

Vacuum generators VAD/VAK

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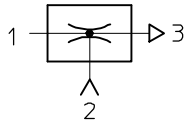
Vacuum generators

Key features

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Product overview

Vacuum generator



All Festo vacuum generators have a single-stage design and operate according to the venturi principle. The product families described below

have been designed for a wide range of applications. The different performance classes of the individual

product families make it possible to select vacuum generators tailored to suit specific requirements.

Standard and inline ejectors

VN-...

Technical data → Internet: vn



- Nominal size 0.45 ... 3 mm
- Max. vacuum 93%
- Temperature range 0 ... +60 °C
- A range of extremely effective generators suitable for use directly in the workplace
- Available as straight or T-shaped housing
- Low space requirement
- Low-cost
- No wearing parts
- Extremely fast evacuation time
- Vacuum switch (optional)
- Optional with additional functions:
 - integrated eject pulse
 - electric control for vacuum ON/OFF
 - combination of eject pulse and control

VAD-.../VAK-...

→ 6



- Nominal size 0.5 ... 1.5 mm
- Max. vacuum 80%
- Temperature range -20 ...+80 °C
- Range of vacuum generators with sturdy aluminium casing
- VAK-...: Built-in reservoir
- VAD-...: Connection for additional external reservoir
- Maintenance-free
- VAK-...: Reliable setting down of workpieces

Vacuum generators

Key features

Compact ejectors

VADM-...VADMI-...

Technical data → Internet: vadm



- Nominal size
0.45 ... 3 mm
- Max. vacuum
84%
- Temperature range
0 ... +60 °C
- Compact design
- Minimal installation work required
- Short response times
- Built-in solenoid valve (on/off)
- VADMI-...: Additional built-in solenoid valve for ejector pulse
- Filter with display
- Air-saving circuit (optional)
- Vacuum switch (optional)
- Reliable setting down of workpieces

VAD-M-.../VAD-M-I-...

Technical data → Internet: vad-m

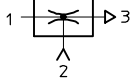


- Nominal size
0.7 ... 2 mm
- Max. vacuum
85%
- Temperature range
0 ... +40 °C
- Compact design
- Minimal installation work required
- Short response times
- Built-in solenoid valve (on/off)
- VAD-M-I-...: Additional built-in solenoid valve for ejector pulse
- Reliable setting down of workpieces

Vacuum generators VAD/VAK

Key features

At a glance



- Vacuum generation via ejector principle
- Mounting holes in metal housing
- Connecting thread for the suction cup

Compressed air flowing from 1 to 3 generates a vacuum at port 2 in accordance with the ejector principle.

The low noise levels which occur during exhaust can be further reduced with a silencer at port 3.

Workpieces can be picked up in any position. When the compressed air is turned off, the suction process ends and the vacuum dissipates.

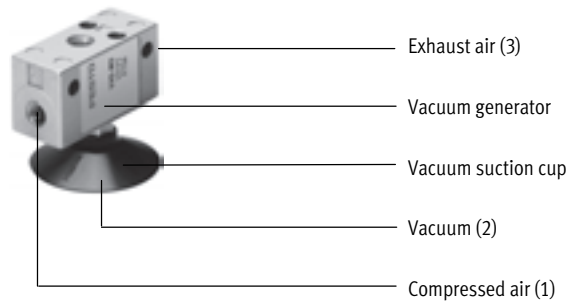
During the suction process, the vacuum generator VAK fills a reservoir of approx. 32 cm³ with compressed

air, which creates an ejector pulse when the input pressure is switched off and reliably releases the workpiece from the suction cup.

Max. switching frequency approx. 10 Hz at 6 bar and with approx. 1 m suction line.

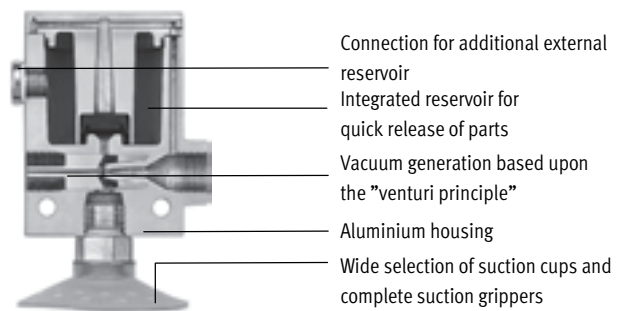
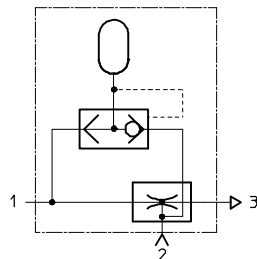
Vacuum generator VAD-... without ejector pulse

- Workpieces can be picked up in any position.
- Sturdy and resistant to environmental factors
- Easy to install
- No moving parts, maintenance-free
- Connecting threads and mounting holes available



Vacuum generator VAK-... with ejector pulse

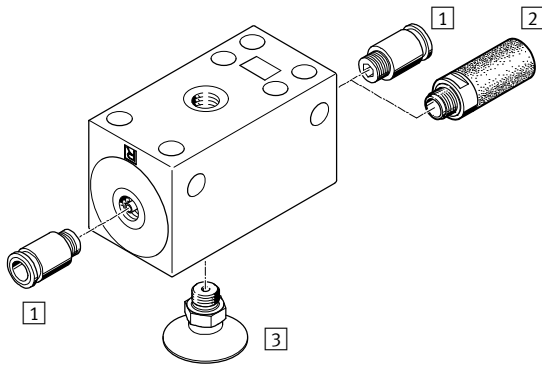
- Quick and reliable setting down of parts via an ejector pulse from a pre-filled reservoir
- Robust vacuum generator for a broad field of applications
- Optional silencer



Vacuum generators VAD/VAK

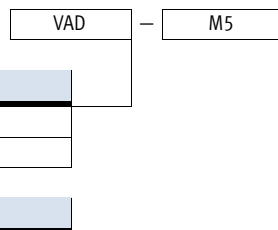
Peripherals overview and type codes

Peripherals overview




Mounting attachments and accessories		→ Page/Internet
1	Push-in fitting QS	qs
2	Silencer U/UC	u
3	Suction cups VAS/VASB	vas
-	Suction gripper ESG	esg
-	Suction cup holder ESH	esh
-	suction cup ESS	ess

Type codes



Type	
VAD	Vacuum generator
VAK	Vacuum generator

Connection sizes	
M5	Thread M5
1/8	Thread G1/8
1/4	Thread G1/4
3/8	Thread G3/8

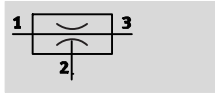
-  - Note
Possible combinations can be found in the ordering data.

Vacuum generators VAD/VAK

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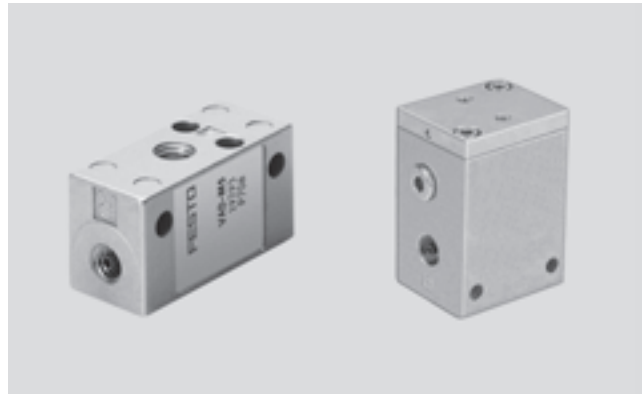
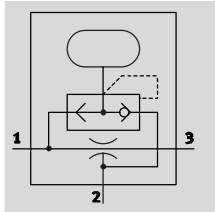
Technical data

VAD



- - Temperature range
-20 ... +80 °C
- - Operating pressure
1.5 ... 10 bar

VAK



General technical data					
Type	VAD				VAK
Size	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$
Nominal size of laval nozzle [mm]	0.5	0.8	1	1.5	1
Ejector characteristic	High vacuum				
Max. vacuum [%]	80				
Pneumatic connection 1	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$
Vacuum connection	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$
Pneumatic connection 3	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$
Design	T-type				
Integrated function	-				Pneumatic ejector pulse
Type of mounting	Via through-holes				
Assembly position	Any				

Operating and environmental conditions	
Operating pressure [bar]	1.5 ... 10
Operating medium	Compressed air according to ISO 8573-1:2010 [7:4:4]
Note about the operating/pilot medium	Operation with lubricated medium possible (in which case lubricated operation will always be required)
Ambient temperature [°C]	-20 ... +80
Temperature of medium [°C]	-20 ... +80
Corrosion resistance class CRC ¹⁾	2

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.

Response time [s] as a function of vacuum [bar] at 6 bar operating pressure and 1 l volume						
Type	VAD					VAK
Size	M5	G $\frac{1}{8}$	G $\frac{1}{4}$	G $\frac{3}{8}$	G $\frac{1}{4}$	
Evacuation						
At vacuum	0.2 bar	1.3	0.51	0.29	0.142	0.29
	0.4 bar	3.53	1.38	0.745	0.35	0.745
	0.6 bar	8.18	3.41	1.69	0.817	1.69
	0.8 bar	26.6 ¹⁾	11.67	4.04 ¹⁾	2.72	4.04 ¹⁾
Air supply						
At vacuum	0.2 bar	2.8	0.89	0.61	0.265	-
	0.4 bar	3.8	1.3	0.89	0.372	-
	0.6 bar	4.65	1.64	1.12	0.46	-
	0.8 bar	5.45	1.98	1.32	0.536	-

1) At 0.75 bar vacuum.

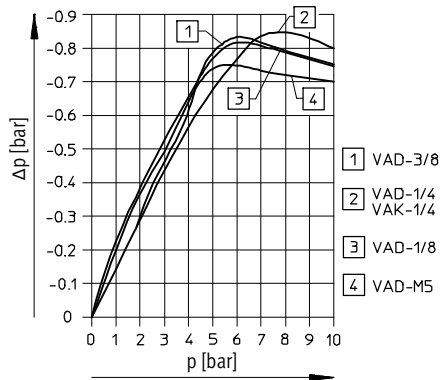
Vacuum generators VAD/VAK

Technical data

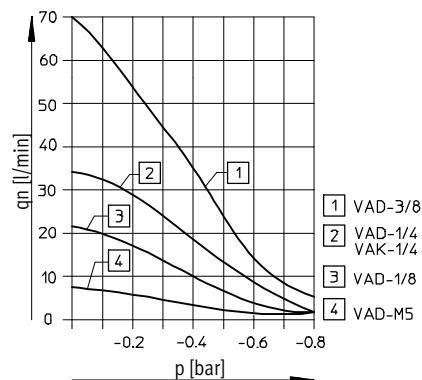
Materials

Housing	Die-cast aluminium
Note on materials	Free of copper and PTFE

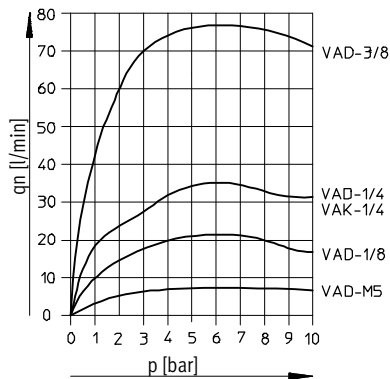
Vacuum Δp as a function of operating pressure p



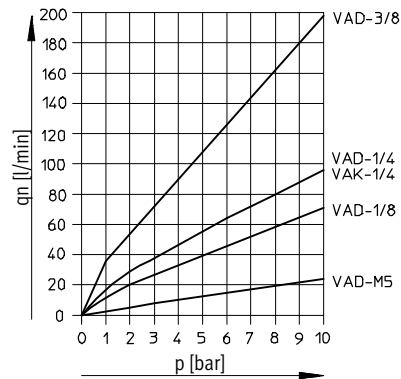
Suction capacity q_n as a function of vacuum p



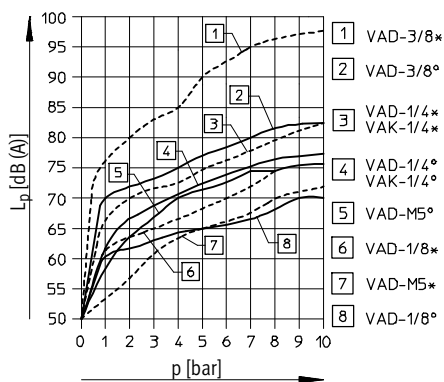
Suction capacity q_n as a function of operating pressure p



Air consumption q_n as a function of operating pressure p



Noise level L_p as a function of operating pressure p



* = without silencer; ° = with silencer

Vacuum generators VAD/VAK

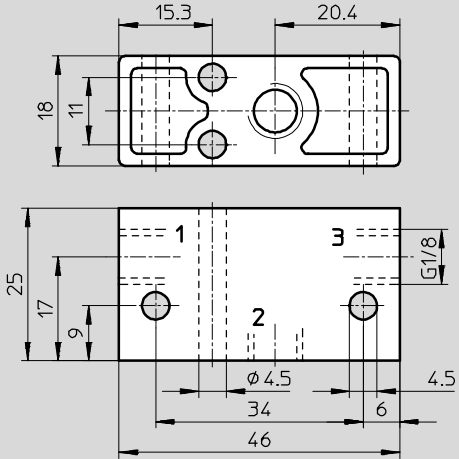
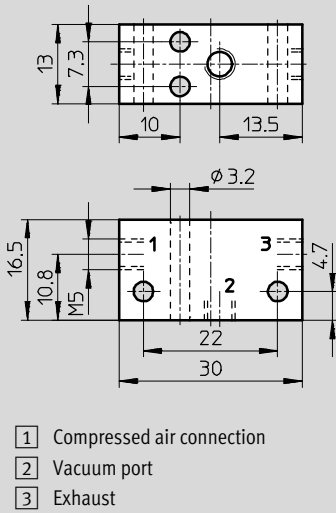
Technical data

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Dimensions

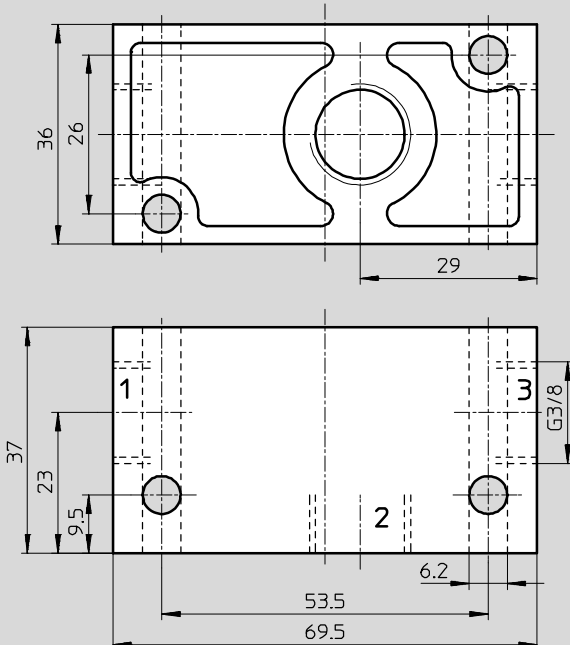
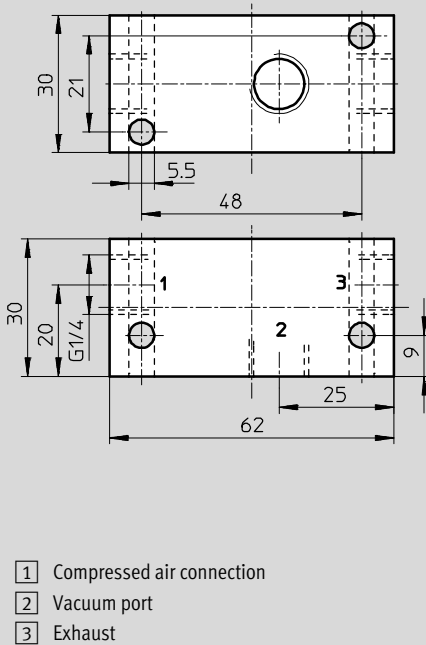
VAD-M5

VAD-1/8



VAD-1/4

VAD-3/8

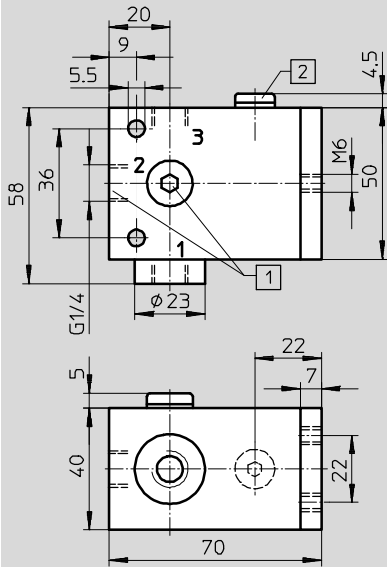


Vacuum generators VAD/VAK

Technical data

Dimensions

VAK-1/4



- 1 Alternative connection 2
- 2 Connection for additional reservoir

- 1 Compressed air connection
- 2 Vacuum port
- 3 Exhaust

Ordering data

Pneumatic connection	Nominal size of laval nozzle [mm]	Weight [g]	Part No.	Type
Without ejector pulse				
M5	0.5	14	19293	VAD-M5
G $\frac{1}{8}$	0.8	40	14015	VAD- $\frac{1}{8}$
G $\frac{1}{4}$	1	90	9394	VAD- $\frac{1}{4}$
G $\frac{3}{8}$	1.5	155	19294	VAD- $\frac{3}{8}$
With ejector pulse				
G $\frac{1}{4}$	1	265	6890	VAK- $\frac{1}{4}$

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