

Vacuum generators VAD/VAK

FESTO



Key features

Product overview

All Festo vacuum generators have a single-stage design and operate according to the Venturi principle. The product series described below have been designed for a wide range of applications.

The different performance classes of the individual product series make it possible to select vacuum generators tailored to suit the specific requirements of each application.

Standard and inline ejectors

VN

Datasheets → Internet: vn



- Nominal width
0.45 ... 3 mm
- Max. vacuum
93%
- Temperature range
0 ... +60°C
- A range of extremely effective generators suitable for use directly in the workspace
- Available as a straight or T-shaped design
- Minimal space required
- Low cost
- No wearing parts
- Extremely fast evacuation time
- Optional vacuum switch
- Optional additional functions:
 - Integrated ejector pulse
 - Electrical control for vacuum ON/OFF
 - Combination of ejector pulse and actuation

VAD/VAK

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- Nominal width
0.5 ... 1.5 mm
- Max. vacuum
80%
- Temperature range
–20 ... +80°C
- Range of vacuum generators with sturdy aluminium housing
- VAK-...: integrated volume,
VAD-...: connection for external volume
- Maintenance-free
- VAK: reliable setting down of workpieces

Key features

Compact ejectors

OVEM

Datasheets → Internet: ovem



- Nominal width
0.45 ... 2 mm
- Max. vacuum
93%
- Temperature range
0 ... +50°C
- Compact design
- Minimal installation effort
- Short switching times
- Integrated solenoid valves for vacuum ON/OFF and ejector pulse
- Filter with display
- Vacuum sensor with LCD display for continuous monitoring of the entire vacuum system
- Optional air saving function
- Reliable setting down of workpieces
- Blocking of multiple vacuum generators on a common supply manifold

VADM/VADMI

Datasheets → Internet: vadm



- Nominal width
0.45 ... 3 mm
- Max. vacuum
85%
- Temperature range
0 ... +60°C
- Compact design
- Minimal installation effort
- Short switching times
- Integrated solenoid valve (on/off)
- VADMI: additional integrated solenoid valve for ejector pulse
- Filter with display
- Optional air saving function
- Optional vacuum switch
- Reliable setting down of workpieces

VAD-M

Datasheets → Internet: vad-m



- Nominal width
0.7 ... 2 mm
- Max. vacuum
85%
- Temperature range
0 ... +40°C
- Compact design
- Minimal installation effort
- Short switching times
- Integrated solenoid valve (on/off)
- VAD-M-I: additional integrated solenoid valve for ejector pulse
- Reliable setting down of workpieces

Key features

At a glance

- Compressed air flowing from 1 to 3 generates a vacuum at port 2 in accordance with the ejector principle.
- The low exhaust noise during blowing can be further dampened by using a silencer in port 3.
- Workpieces can be picked up in any position. When the compressed air is switched off, suction stops and the vacuum breaks down.
- During suction with vacuum generator VAK, a volume of approx. 32 cm³ is filled with compressed air; this creates an ejector pulse when the input pressure is switched off, reliably releasing the workpiece from the suction cup.
- Max. switching frequency approx. 10 Hz at 6 bar and approx. 1 m suction line.

Vacuum generator VAD-... without ejector pulse



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

Vacuum generator VAK-... with ejector pulse



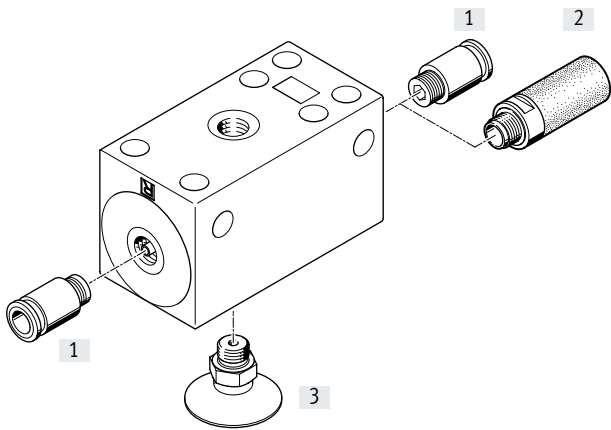
- Quick and reliable setting down of parts via an ejector pulse from a pre-filled reservoir
- Robust vacuum generator for a broad field of applications
- Optional silencer

Type codes

001	Series
VAD	Vacuum generator
VAK	Vacuum generator with ejector pulse

002	Pneumatic connection
M5	Female thread M5
1/8	Female thread G1/8
1/4	Female thread G1/4
3/8	Female thread G3/8



Peripherals overview



Mounting attachments and accessories

		→ Page/Internet
[1]	Push-in fitting QS	quick star
[2]	Silencers U/UC	u
[3]	Suction cups VAS/VASB	vas
-	Suction gripper ESG	esg
-	Suction cup holder ESH	esh
-	Suction cup ESS	ess

Datasheet

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



General technical data		VAD				VAK
Type						
Size		M5	G1/8	G1/4	G3/8	G1/4
Nominal width of Laval nozzle	[mm]	0.5	0.8	1	1.5	1
Ejector characteristics		High vacuum				
Max. vacuum	[%]	80				
Pneumatic connection 1		M5	G1/8	G1/4	G3/8	G1/4
Vacuum port		M5	G1/8	G1/4	G3/8	G1/4
Pneumatic connection 3		M5	G1/8	G1/4	G3/8	G1/4
Design		T-shape				
Integrated function		-				Ejector pulse, pneumatic
Type of mounting		Via through-hole				
Mounting position		Any				

Operating and environmental conditions	
Operating pressure	[bar] 1.5 ... 10
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Note on the operating/ pilot medium	Lubricated operation 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 can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

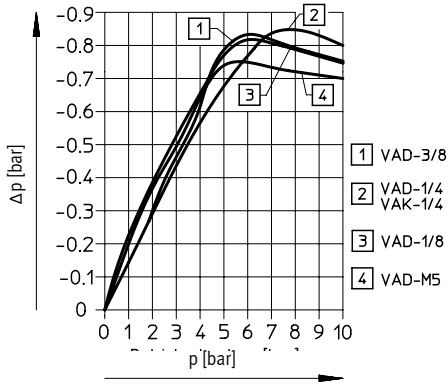
Switching time [s] as a function of vacuum [bar] at operating pressure 6 bar and measurement volume 1 l						
Type		VAD				VAK
Size		M5	G1/8	G1/4	G3/8	G1/4
Evacuation						
At vacuum	0.2 bar	1.3	0.51	0.29	0.142	0.29
	0.4 bar	3.53	1.38	0.745	0.35	0.745
	0.6 bar	8.18	3.41	1.69	0.817	1.69
	0.8 bar	26.6 ¹⁾	11.67	4.04 ¹⁾	2.72	4.04 ¹⁾
Pressurisation						
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

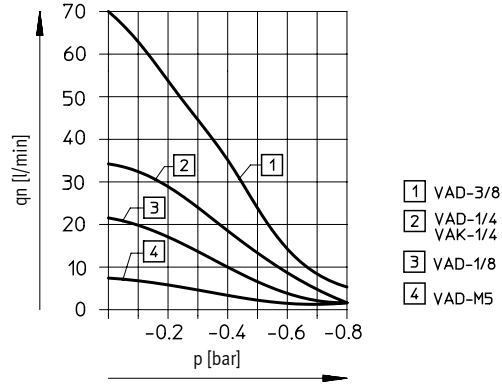
Datasheet

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

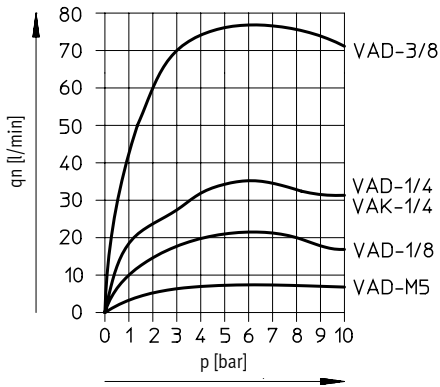
Vacuum Δp as a function of operating pressure p



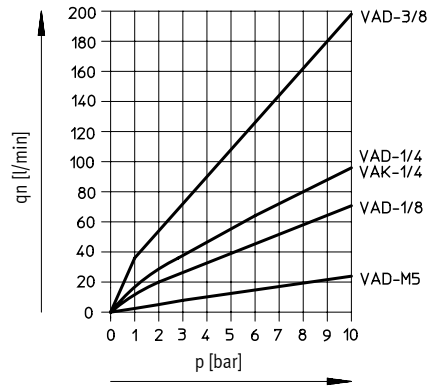
Suction capacity q_n as a function of vacuum p



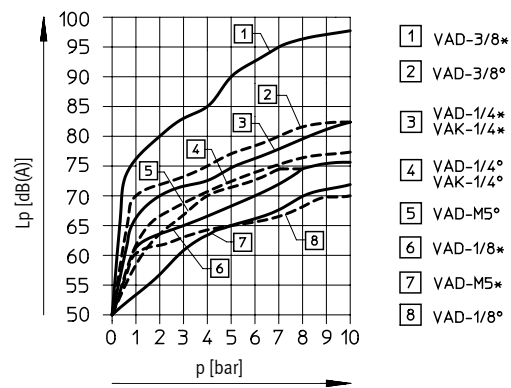
Suction capacity q_n as a function of operating pressure p



Air consumption q_n as a function of operating pressure p



Noise level L_p as a function of operating pressure p

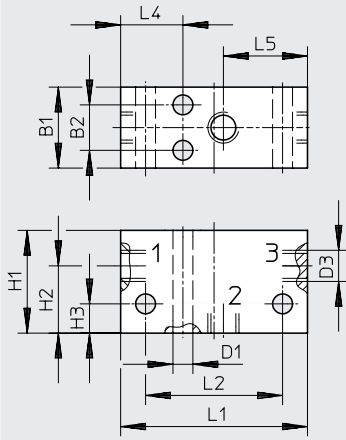


* = without silencer; ° = with silencer

Datasheet

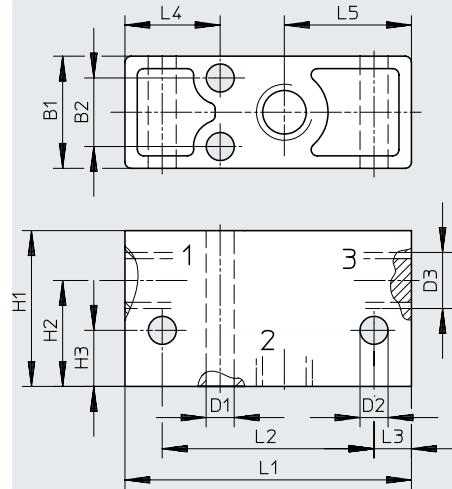
Dimensions

VAD-M5



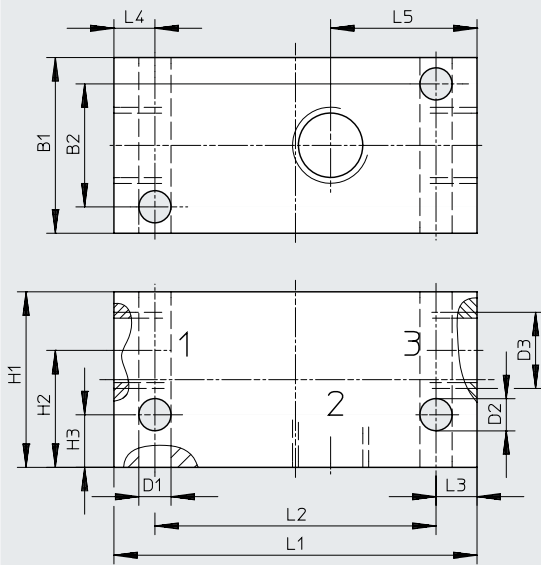
- 1 Supply port
- 2 Vacuum port
- 3 Exhaust

VAD-1/8



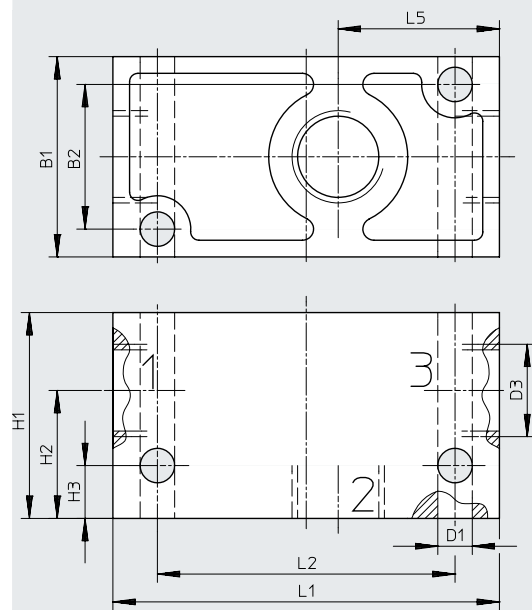
- 1 Supply port
- 2 Vacuum port
- 3 Exhaust

VAD-1/4



- 1 Supply port
- 2 Vacuum port
- 3 Exhaust

VAD-3/8



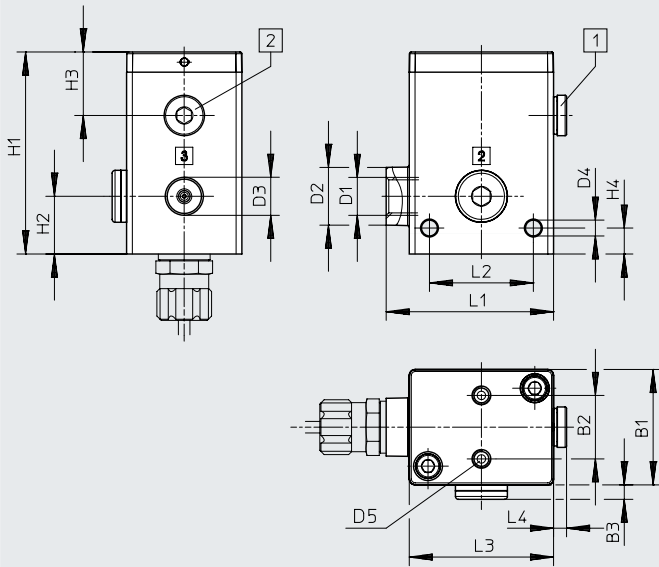
- 1 Supply port
- 2 Vacuum port
- 3 Exhaust

Type	B1	B2	D1 ∅	D2 ∅	D3	H1	H2	H3	L1	L2	L3	L4	L5
VAD-M5	13	7.3	3.2	-	M5	16.5	10.8	4.7	30	22	-	10	13.5
VAD-1/8	18	11	4.5	4.5	G1/8	25	17	9	46	34	6	15.3	20.4
VAD-1/4	30	21	5.5	5.5	G1/4	30	20	9	62	48	7	7	25
VAD-3/8	36	26	6.2	-	G3/8	37	23	9.5	69.5	53.5	-	-	29

Datasheet

Dimensions

VAK-1/4



- [1] Alternative connection 2
 - [2] Connection for additional volume
- 1 Supply port
 - 2 Vacuum port
 - 3 Exhaust

Type	B1	B2 ±0.1	B3	D1	D2 ∅	D3	D4 ∅	D5	H1	H2	H3	H4 ±0.1	L1	L2 ±0.1	L3	L4
VAK-1/4	40	22	5	G1/4	20	G1/4	5.5	M6	70	-20	22	9	58	36	50	4.5

Ordering data

Pneumatic connection	Nominal width of Laval nozzle [mm]	Weight [g]	Part no.	Type
Without ejector pulse				
M5	0.5	14	19293	VAD-M5
G1/8	0.8	40	14015	VAD-1/8
G1/4	1	90	9394	VAD-1/4
G3/8	1.5	155	19294	VAD-3/8
With ejector pulse				
G1/4	1	265	6890	VAK-1/4