

## 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      | Vertical           |

| Technical data  |             |                         |                       |                              |               |
|---|-------------|-------------------------|-----------------------|------------------------------|---------------|
| Allocating suction cup holders to suction cups<br>ESS → Internet: ESS | Vacuum port | Suction cup mounting    | Nominal width<br>[mm] | Volume<br>[cm <sup>3</sup> ] | Weight<br>[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   |                             |                       |

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

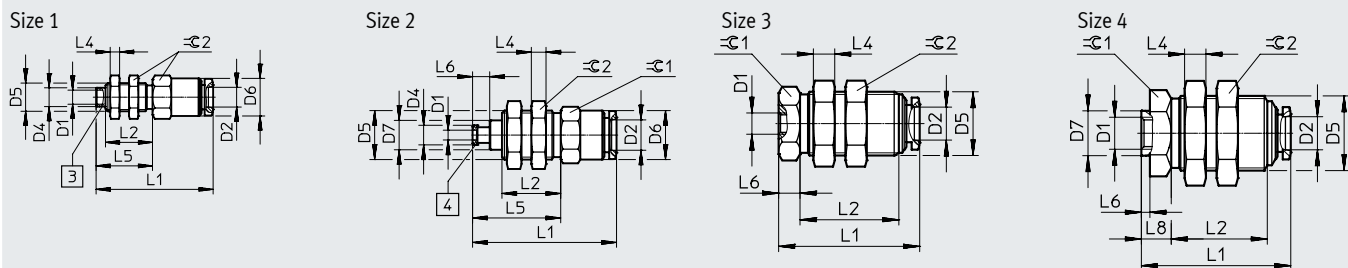
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, or parts which are covered in the application (e.g. drive trunnions).

| 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**

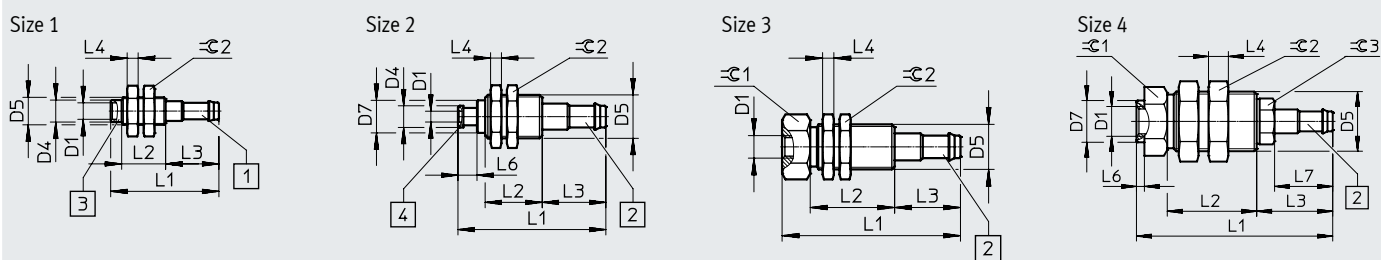
Push-in connector QS



- [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

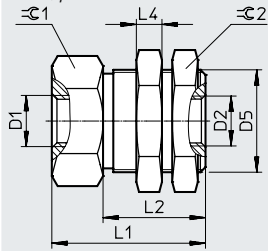
| ∅      | D1 | D4 | D5      | D7  | L1   | L2   | L3   | L4 | L6  | L7   | ∅1 | ∅2 | ∅3  |
|--------|----|----|---------|-----|------|------|------|----|-----|------|----|----|-----|
| [mm]   | ∅  | ∅  |         | ∅   |      |      |      |    |     |      |    |    |     |
| Size 1 | 3  | 4  | M5x0.5  | -   | 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      | Vertical                |

| Technical data  |             |                         |                       |                              |               |
|---|-------------|-------------------------|-----------------------|------------------------------|---------------|
| Allocating suction cup holders to suction cups<br>ESS → Internet: ESS | Vacuum port | Suction cup mounting    | Nominal width<br>[mm] | Volume<br>[cm <sup>3</sup> ] | Weight<br>[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   |                             |                       |

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

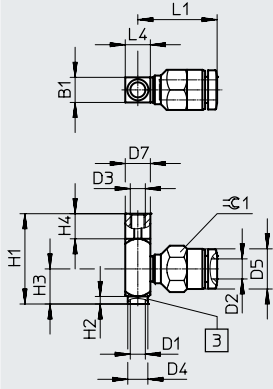
| Materials         |   |  |  |
|-------------------|---|--|--|
| Vacuum port       | Push-in connector QS  | Barbed fitting connector PK                                      | Threaded connection G  |
| Retaining bracket | High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM | High-alloy 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

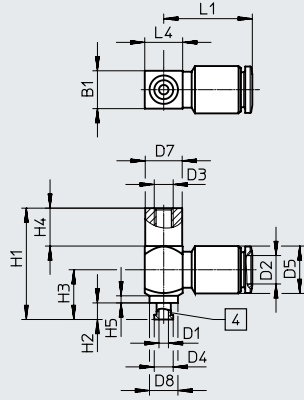
Dimensions

Push-in connector QS

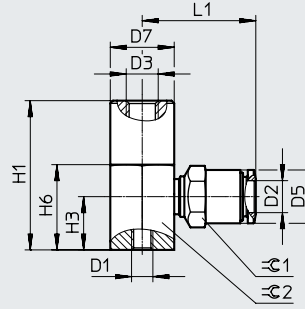
Size 1



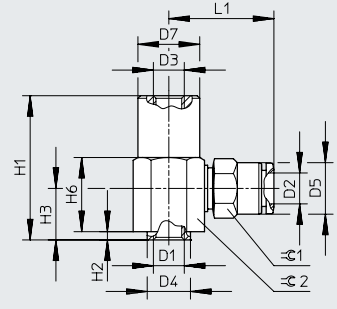
Size 2



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   |

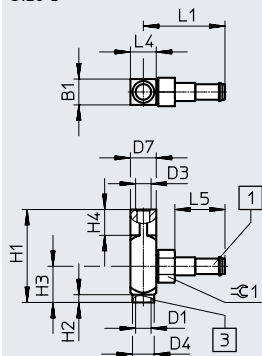
| ∅      | H2  | H3   | H4 | H6   | L1   | L4 | ∅ 1 | ∅ 2 |
|--------|-----|------|----|------|------|----|-----|-----|
| [mm]   |     |      |    |      |      |    |     |     |
| Size 1 | 1.5 | 7    | 5  | -    | 15.8 | 5  | 8   | -   |
| Size 2 | 3.5 | 10.5 | 8  | -    | 18.7 | 8  | -   | -   |
|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

## Datasheet

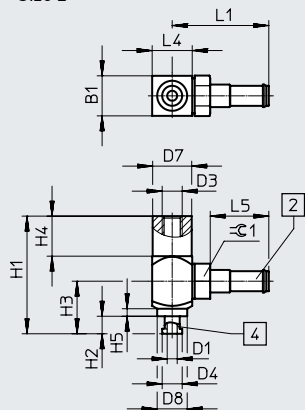
### Dimensions

Barbed fitting connector PK

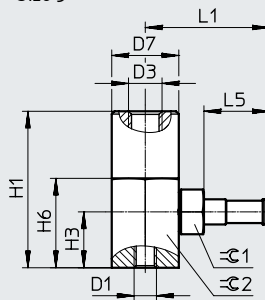
Size 1



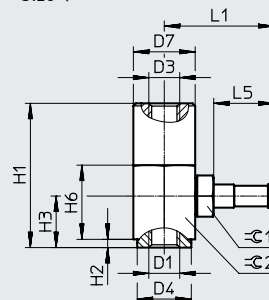
Size 2



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

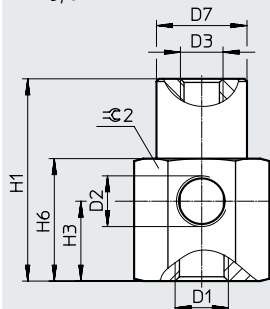
[4] Barbed connector for suction cup

| ∅      | 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> |

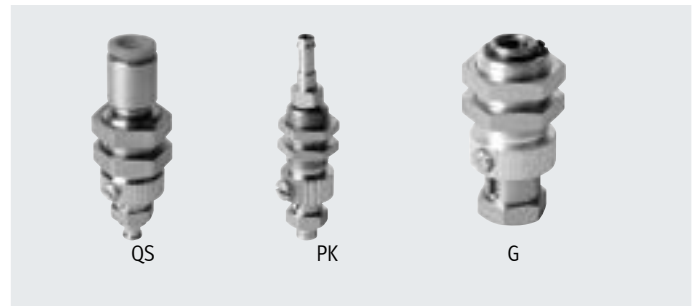
## Datasheet

### 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<br>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> | 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  |                             |                       |

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

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

### Materials

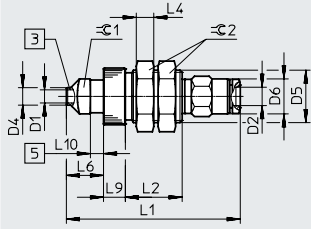
| Vacuum port       | Push-in connector QS  | Barbed fitting connector PK                                      | Threaded connection G  |
|-------------------|---|--|--|
| Retaining bracket | High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM | High-alloy steel, tempered steel, aluminium,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

## Datasheet

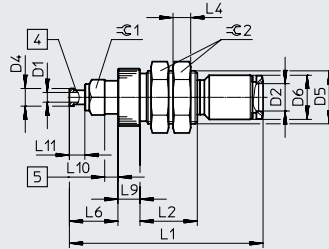
### Dimensions

#### Push-in connector QS

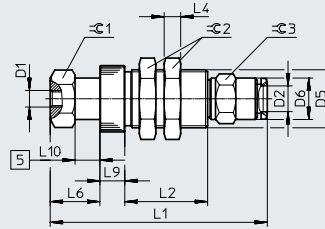
##### Size 1



##### Size 2



##### Size 3/4

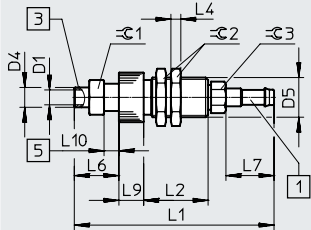


- [3] Drilled hole for suction cup
- [4] Barbed connector for suction cup
- [5] Stroke

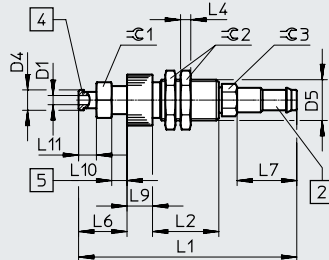
| ∅      | D1  | D2<br>∅ | D4<br>∅ | D5    | D6  | L1   | L2 | L4 | L6  | L9 | L10 | ∅ 1 | ∅ 2 | ∅ 3 |
|--------|-----|---------|---------|-------|-----|------|----|----|-----|----|-----|-----|-----|-----|
| [mm]   |     |         |         |       |     |      |    |    |     |    |     |     |     |     |
| 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

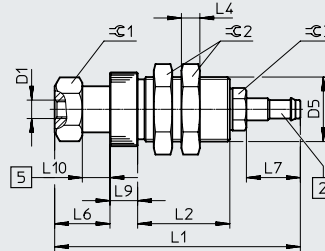
##### Size 1



##### 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

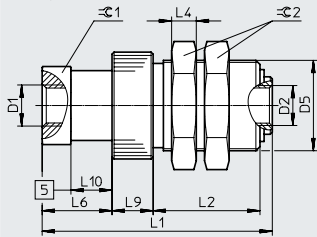
| ∅      | D1  | D4<br>∅ | D5      | L1   | L2 | L4 | L6  | L7   | L9 | L10 | L11 | ∅ 1 | ∅ 2 | ∅ 3 |
|--------|-----|---------|---------|------|----|----|-----|------|----|-----|-----|-----|-----|-----|
| [mm]   |     |         |         |      |    |    |     |      |    |     |     |     |     |     |
| 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

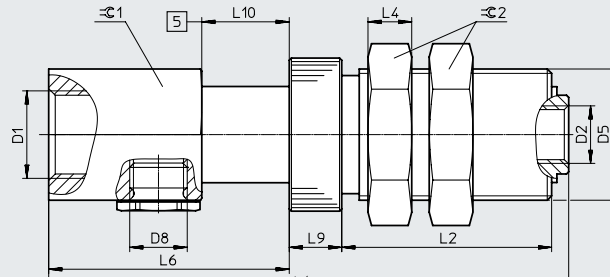
**Dimensions**

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> |

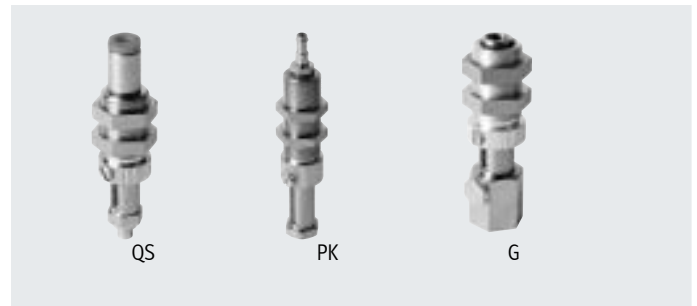
## Datasheet

### 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<br>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> | 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  |                             |                       |

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

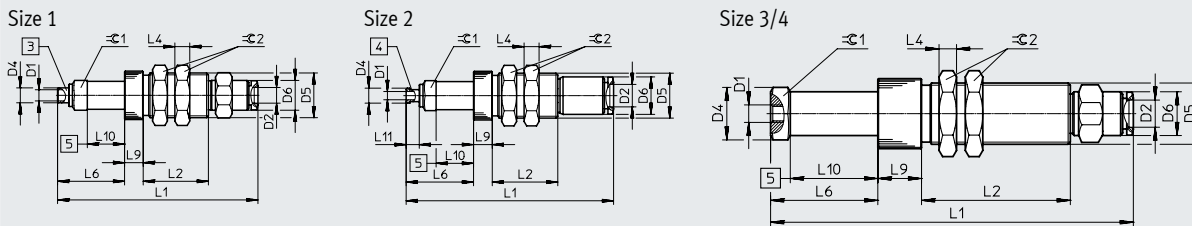
Low corrosion stress. Dry internal application or transport and storage protection. Also applies to parts behind covers, in the non-visible interior area, or parts which are covered in the application (e.g. drive trunnions).

| 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**

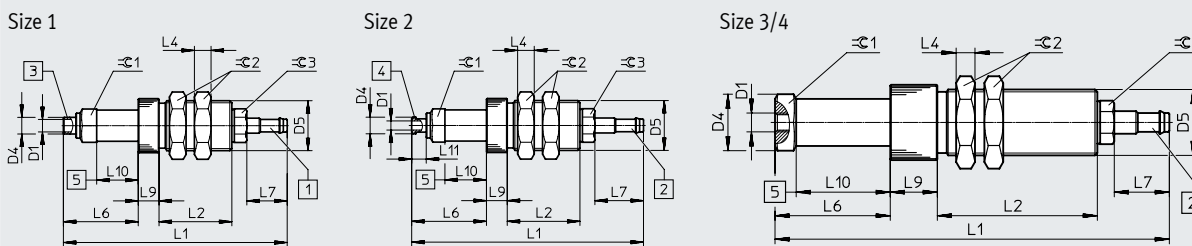
Push-in connector QS



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

| ∅      | D1  | D2<br>∅ | D4<br>∅ | D5    | D6<br>∅ | 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

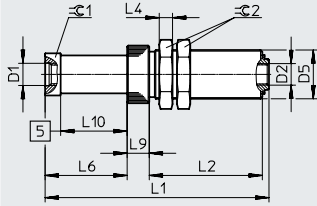
| ∅      | D1  | D4<br>∅ | D5    | L1   | L2   | L4 | L6   | L7   | L9 | L10 | L11 | ∅C1 | ∅C2 | ∅C3 |
|--------|-----|---------|-------|------|------|----|------|------|----|-----|-----|-----|-----|-----|
| [mm]   |     |         |       |      |      |    |      |      |    |     |     |     |     |     |
| 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

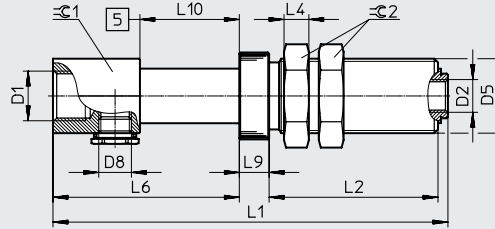
## Dimensions

Threaded connection G

Size 5



Size 6



[5] Stroke

| ∅      | D1    | D2   | D5    | L1  | L2 | L4 | L6 | L9 | L10 | ∅ 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

| 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 |

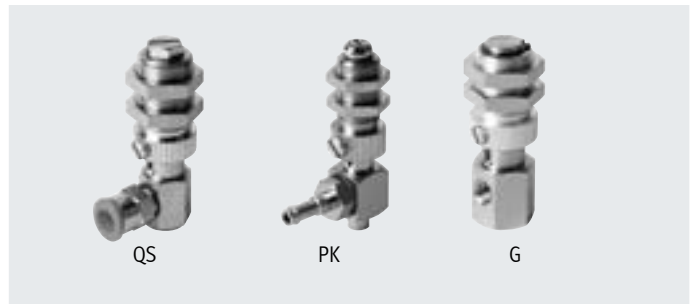
## Datasheet

### 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<br>ESS → Internet: ESS | Vacuum port | Suction cup mounting    | Nominal width | Suction cup holder height compensation | Spring force (normal/min. length)<br>[N] | Volume<br>[cm <sup>3</sup> ] | Weight<br>[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           |  |  |                              |               |
| Size 2  | QS-6        | O.D. 4 mm <sup>1)</sup> | 1.8           | 3                                      | Max. 1                                   | 0.417                        | 15            |
|   | PK-4        |                         | 1.8           |  |  |                              |               |
| Size 3  | QS-6        | M4                      | 3.3           | 6                                      | 2/5                                      | 0.573                        | 46            |
|   | PK-4        |                         | 3             |  |  |                              |               |
| Size 4  | QS-6        | M6                      | 5             | 6                                      | 5/10                                     | 0.678                        | 45            |
|   | PK-4        |                         | 3             |  |  |                              |               |
| 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  |                             |                       |

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

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

### 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  |  |  |

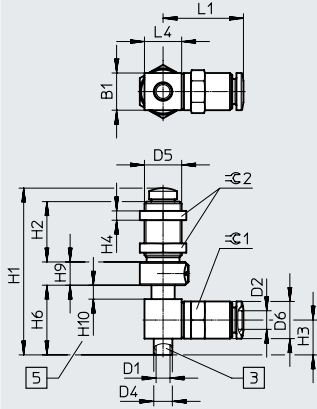


Datasheet

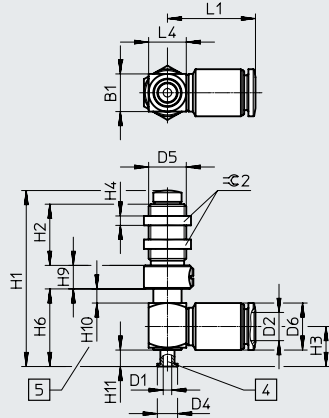
Dimensions

Push-in connector QS

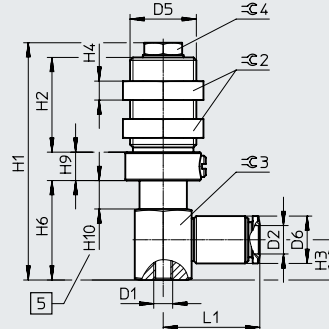
Size 1



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  |

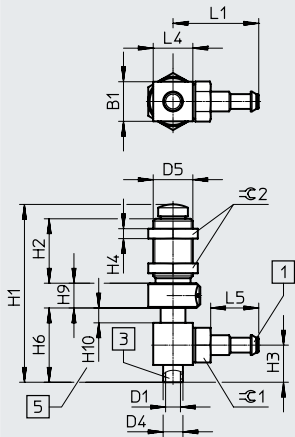
| ∅      | H6   | H9 | H10 | H11 | L1   | L4 | ∅ 1 | ∅ 2 | ∅ 3 | ∅ 4 |
|--------|------|----|-----|-----|------|----|-----|-----|-----|-----|
| [mm]   |      |    |     |     |      |    |     |     |     |     |
| Size 1 | 15   | 5  | 3   | -   | 17.3 | 8  | 8   | 10  | -   | -   |
| Size 2 | 16.5 | 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

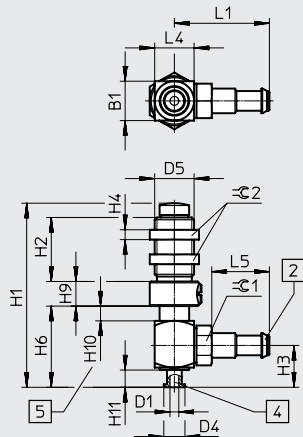
**Dimensions**

Barbed fitting connector PK

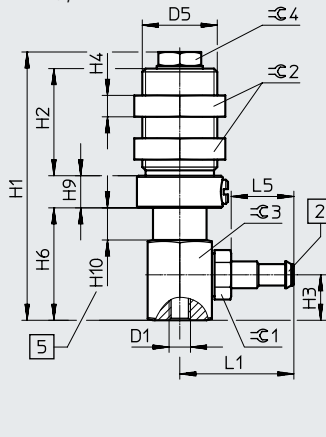
Size 1



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

| $\varnothing$ | B1 | D1  | D2            | D4            | D5      | D6            | H1   | H2 | H3  | H4 |
|---------------|----|-----|---------------|---------------|---------|---------------|------|----|-----|----|
| [mm]          |    |     | $\varnothing$ | $\varnothing$ |         | $\varnothing$ |      |    |     |    |
| 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  |

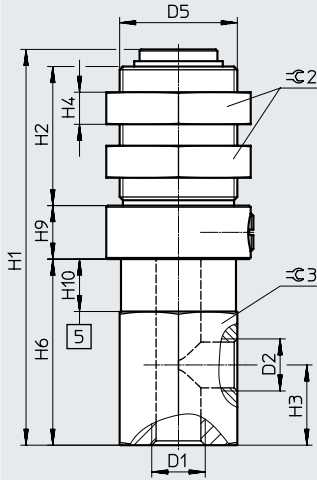
| $\varnothing$ | H6   | H9 | H10 | H11 | L1   | L4 | $\varnothing 1$ | $\varnothing 2$ | $\varnothing 3$ | $\varnothing 4$ |
|---------------|------|----|-----|-----|------|----|-----------------|-----------------|-----------------|-----------------|
| [mm]          |      |    |     |     |      |    |                 |                 |                 |                 |
| 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

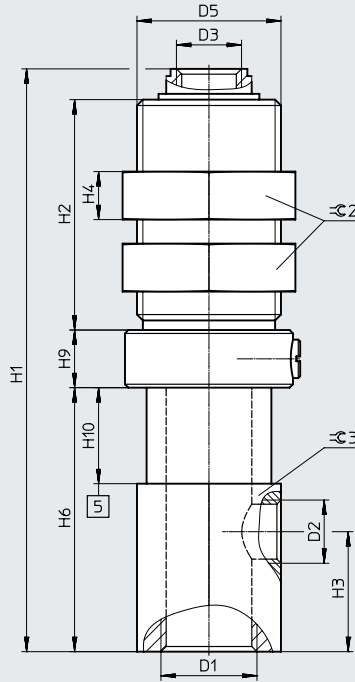
Dimensions

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 |

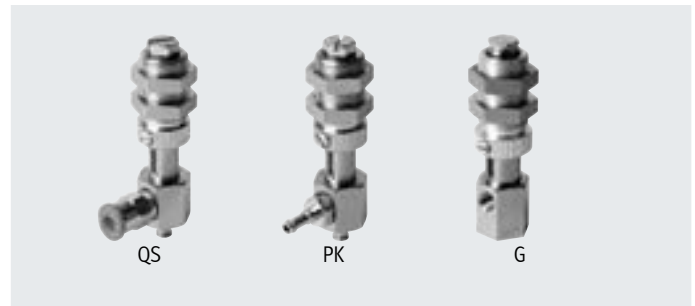
## Datasheet

### 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<br>ESS → Internet: ESS | Vacuum port | Suction cup mounting    | Nominal width<br>[mm] | Suction cup holder height compensation<br>[mm] | Spring force (normal/min. length)<br>[N] | Volume<br>[cm <sup>3</sup> ] | Weight<br>[g] |
|---|-------------|-------------------------|-----------------------|--|--|------------------------------|---------------|
| Size 1  | QS-4        | I.D. 3 mm <sup>1)</sup> | 3                     | 10   | Max. 1                                   | 0.272                        | 29            |
|   | PK-3        |                         | 1.9                   |  |  |                              | 28            |
| Size 2  | QS-6        | O.D. 4 mm <sup>1)</sup> | 2.2                   | 10   | Max. 1                                   | 0.260                        | 33            |
|   | PK-4        |                         | 2.2                   |  |  |                              | 32            |
| Size 3  | QS-6        | M4                      | 3.3                   | 20   | 1/3                                      | 0.474                        | 65            |
|   | PK-4        |                         | 3                     |  |  |                              | 63            |
| Size 4  | QS-6        | M6                      | 5                     | 20   | 1/9                                      | 0.370                        | 65            |
|   | PK-4        |                         | 3                     |  |  |                              | 63            |
| 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   |                             |                       |

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

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

### Materials

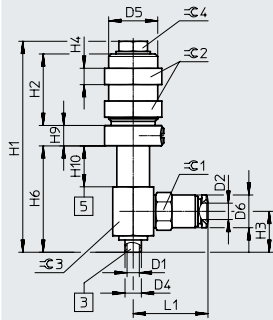
| Vacuum port       | Push-in connector QS  | Barbed fitting connector PK                                      | Threaded connection G  |
|-------------------|---|--|--|
| Retaining bracket | High-alloy steel, tempered steel, aluminium, nickel-plated brass, POM | High-alloy steel, tempered steel, aluminium,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

## Datasheet

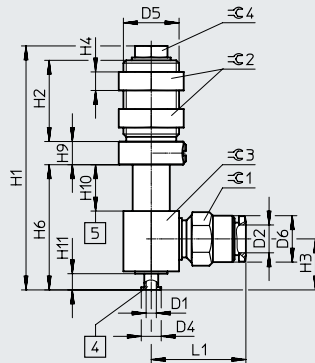
## Dimensions

Push-in connector QS

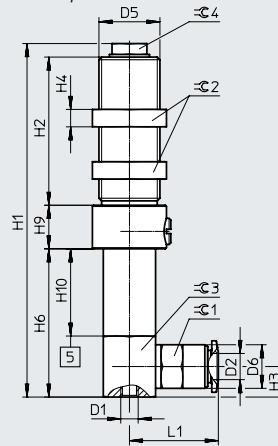
Size 1



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  |

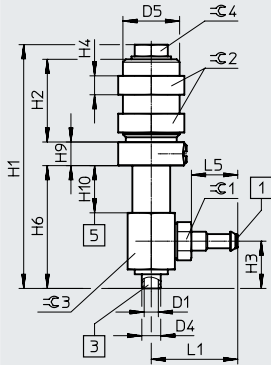
| $\varnothing$ | H6 | H9 | H10 | H11 | L1   | $\varnothing 1$ | $\varnothing 2$ | $\varnothing 3$ | $\varnothing 4$ |
|---------------|----|----|-----|-----|------|-----------------|-----------------|-----------------|-----------------|
| [mm]          |    |    |     |     |      |                 |                 |                 |                 |
| 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

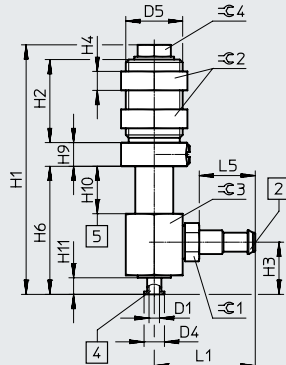
Dimensions

Barbed fitting connector PK

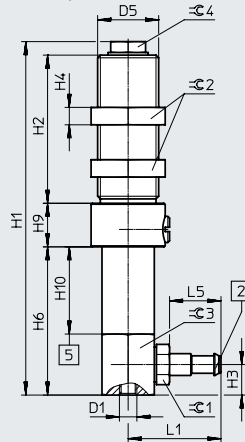
Size 1



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<br>∅ | 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 |

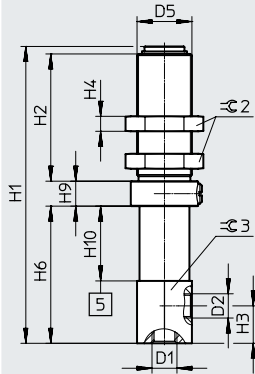
| ∅      | H10 | H11 | L1   | L5   | ∅ 1 | ∅ 2 | ∅ 3 | ∅ 4 |
|--------|-----|-----|------|------|-----|-----|-----|-----|
| [mm]   |     |     |      |      |     |     |     |     |
| Size 1 | 10  | -   | 18.3 | 9.8  | 7   | 14  | 10  | 7   |
| Size 2 | 10  | 3.5 | 21.3 | 11.8 | 7   | 14  | 12  | 7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

## Datasheet

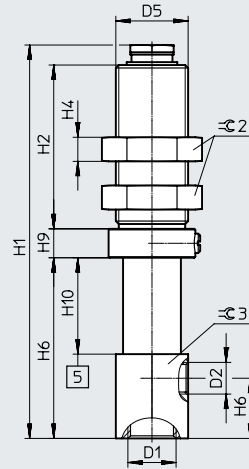
### Dimensions

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 | Vertical                         |

### Technical data

| Allocating suction cup holders to suction cups<br>ESS → Internet: ESS | Vacuum port | Suction cup mounting    | Nominal width<br>[mm] | Volume<br>[cm <sup>3</sup> ] | Weight<br>[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   |

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

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

### Materials

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

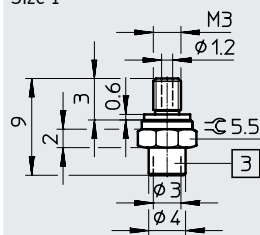


## Datasheet

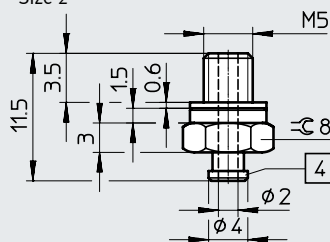
### Dimensions

G and M thread

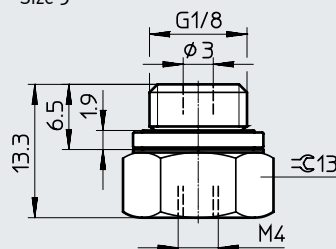
Size 1



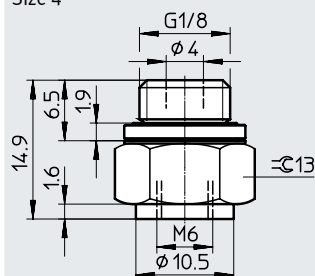
Size 2



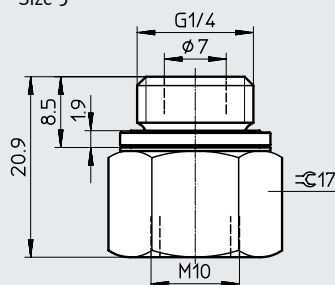
Size 3



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



| 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<br>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  | 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   |

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

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

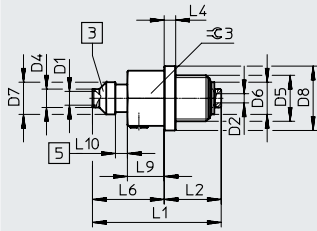
| Materials         |                |
|-------------------|----------------|
| Retaining bracket | Tempered steel |
| Seals             | NBR, POM       |
| Note on materials | RoHS-compliant |

## Datasheet

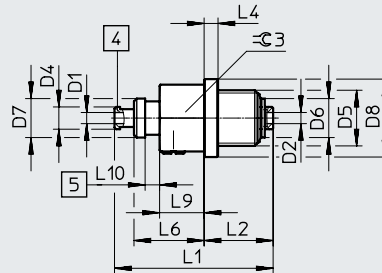
## Dimensions

M thread

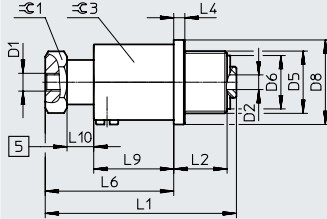
Size 1



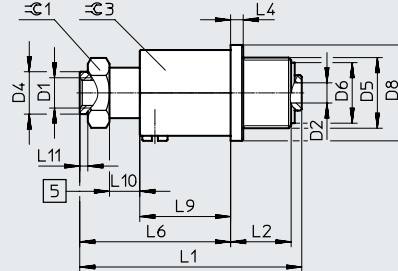
Size 2



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       | <b>189260</b> | <b>ESH-HF-1-M10x1</b> |
| Size 2                         | M10x1       | <b>189261</b> | <b>ESH-HF-2-M10x1</b> |
| Size 3                         | M14x1       | <b>189262</b> | <b>ESH-HF-3-M14x1</b> |
| Size 4                         | M14x1       | <b>189263</b> | <b>ESH-HF-4-M14x1</b> |