

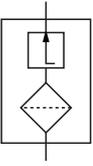
Vacuum security valve ISV

FESTO



Characteristics

At a glance



When several suction cups are arranged in parallel, the vacuum security valve prevents the vacuum from collapsing if one or more suction cups are not tightly seated.

- Enables randomly placed products to be gripped
- Gripping only takes place with full contact

Additional documents

[Link](#) [isv](#)



The additional document ISV-ADD contains further information on the operating conditions of the vacuum security valve ISV.

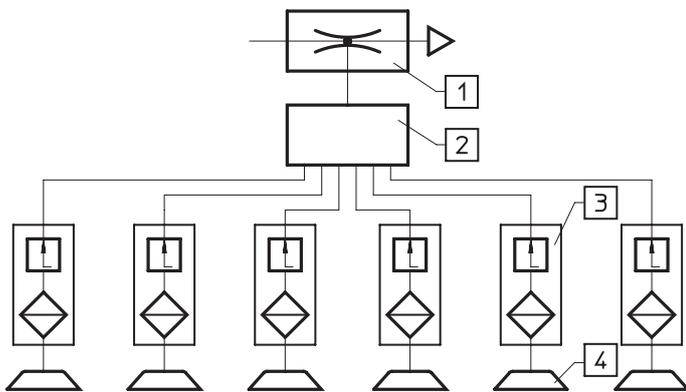
Diagrams

[Link](#) [isv](#)



The diagrams shown in this document are also available online. These can be used to display precise values.

Series



[1] Vacuum generator, [2] Distributor, [3] Vacuum security valve, [4] Suction cup

[ISV] Vacuum security valve

The vacuum security valve ISV is mounted between the suction cup and the vacuum generator. If, during vacuum generation, a suction cup is uncovered, or only partly covered, the vacuum security valve automatically shuts off the influx of air. Once the suction cup is seated tightly on the surface, the vacuum is switched back on again. If the workpiece is separated from the suction cup, the vacuum security valve immediately closes.

- If the suction cup is open to the environment, the float is pushed back against the housing. In this position, air can only flow through a small hole at the front of the float.
- If a workpiece comes in contact with the suction cup, the air flow is reduced and the spring forces the float forward. This causes the vacuum security valve to open, and a complete vacuum is created in the suction cup.

Type code

| | | |
|------------|-----------------------|--|
| 001 | Series | |
| ISV | Vacuum security valve | |

| | | |
|------------|--------------------|--|
| 002 | Vacuum port | |
| G14 | G1/4 | |
| G18 | G1/8 | |
| G38 | G3/8 | |
| M10 | M10 | |
| M4 | Male thread M4 | |
| M5 | M5 | |
| M6 | M6 | |

| | | |
|------------|--|--|
| 003 | Special material properties | |
| | None | |
| F1A | Recommended for production plants for manufacturing lithium-ion batteries, F1A | |

Datasheet

General technical data – Vacuum security valves for suction cups

| | | | | |
|---|----------|---------|-----------|-----------|
| Pneumatic connection, port 1 | M5 | G1/8 | G1/4 | G3/8 |
| Pneumatic connection, port 2 | M5 | G1/8 | G1/4 | G3/8 |
| Mounting position | optional | | | |
| Type of mounting | Screw-in | | | |
| Suitable for ejector pulse | ≤8 MPa | | | |
| Suitable for ejector pulse | 8 bar | | | |
| Required suction volumetric flow at -0.05 MPa (-0.5 bar, -7.25 psi) | 1 l/min | 2 l/min | 1.6 l/min | 1.5 l/min |

General technical data – Vacuum security valves for suction grippers

| | | | |
|---|----------|---------|-----|
| Pneumatic connection, port 1 | M4 | M6 | M10 |
| Pneumatic connection, port 2 | M4 | M6 | M10 |
| Mounting position | optional | | |
| Type of mounting | Screw-in | | |
| Suitable for ejector pulse | ≤0.8 MPa | | |
| Suitable for ejector pulse | ≤8 bar | | |
| Required suction volumetric flow at -0.05 MPa (-0.5 bar, -7.25 psi) | 1 l/min | 2 l/min | |

Operating and environmental conditions – Vacuum security valves for suction cups

| | | | | |
|--|---|------|------|------|
| Pneumatic connection, port 1 | M5 | G1/8 | G1/4 | G3/8 |
| Operating pressure | -95 ... 0 kPa | | | |
| Operating pressure | -0.95 ... 0 bar | | | |
| Operating medium | Compressed air to ISO 8573-1:2010 [7:-:-] | | | |
| Ambient temperature | -10 ... 60°C | | | |
| Corrosion resistance class CRC ¹⁾ | 2 - Moderate corrosion stress | | | |

1) More information www.festo.com/x/topic/crc

Operating and environmental conditions – Vacuum security valves for suction grippers

| | | | |
|--|---|----|-----|
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| Ambient temperature | -10 ... 60°C | | |
| Corrosion resistance class CRC ¹⁾ | 2 - Moderate corrosion stress | | |

1) More information www.festo.com/x/topic/crc

Materials – Vacuum security valves for suction cups

| | | | | |
|------------------------------|-------------------|---|------|------|
| Pneumatic connection, port 1 | M5 | G1/8 | G1/4 | G3/8 |
| Material housing | High-alloy steel | Wrought aluminium alloy | | |
| Material filter | Sintered bronze | Wrought aluminium alloy, Stainless steel mesh | | |
| Material spring | – | High-alloy steel | | |
| Material hollow bolt | – | Wrought aluminium alloy | | |
| Material float | – | POM | | |
| LABS (PWIS) conformity | VDMA24364-B1/B2-L | VDMA24364-B2-L | | |

Materials – Vacuum security valves for suction grippers

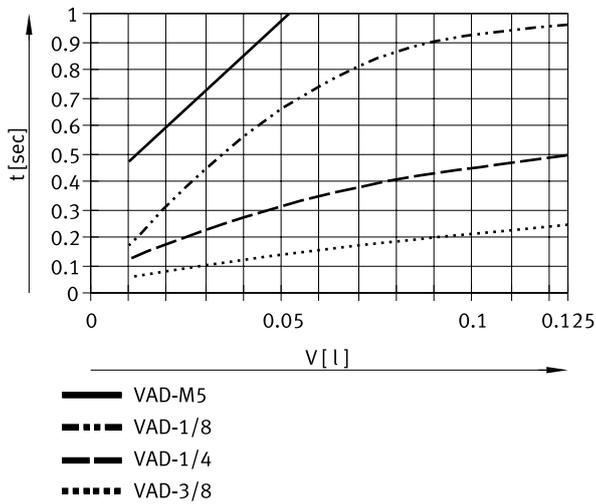
| | | | |
|------------------------------|-------------------------|------------------|-----|
| Pneumatic connection, port 1 | M4 | M6 | M10 |
| Material housing | Wrought aluminium alloy | | |
| Material filter | Sintered bronze | | |
| Material spring | – | High-alloy steel | |
| Material float | – | POM | |
| LABS (PWIS) conformity | VDMA24364-B1/B2-L | | |

Datasheet

Materials – special material properties: F1A

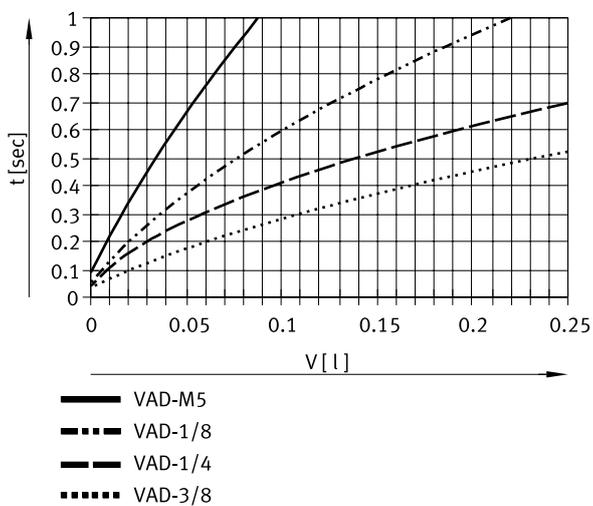
| | |
|--|--|
| LABS (PWIS) conformity | VDMA24364-B1/B2-L |
| Suitability for the production of Li-ion batteries | Suitable for battery production with reduced Cu/Zn/Ni values (F1a) |

Evacuation time t as a function of the volume V to be evacuated with various vacuum generators (ISV-M5)



Evacuation time is the time required to achieve 90% of the maximum possible vacuum.

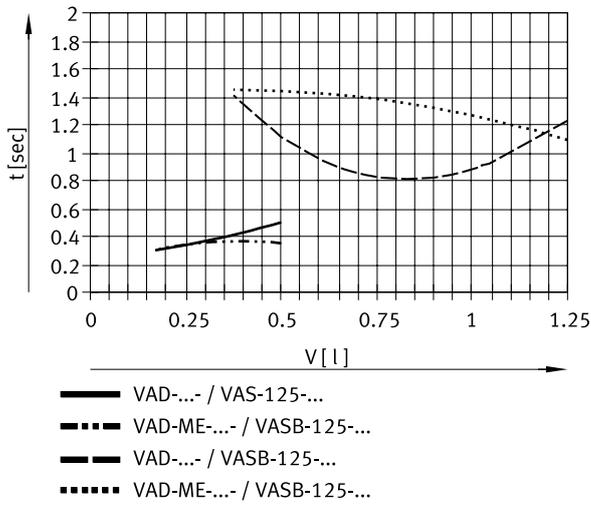
Evacuation time t as a function of the volume V to be evacuated with various vacuum generators (ISV-1/8, ISV-1/4)



Evacuation time is the time required to achieve 90% of the maximum possible vacuum.

Datasheet

Evacuation time t as a function of the volume V to be evacuated with various vacuum generators (ISV-3/8)

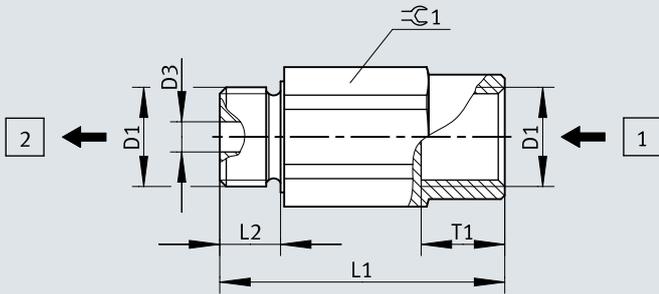


Evacuation time is the time required to achieve 90% of the maximum possible vacuum.

Dimensions

Dimensions – Vacuum security valves ISV for suction cups

Download CAD data www.festo.com



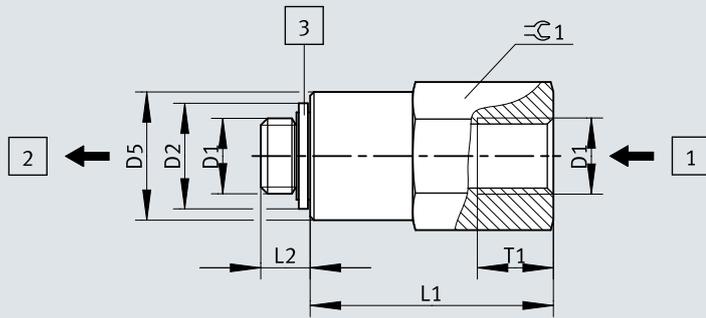
- [1] Suction side
- [2] Tubing side

| | D1 | D3 ∅ | L1 | L2 | T1 | ±C1 |
|---------|------|---------|------|-----|-----|-----|
| ISV-M5 | M5 | 2 | 15 | 4,3 | 5,5 | 8 |
| ISV-1/8 | G1/8 | 4 | 36 | 6,5 | 11 | 13 |
| ISV-1/4 | G1/4 | 4 | 37,5 | 8 | 11 | 17 |
| ISV-3/8 | G3/8 | 4 | 42 | 9 | 13 | 22 |

Dimensions

Dimensions – Vacuum security valves ISV for suction grippers

Download CAD data www.festo.com



- [1] Suction side
- [2] Tubing side
- [3] Sealing ring

| | D1 | D2 ø | D5 ø | L1 | L2 | T1 | ≈C 1 |
|---------|-----|---------|---------|------|-----|----|------|
| ISV-M4 | M4 | 7,8 | 7 | 10,7 | 3,8 | 5 | 7 |
| ISV-M6 | M6 | 8,4 | 14 | 28,3 | 5 | 5 | 14 |
| ISV-M10 | M10 | 13 | 17 | 32 | 6,5 | 10 | 17 |

Ordering data

| Ordering data – Vacuum security valves for suction cups | | | | | |
|---|------------------------------|---|----------------|---------------|----------------|
| | Pneumatic connection, port 1 | Required suction volumetric flow at -0.05 MPa (-0.5 bar, -7.25 psi) | Product weight | Part no. | Type |
|  | M5 | 1 l/min | 4 g | 151217 | ISV-M5 |
| | G1/8 | 2 l/min | 9 g | 33969 | ISV-1/8 |
| | G1/4 | 1.6 l/min | 16 g | 33970 | ISV-1/4 |
| | G3/8 | 1.5 l/min | 33 g | 33971 | ISV-3/8 |

| Ordering data – Vacuum security valves for suction grippers | | | | | |
|---|------------------------------|---|----------------|---------------|----------------|
| | Pneumatic connection, port 1 | Required suction volumetric flow at -0.05 MPa (-0.5 bar, -7.25 psi) | Product weight | Part no. | Type |
|  | M4 | 1 l/min | 1.5 g | 545996 | ISV-M4 |
| | M6 | 2 l/min | 14 g | 545997 | ISV-M6 |
| | M10 | | 18 g | 545998 | ISV-M10 |

| Ordering information – Vacuum security valves for suction cups with connection (products for battery production) | | | | | |
|--|------------------------------|---|----------------|----------------|--------------------|
| | Pneumatic connection, port 1 | Required suction volumetric flow at -0.05 MPa (-0.5 bar, -7.25 psi) | Product weight | Part no. | Type |
|  | M5 | 1 l/min | 4 g | 8217206 | ISV-M5-F1A |
| | G1/8 | 2 l/min | 9 g | 8217204 | ISV-1/8-F1A |
| | G1/4 | 1.6 l/min | 16 g | 8217205 | ISV-1/4-F1A |