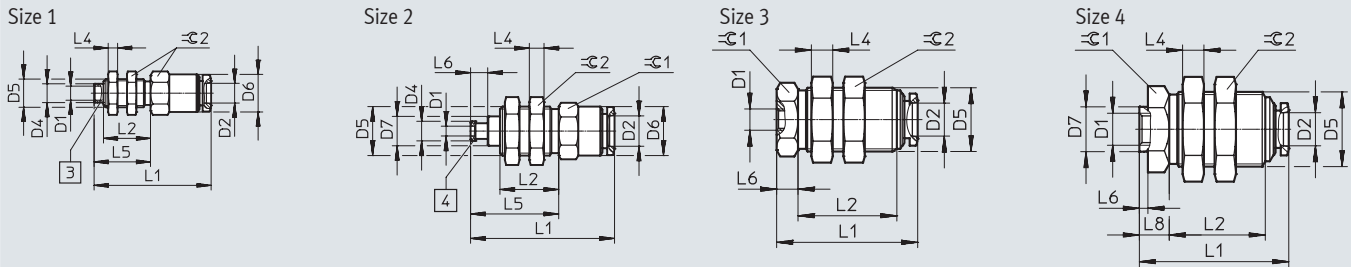
1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

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

Datasheet

**Dimensions**

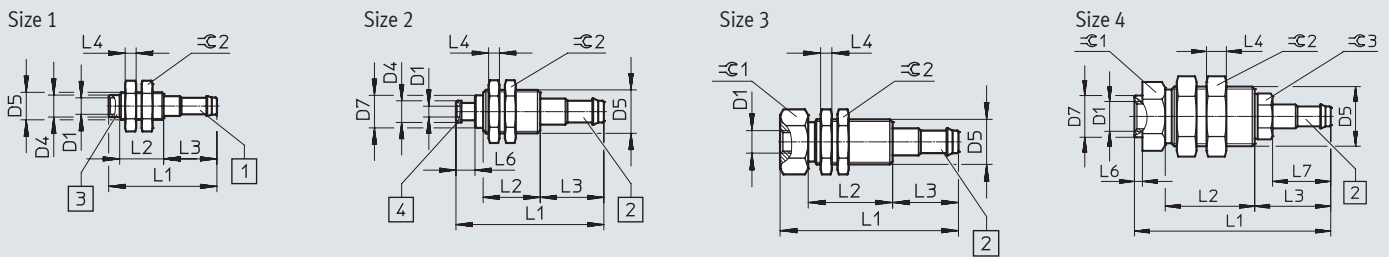
Push-in connector QS



- [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

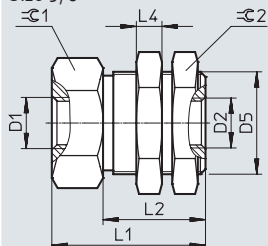
∅	D1	D4	D5	D7	L1	L2	L3	L4	L6	L7	∅ 1	∅ 2	∅ 3
[mm]	∅	∅		∅									
Size 1	3	4	M5x0.5	-	19.7	8	9.7	2	-	-	-	8	-
Size 2	2	4	M8x0.75	65	27.2	10.5	11.7	2	3.5	-	-	10	-
Size 3	M4	-	M8x0.75	-	31.7	15	11.7	2	-	-	10	10	-
Size 4	M6	-	M12x1	8.4	39.5	18	15.3	4	1.6	11.7	12	14	5.5

## Datasheet

## Dimensions

Threaded connection G

Size 5/6



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

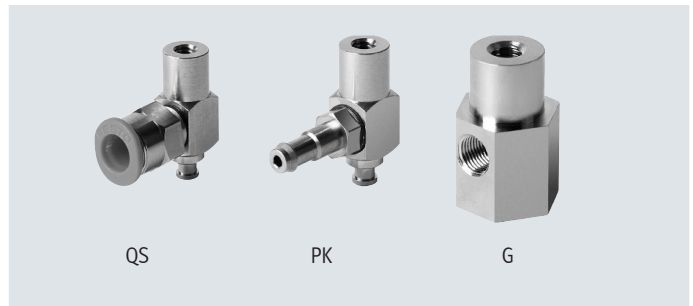
## Ordering data

Allocating suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connection	
		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

## Datasheet

### ESH-HB

- Vacuum port on the side
  - Mounting via female thread
  - Without height compensation
- Vacuum port:
- Push-in connector QS
  - Barbed fitting connector PK
  - Threaded connection G



#### General technical data

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

#### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm <sup>3</sup> ]	Weight [g]
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	3	0.228	5
	PK-3		2.5	0.108	4
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

#### Materials

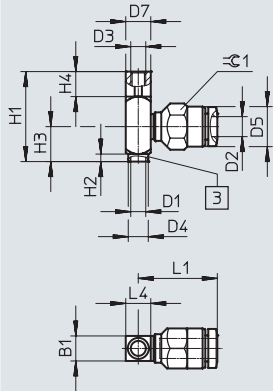
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connection G
Retaining bracket	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass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

Datasheet

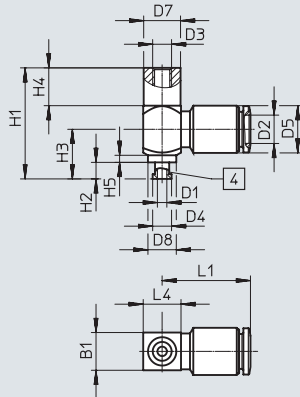
Dimensions

Push-in connector QS

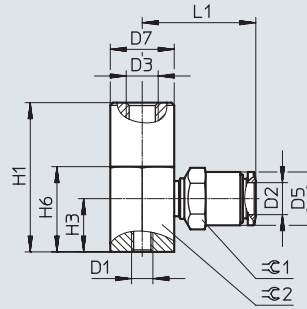
Size 1



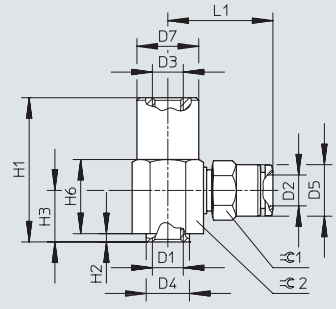
Size 2



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	8.4	10	12	-	28

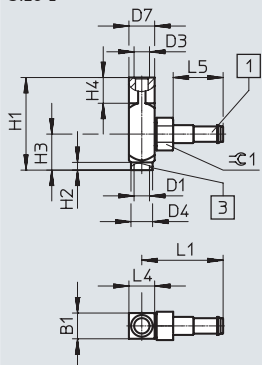
∅	H2	H3	H4	H6	L1	L4	∅ 1	∅ 2
[mm]								
Size 1	1.5	7	5	-	15.8	5	8	-
Size 2	3.5	10.5	8	-	18.7	8	-	-
Size 3	-	10	-	16	21.3	-	10	12
Size 4	1.6	10	-	14.4	20.4	-	10	12

Datasheet

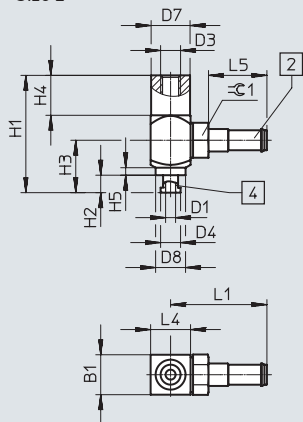
Dimensions

Barbed fitting connector PK

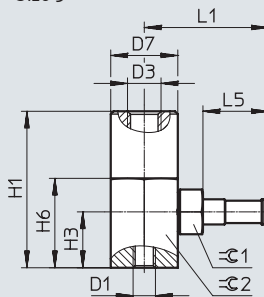
Size 1



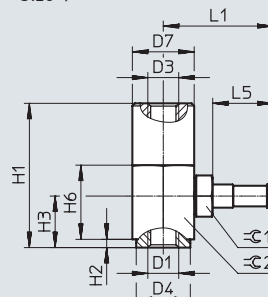
Size 2



Size 3



Size 4



- [1] Barbed connector PK-3 for plastic tubing
- [2] Barbed connector PK-4 for plastic tubing

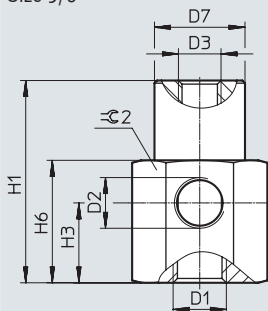
- [3] Drilled hole for suction cup
- [4] Barbed connector for suction cup

∅	B1	D1	D3	D4	D7	D8	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

∅	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 connection G

Size 5/6



∅	D1	D2	D3	D7	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



## Datasheet

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

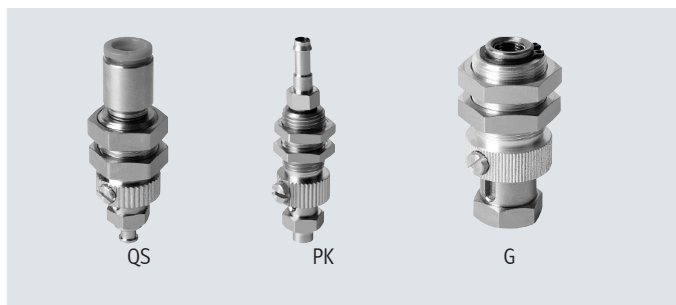
## Datasheet

### ESH-HC

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

### Vacuum port:

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



### General technical data

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

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width	Suction cup holder height compensation [mm]	Spring force (normal/min. length) [N]	Volume [cm <sup>3</sup> ]	Weight [g]
			[mm]				
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	2.4	3	Max. 1	0.385	17
	PK-3		1.2				
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	2.2	3	Max. 1	0.551	18
	PK-4		1.2				
Size 3	QS-6	M4	3.4	6	2/5	1.041	34
	PK-4		2.5				
Size 4	QS-6	M6	3.4	6	5/10	1.153	33
	PK-4		2.5				
Size 5	G1/8	M10	8.4	10	8/18	3.327	112
Size 6	G1/4	M20x2	10	20	12/22	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

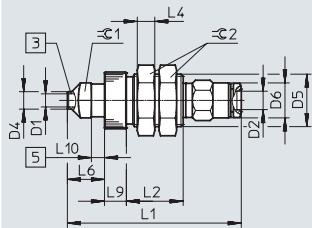
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connection G
Retaining bracket	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass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

## Datasheet

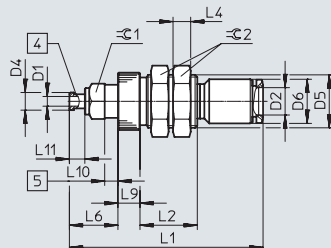
### Dimensions

Push-in connector QS

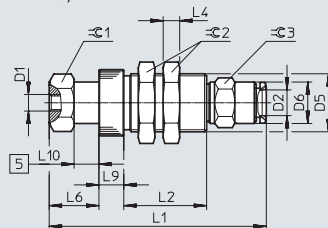
Size 1



Size 2



Size 3/4

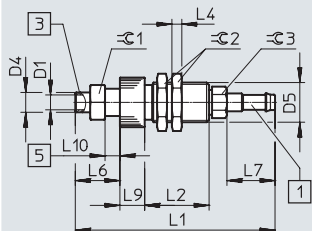


- [3] Drilled hole for suction cup
- [4] Barbed connector for suction cup
- [5] Stroke

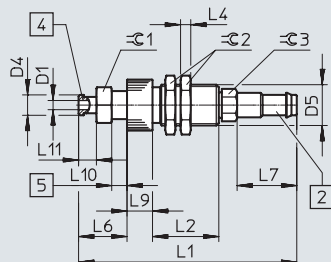
∅	D1	D2 ∅	D4 ∅	D5	D6	L1	L2	L4	L6	L9	L10	∅ 1	∅ 2	∅ 3
[mm]														
Size 1	3	4	4	M12x1	8	39.8	13	4	8.5	5	3	8	14	-
Size 2	2.2	6	4	M12x1	M10	43.9	13	4	11	5	3	8	14	-
Size 3	M4	6	-	M14x1	10	52.4	20	4	12	6	6	12	17	10
Size 4	M6	6	-	M14x1	10	52.4	20	4	12	6	6	12	17	10

Barbed fitting connector PK

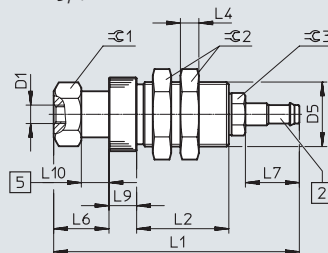
Size 1



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

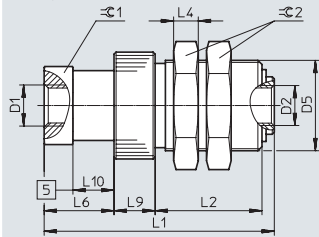
∅	D1	D4 ∅	D5	L1	L2	L4	L6	L7	L9	L10	L11	∅ 1	∅ 2	∅ 3
[mm]														
Size 1	3	4	M8x0.75	40.3	13	2	9	9.7	5	3	-	7	10	5.5
Size 2	1.8	4	M8x0.75	42.8	13	2	9.5	11.7	5	3	3.5	7	10	5
Size 3	M4	-	M14x1	53.3	20	4	12	11.7	6	6	-	12	17	8
Size 4	M6	-	M14x1	53.3	20	4	12	11.7	6	6	-	12	17	8

## Datasheet

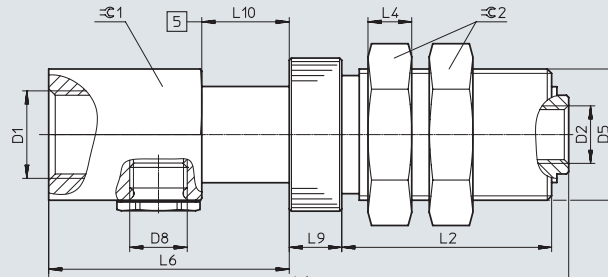
### Dimensions

Threaded connection G

Size 5



Size 6



[5] Stroke

$\varnothing$	D1	D2	D5	D8	L1	L2	L4	L6	L9	L10	$\varnothing 1$	$\varnothing 2$
[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

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

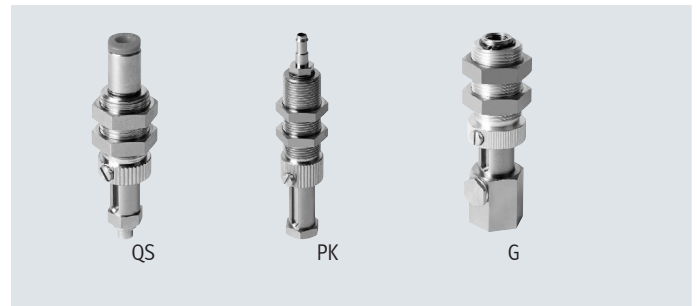
## Datasheet

### ESH-HCL

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

### Vacuum port:

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



### General technical data

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

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width	Suction cup holder height compensation [mm]	Spring force (normal/min. length) [N]	Volume [cm <sup>3</sup> ]	Weight [g]
			[mm]				
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	2.8	10	Max. 1	0.489	20
	PK-3		1.9				
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	2.2	10	Max. 1	0.519	20
	PK-4		2.2				
Size 3	QS-6	M4	3.4	20	1/3	1.616	48
	PK-4		3				
Size 4	QS-6	M6	3.4	20	1/9	1.780	47
	PK-4		3				
Size 5	G1/8	M10	8.4	30	10/16	6.060	169
Size 6	G1/4	M20x2	10	40	15/32	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

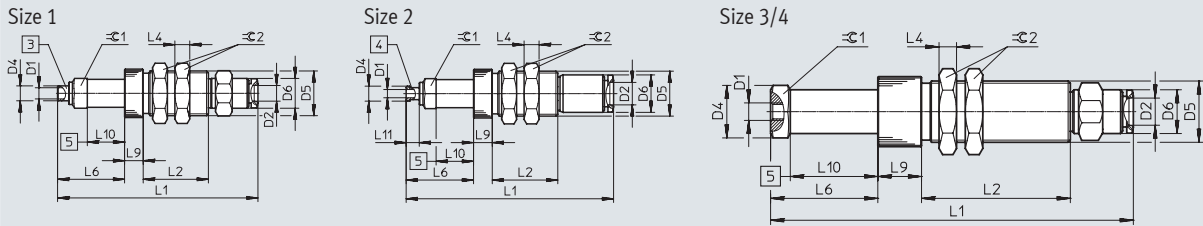
### Materials

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

Datasheet

**Dimensions**

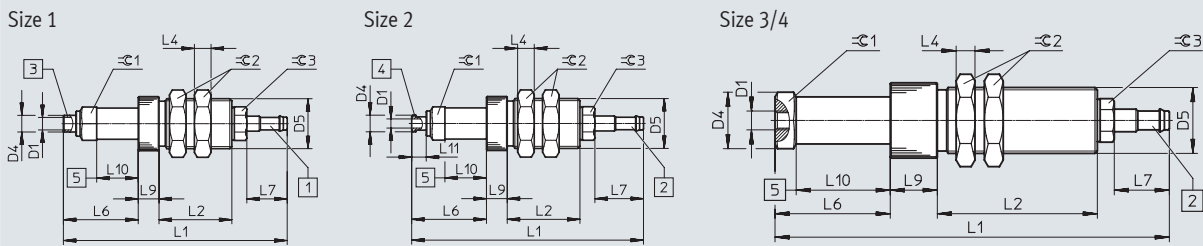
Push-in connector QS



- [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	∅ C1	∅ C2
[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

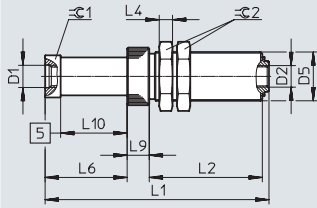
∅	D1	D4 ∅	D5	L1	L2	L4	L6	L7	L9	L10	L11	∅ C1	∅ C2	∅ C3
[mm]														
Size 1	3	4	M12x1	53.8	17.5	4	18	9.7	5	10	-	8	14	7
Size 2	2.2	4	M12x1	55.8	17.5	4	18	11.7	5	10	3.5	8	14	7
Size 3	M4	10	M14x1	83.8	34	4	24.5	11	10	20	-	12	17	8
Size 4	M6	10	M14x1	83.8	34	4	24.5	11	10	20	-	12	17	8

## Datasheet

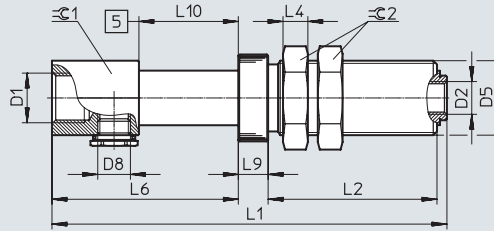
## Dimensions

Threaded connection G

Size 5



Size 6



[5] Stroke

∅	D1	D2	D5	L1	L2	L4	L6	L9	L10	⊖ C1	⊖ C2
[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

Allocating suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connection	
		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

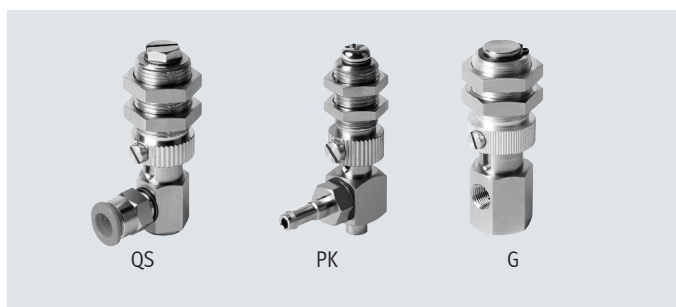
## Datasheet

### ESH-HD

- Vacuum port on the side
- Mounting with lock nut
- With height compensation

### Vacuum port:

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



### General technical data

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

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width	Suction cup holder height compensation	Spring force (normal/min. length) [N]	Volume [cm <sup>3</sup> ]	Weight [g]
			[mm]	[mm]			
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	3	3	Max. 1	0.241	13
	PK-3		1.9				11
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	1.8	3	Max. 1	0.417	15
	PK-4		1.8				12
Size 3	QS-6	M4	3.3	6	2/5	0.573	46
	PK-4		3				44
Size 4	QS-6	M6	5	6	5/10	0.678	45
	PK-4		3				43
Size 5	G1/8	M10	8.5	10	8/18	2.072	195
Size 6	G1/4	M20x2	10	20	12/22	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

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

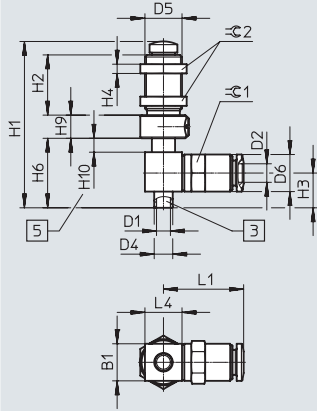


Datasheet

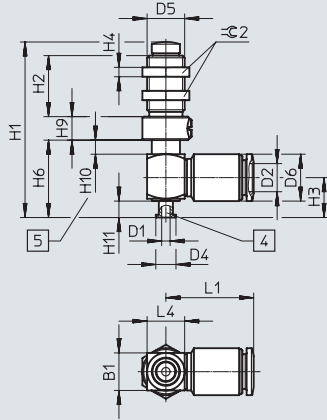
Dimensions

Push-in connector QS

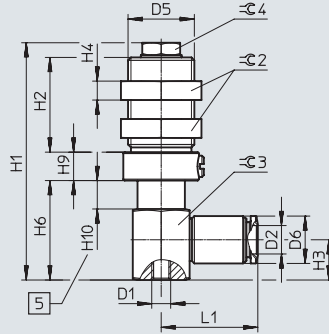
Size 1



Size 2



Size 3/4



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

∅	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

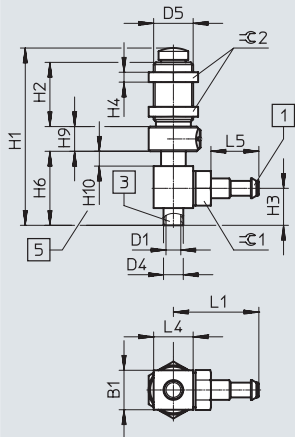
∅	H6	H9	H10	H11	L1	L4	∅ 1	∅ 2	∅ 3	∅ 4
[mm]										
Size 1	15	5	3	-	17.3	8	8	10	-	-
Size 2	16.5	5	3	3.5	18.7	8	-	10	-	-
Size 3	21	6	6	-	20.4	-	-	17	12	8
Size 4	21	6	6	-	20.4	-	-	17	12	8

Datasheet

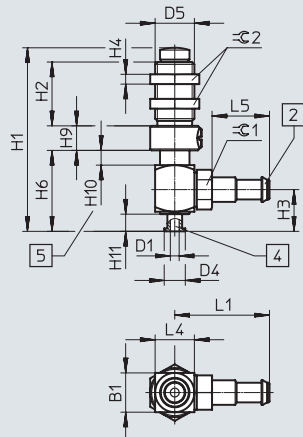
Dimensions

Barbed fitting connector PK

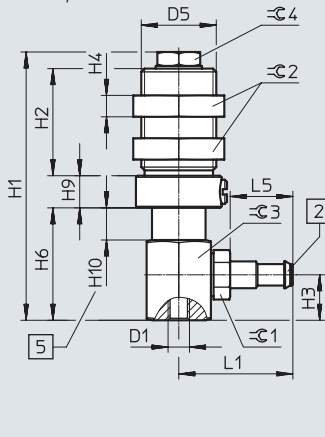
Size 1



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

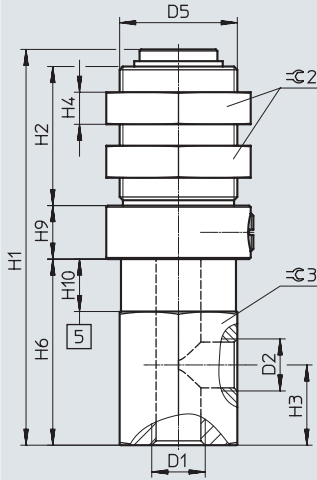
∅	H6	H9	H10	H11	L1	L4	∅ 1	∅ 2	∅ 3	∅ 4
[mm]										
Size 1	15	5	3	-	17.3	8	8	10	-	-
Size 2	16.5	5	3	3.5	18.7	8	-	10	-	-
Size 3	21	6	6	-	20.4	-	-	17	12	8
Size 4	21	6	6	-	20.4	-	-	17	12	8

Datasheet

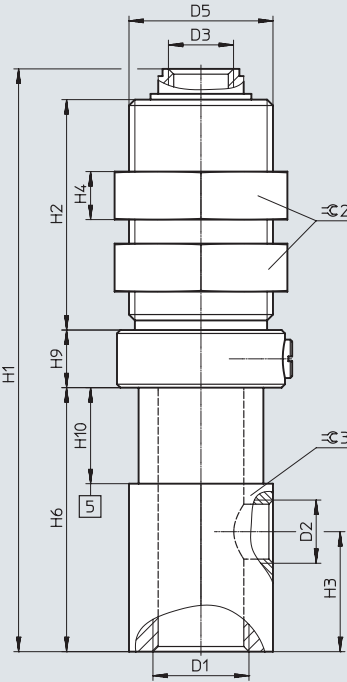
Dimensions

Threaded connection G

Size 5



Size 6



[5] Stroke

∅	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

Allocating suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connection	
		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

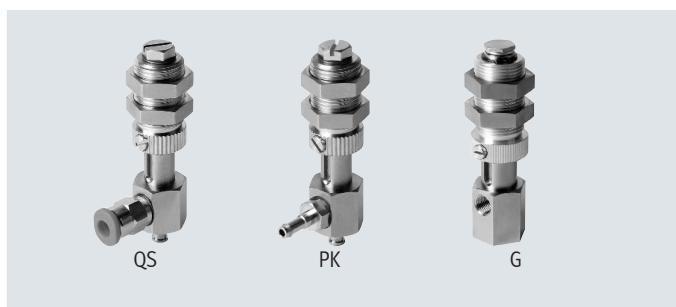
## Datasheet

### ESH-HDL

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

### Vacuum port:

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



### General technical data

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

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width	Suction cup holder height compensation	Spring force (normal/min. length)	Volume	Weight
			[mm]				
Size 1	QS-4	I.D. 3 mm <sup>1)</sup>	3	10	Max. 1	0.272	29
	PK-3		1.9				
Size 2	QS-6	O.D. 4 mm <sup>1)</sup>	2.2	10	Max. 1	0.260	33
	PK-4		2.2				
Size 3	QS-6	M4	3.3	20	1/3	0.474	65
	PK-4		3				
Size 4	QS-6	M6	5	20	1/9	0.370	65
	PK-4		3				
Size 5	G1/8	M10	8.5	30	10/16	1.667	273
Size 6	G1/4	M20x2	10	40	15/32	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 connection 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 <sup>1)</sup>	1 - Low corrosion stress		

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

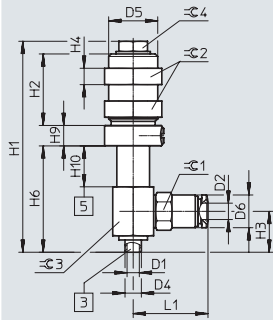
Vacuum port	Push-in connector QS	Barbed fitting connector PK	Threaded connection G
Retaining bracket	High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM	High-alloy steel, tempered steel, aluminium, nickel-plated brass	High-alloy steel, tempered steel, aluminium, nickel-plated brass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

## Datasheet

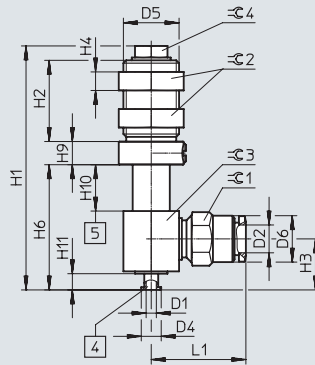
## Dimensions

Push-in connector QS

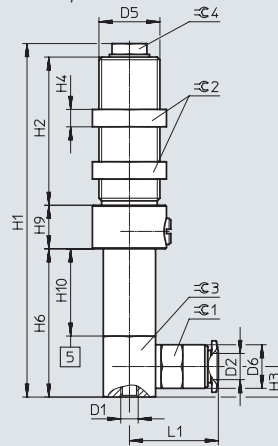
Size 1



Size 2



Size 3/4



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

[5] Stroke

$\varnothing$	D1	D2	D4	D5	D6	H1	H2	H3	H4
[mm]		$\varnothing$	$\varnothing$		$\varnothing$				
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

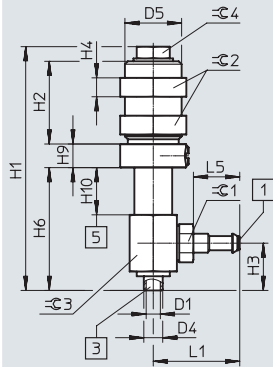
$\varnothing$	H6	H9	H10	H11	L1	$\varnothing 1$	$\varnothing 2$	$\varnothing 3$	$\varnothing 4$
[mm]									
Size 1	26	5	10	-	18.3	8	14	10	7
Size 2	27	5	10	3.5	20.4	8	14	12	7
Size 3	34	10	20	-	20.4	10	17	12	8
Size 4	34	10	20	-	20.4	10	17	12	8

## Datasheet

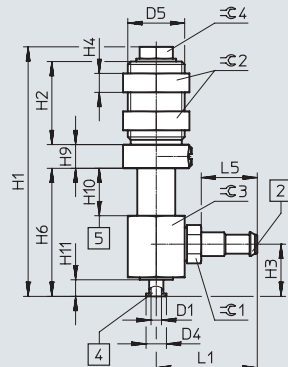
### Dimensions

Barbed fitting connector PK

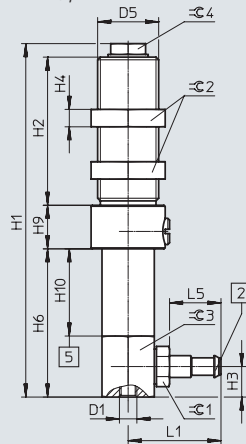
Size 1



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

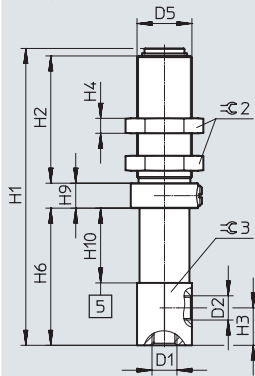
∅	H10	H11	L1	L5	∅ 1	∅ 2	∅ 3	∅ 4
[mm]								
Size 1	10	-	18.3	9.8	7	14	10	7
Size 2	10	3.5	21.3	11.8	7	14	12	7
Size 3	20	-	21.3	11.8	8	17	12	8
Size 4	20	-	21.3	11.8	8	17	12	8

## Datasheet

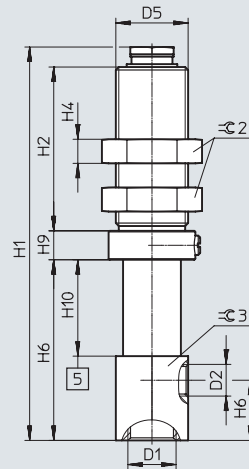
## Dimensions

Threaded connection 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

Allocating suction cup holders	Vacuum port	Push-in connector		Barbed fitting connector		Threaded connection	
		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

## Datasheet

### ESH-HE

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

### 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	Optional

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Volume [cm <sup>3</sup> ]	Weight [g]
Size 1	M3	I.D. 3 mm <sup>1)</sup>	1.2	0.040	1
Size 2	M5	O.D. 4 mm <sup>1)</sup>	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 <sup>1)</sup>	1 - Low corrosion stress

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

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

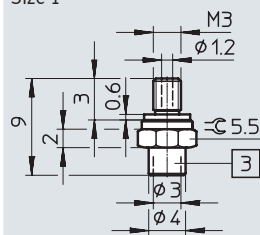


## Datasheet

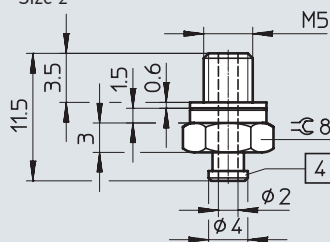
## Dimensions

G and M thread

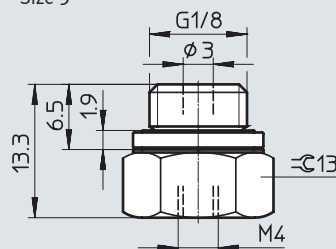
Size 1



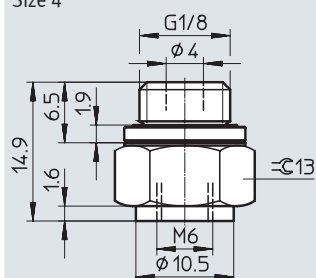
Size 2



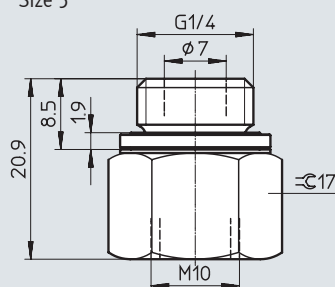
Size 3



Size 4



Size 5



[3] Drilled hole for suction cup

[4] Barbed connector for suction cup

## Ordering data

Allocating 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

## Datasheet

### ESH-HF

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

### Vacuum port:

- Threaded connector M10x1 and M14x1



M10x1/M14x1

### General technical data

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

### Technical data

Allocating suction cup holders to suction cups ESS → Internet: ESS	Vacuum port	Suction cup mounting	Nominal width [mm]	Suction cup holder height compensation [mm]	Spring force (normal/min. length) [N]	Volume [cm <sup>3</sup> ]	Weight [g]
Size 1	M10x1	I.D. 3 mm <sup>1)</sup>	2	2.6	2/4	0.108	14
Size 2	M10x1	O.D. 4 mm <sup>1)</sup>	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 <sup>1)</sup>	1 - Low corrosion stress

1) More information [www.festo.com/x/topic/crc](http://www.festo.com/x/topic/crc)

### Materials

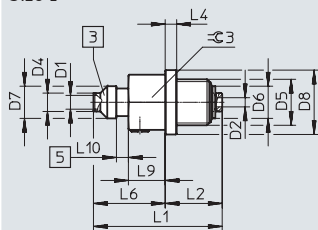
Retaining bracket	Tempered steel
Seals	NBR, POM
Note on materials	RoHS-compliant

## Datasheet

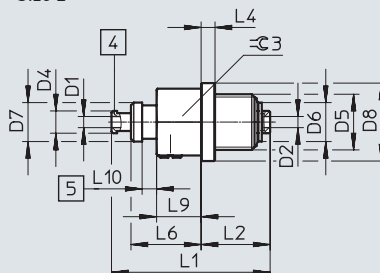
## Dimensions

M thread

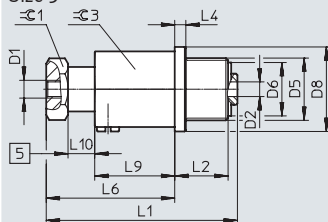
Size 1



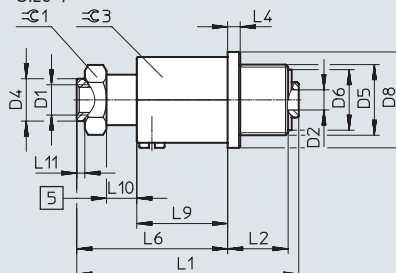
Size 2



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

Allocating 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