

- Vacuum does not dissipate when several suction cups are arranged in parallel
- Suitable for handling sacks of powdered material
- Gripping of randomly placed products
- Saves compressed air and energy

Vacuum efficiency valves ISV

Features



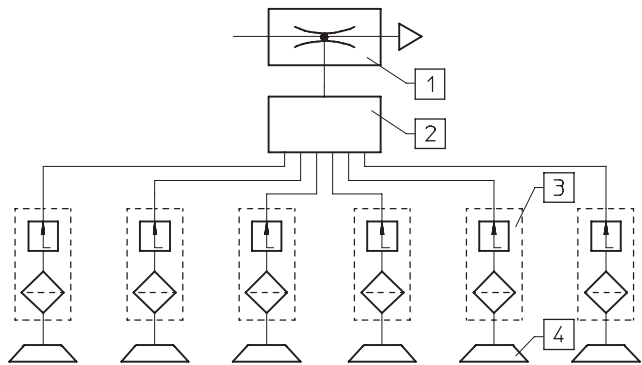
Areas of application

- For parallel arrangement of several suction cups
 - To prevent dissipation of the vacuum if one or several suction cups do not make full contact
- Handling sacks of powdered product
 - Unintentional dispersal of the product around the vacuum device is prevented
- Gripping of randomly placed products
- Saves compressed air and energy
 - Retention is only successful if 100% contact is achieved
- Maintains vacuum

Function diagram

These valves are suitable for applications requiring several vacuum suction cups and for the maintenance of vacuum in the event that one suction cup should fail to make contact.

- 1 Vacuum generator
- 2 Distributor
- 3 Vacuum efficiency valve
- 4 Suction cup



Vacuum efficiency valve function

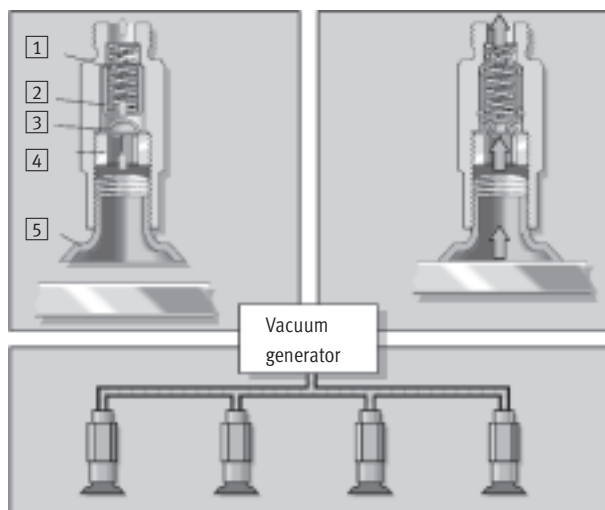
The ISV valve is fitted between the vacuum generator and the suction cup.

If, during vacuum generation, a suction cup is uncovered, or only partly covered, the ISV automatically stops the influx of air.

When the suction cup fits tightly against the surface, a vacuum is regenerated.

Removal of the object from the suction cup causes the ISV valve to close immediately.

1. When the suction cup is open to atmosphere, the float is drawn back against the housing. In this position, flow is only possible through the small hole in the end of the float.
2. When an object is in contact with the suction cup, flow is reduced and the spring forces the float forward. The seal is thus broken and full vacuum is generated within the suction cup.

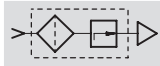


- 1 Spring
- 2 Float
- 3 Filter
- 4 Retaining screw
- 5 Suction cup


Vacuum efficiency valves ISV

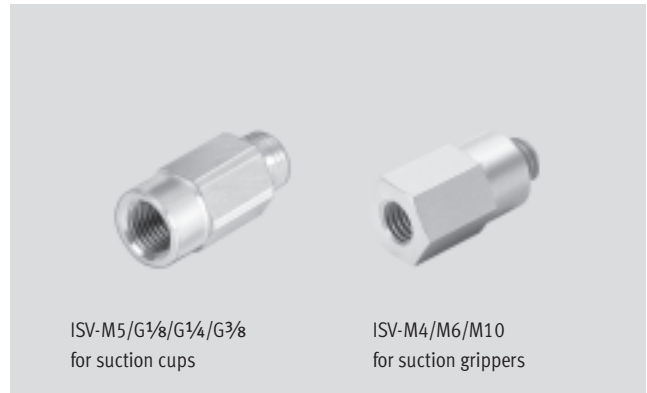
Technical data

Function



 Temperature range
-10 ... +60 °C

 Operating pressure
4 ... 10 bar



ISV-M5/G $\frac{1}{8}$ /G $\frac{1}{4}$ /G $\frac{3}{8}$
for suction cups

ISV-M4/M6/M10
for suction grippers

| General technical data | | | | | | | |
|---|--|-----------------|-----------------|-----------------|----------------------|-------------|-----|
| Size | For suction cups | | | | For suction grippers | | |
| | M5 | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | M4 | M6 | M10 |
| Operating medium | Atmospheric air | | | | | | |
| Mounting position | Any | | | | | | |
| Type of mounting | Screwed in between suction cup and distributor | | | | | | |
| Pneumatic connection | M5 | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | M4 | M6 | M10 |
| Operating pressure [bar] | 4 ... 10 | | | 5 ... 7 | | -0.95 ... 0 | |
| Ejector pulse possibility [bar] | - | | | | ≤ 8 | | |
| Required suction rate at -0.5 bar [l/min] | - | | | | 1 | 2 | 2 |

| Ambient conditions | | | | | | | |
|--|------------------|-----------------|-----------------|-----------------|----------------------|----|-----|
| Size | For suction cups | | | | For suction grippers | | |
| | M5 | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | M4 | M6 | M10 |
| Ambient temperature [°C] | -10 ... +60 | | | | | | |
| Corrosion resistance CRC ¹⁾ | 2 | | | | | | |

1) Corrosion resistance class 2 according to Festo standard 940 070

Components requiring moderate corrosion resistance. Externally visible parts with primarily decorative surface requirements which are in direct contact with a surrounding industrial atmosphere or media such as cooling or lubricating agents.

| Weights [g] | | | | | | | |
|-------------|------------------|-----------------|-----------------|-----------------|----------------------|----|-----|
| Size | For suction cups | | | | For suction grippers | | |
| | M5 | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | M4 | M6 | M10 |
| ISV-... | 4 | 9 | 16 | 33 | 1.5 | 14 | 18 |

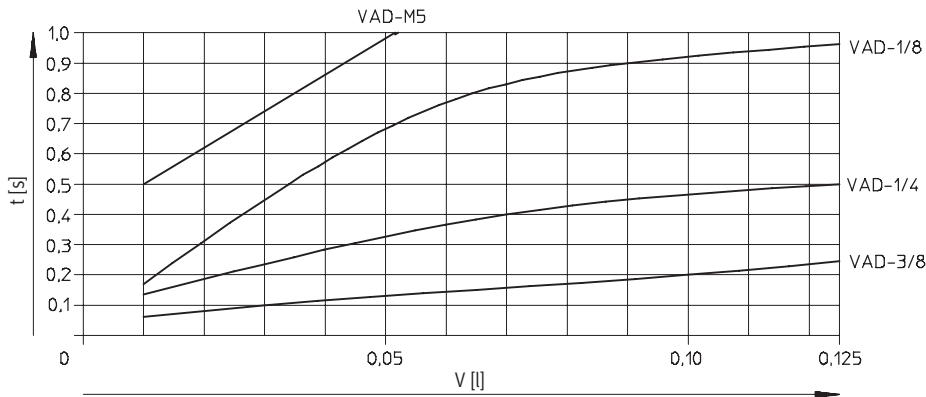
| Materials | | | | | | | |
|-----------|------------------|------------------------|-----------------|-----------------|-------------------------|----------------------------|-----|
| Size | For suction cups | | | | For suction grippers | | |
| | M5 | G $\frac{1}{8}$ | G $\frac{1}{4}$ | G $\frac{3}{8}$ | M4 | M6 | M10 |
| Housing | Galvanised steel | Anodised aluminium | | | Wrought aluminium alloy | | |
| Filter | Sintered bronze | Aluminium-Niro housing | | | Sintered bronze | | |
| Spring | - | Stainless steel | | | - | High-alloy stainless steel | |
| Float | - | Polyacetate | | | - | | |

Vacuum efficiency valves ISV

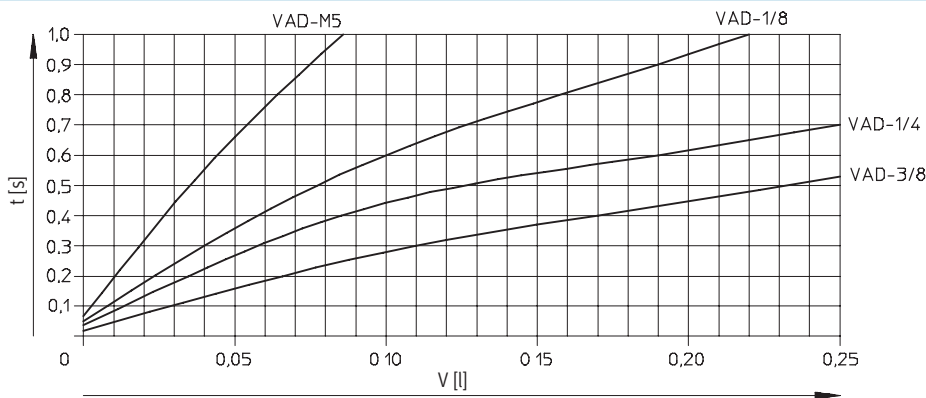
Technical data

Evacuation time t as a function of the volume to be evacuated V with various ejectors

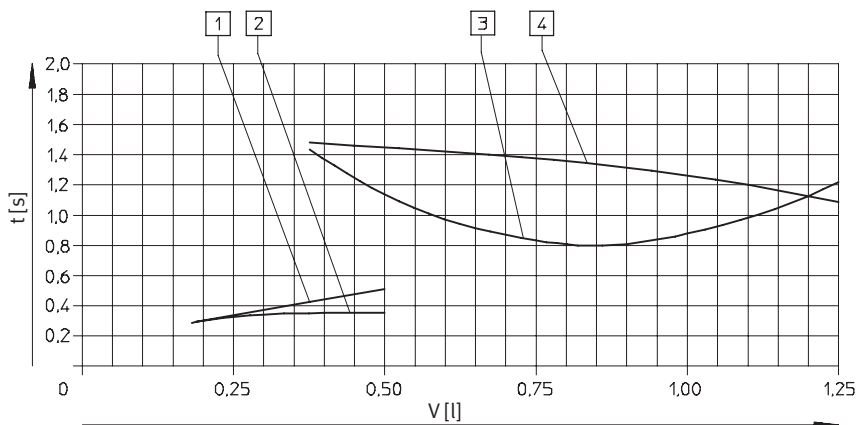
ISV-...-M5




ISV-...-1/8/ISV-...-1/4



ISV-...-3/8



- 1 VAD-...-3/8 with flat suction cup VAS-125-...
- 2 VAD-ME-...-3/8 with flat suction cup VASB-125-...
- 3 VAD-...-3/8 with bellows suction cup VASB-125-...
- 4 VAD-ME-...-3/8 with bellows suction cup VASB-125-...

 Note

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

Vacuum efficiency valves ISV

Technical data

FESTO

Conditions for operation of the vacuum efficiency valve ISV

- The number of vacuum suction cups that can be attached depends upon the suction capacity of the ejector.
- A minimum switching flow rate is required to ensure the function of each ISV vacuum efficiency valve connected in parallel to an ejector.
- The number of cups which can be reliably operated can be estimated on the basis of the ratio of ejector suction power and the minimum switching flow rate of the ISV vacuum efficiency valve.

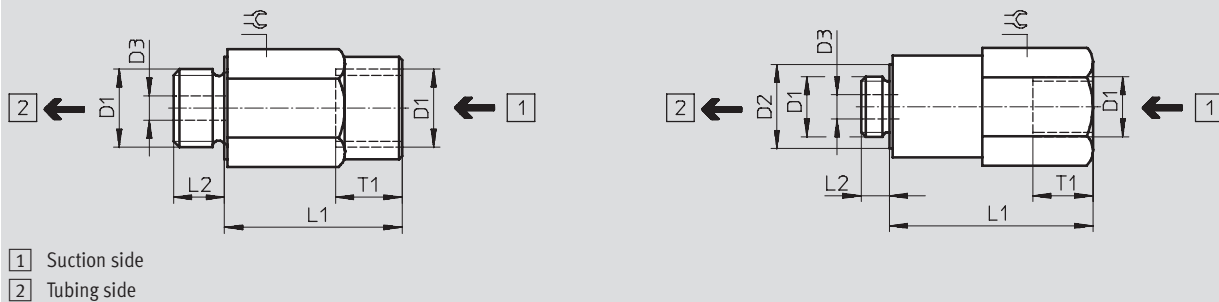
Max. no. of sealed suction cups as a function of the vacuum generator used and the attainable vacuum level

| Vacuum generator | Max. number of suction cups at P _u [bar] | | | | | | | | | | | |
|------------------|---|------|------|---------|------|------|---------|------|------|---------|------|------|
| | ISV-M5 | | | ISV-1/8 | | | ISV-1/4 | | | ISV-3/8 | | |
| | -0.5 | -0.6 | -0.7 | -0.5 | -0.6 | -0.7 | -0.5 | -0.6 | -0.7 | -0.5 | -0.6 | -0.7 |
| VAD-M5 | 2 | 1 | - | 1 | 1 | - | 1 | - | - | - | - | - |
| VAD-1/8 | 4 | 2 | 1 | 2 | 1 | - | 2 | 1 | - | - | - | - |
| VAD-1/4 | 8 | 6 | 3 | 4 | 3 | 1 | 4 | 3 | 1 | - | - | - |
| VAD-3/8 | 8 | 8 | 7 | 7 | 6 | 3 | 7 | 6 | 3 | - | 2 | 1 |
| VADM/VADMI-45 | 2 | 1 | - | 1 | 1 | - | 1 | - | - | - | - | - |
| VADM/VADMI-70 | 4 | 2 | 1 | 2 | 1 | - | 2 | 1 | - | - | - | - |
| VADM/VADMI-95 | 8 | 6 | 3 | 4 | 3 | 1 | 4 | 2 | 1 | - | - | - |
| VADM/VADMI-140 | 8 | 8 | 7 | 7 | 6 | 3 | 7 | 6 | 3 | 3 | 2 | 1 |
| VADM/VADMI-200 | 16 | 16 | 14 | 14 | 12 | 6 | 14 | 12 | 6 | 6 | 4 | 2 |
| VADM/VADMI-300 | 32 | 32 | 28 | 28 | 24 | 12 | 28 | 14 | 12 | 12 | 8 | 4 |

Dimensions




ISV-...

ISV-M4/M6/M10



| Type | D1 | D2 Ø | D3 Ø | L1 | L2 | T1 | ⌀ |
|---------|------|---------|---------|------|-----|-----|----|
| ISV-M5 | M5 | - | 2 | 10 | 5 | 5.5 | 8 |
| ISV-1/8 | G1/8 | - | 4 | 29.5 | 6.5 | 11 | 13 |
| ISV-1/4 | G1/4 | - | 4 | 30 | 8 | 11 | 17 |
| ISV-3/8 | G3/8 | - | 4 | 30 | 9 | 13 | 22 |
| ISV-M4 | M4 | 7.6 | 1.5 | 11.3 | 3.2 | 5 | 7 |
| ISV-M6 | M6 | 8.4 | 3 | 33.8 | 3.5 | 5 | 14 |
| ISV-M10 | M10 | 14 | 4 | 33.8 | 4.7 | 10 | 17 |

Ordering data

| Pneumatic connection | For suction cups | | Pneumatic connection | For suction grippers | |
|----------------------|------------------|-------------------------|----------------------|----------------------|---|
| | Part No. | Type | | Part No. | Type |
| M5 | 151 217 | ISV-M5 | M4 | 545 996 | ISV-M4  New |
| M5 | 183 520 | ISV-M5-CT ¹⁾ | M6 | 545 997 | ISV-M6  New |
| G1/8 | 33 969 | ISV-1/8 | M10 | 545 998 | ISV-M10  New |
| G1/4 | 33 970 | ISV-1/4 | | | |
| G3/8 | 33 971 | ISV-3/8 | | | |

1) Free of copper and PTFE