

- High vacuum levels of up to 93%
- Easy connection of holders and suction cups
- Lightweight and compact design
- No wearing parts
- Long service life
- Vacuum monitoring with vacuum switch

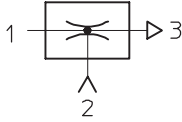
# Vacuum generators

Key features

FESTO

## 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-...

→ 6 / 1.1-10



- 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)

VAD-.../VAK-...

→ 6 / 1.1-36



- 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

FESTO

## Compact ejectors

VADM-...VADMI-...

→ 6 / 1.2-8



- 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-...

→ 6 / 1.2-28



- 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 VN

Features



## At a glance

- Vacuum generators for high vacuum levels of up to 93%
- Laval nozzles in six nominal sizes:
  - 0.45 mm
  - 0.7 mm
  - 0.95 mm
  - 1.4 mm
  - 2.0 mm
  - 3.0 mm
- Vacuum generators for high suction rates resulting in very short evacuation times
- Low space requirement
- Compact and sturdy design
- Wear-resistant and maintenance-free
- Modular system: Large selection of different types
- Can be used directly in the workplace, making them very effective
- Plastic housing
- Versatile connection options:
  - Push-in connector QS
  - Screw-in thread
  - Push-in sleeve
  - Screw-in silencer
- Easy mounting thanks to the double-sided latching function of the mounting plate
- With or without integrated vacuum switch to monitor the vacuum with PNP output

## Two housing types

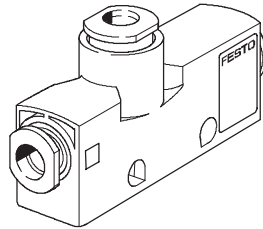
### Standard T-type

Connection options:

- QS push-in connectors
- Female thread
- Male thread
- Silencers

Mounting options:

- Direct mounting with screws
- Indirect mounting by latching onto a mounting plate. This plate is suitable for H-rails 35x7.5 to DIN EN 50 022.



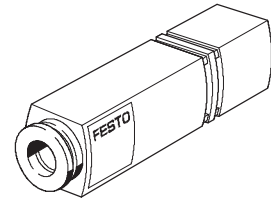
### In-line version

Connection options:

- QS push-in connectors
- Push-in sleeve

Mounting options:

Extremely compact housing with supply and vacuum port arranged in a line and with unducted exhaust air. As a result, this housing type can be installed directly into the tubing line.



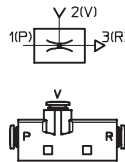
## Two operating principles

### Standard

- T-type housing

#### Design:

Supply port at 90° to vacuum port. The drawn-in flow is diverted 90° from V to R.

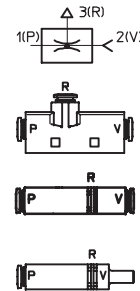


### In-line

- T-type housing with exhaust port
- Straight housing without exhaust port for space-saving assembly in a tubing line or directly in the suction cup holder

#### Design:

Supply and vacuum ports arranged in-line.



# Vacuum generators VN

Features



## Two variants

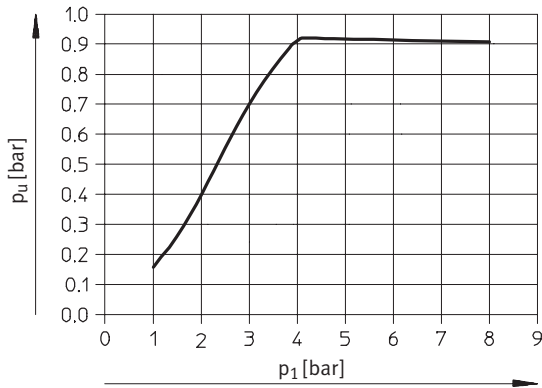
High vacuum

up to 93%

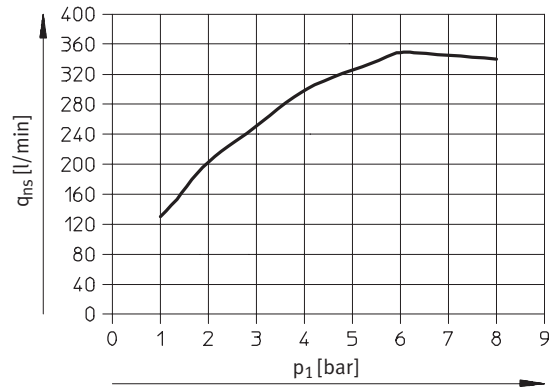
High suction volume

up to 339 l/min which results in very short evacuation times

Vacuum  $p_u$  as a function of operating pressure  $p_1$



Suction rate  $q_{ns}$  as a function of operating pressure  $p_1$

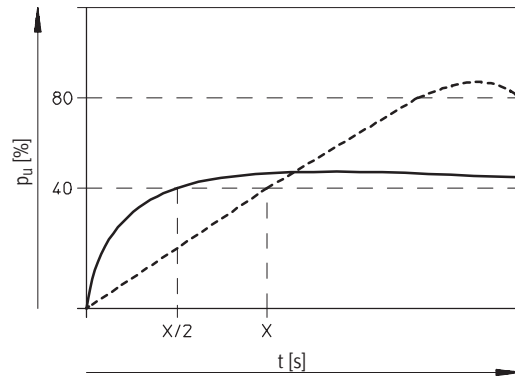


## System comparison

High vacuum – high suction volume

The first type of generator has been optimised for the generation of high vacuum at comparatively lower suction flow rates.

The second type of generator, on the other hand, can achieve very short evacuation times because of the high suction flow rate at relatively low vacuum.











----- High vacuum  
 ——— High suction volume

## Vacuum generators VN

Product range overview

**FESTO**

Function	Version	Type	Nominal size	Housing width						Supply port (1)		
				T-type					Inline		Push-in connector PQ	Female thread PI
				10	14	16	18	24	10	13		
[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]	[mm]					
High vacuum	<b>Standard H</b>											
		VN-05	0.45	■	-	-	-	-	-	-	■	■
				-	■	-	-	-	-	-	■	■
		VN-07	0.7	■	-	-	-	-	-	-	■	■
				-	■	-	-	-	-	-	■	■
	VN-10	0.95	-	■	-	■	-	-	-	■	■	
			-	-	-	-	-	-	-	■	-	
	VN-14	1.4	-	-	-	■	-	-	-	■	■	
			-	-	-	-	-	-	-	■	■	
		VN-20	2.0	-	-	-	-	■	-	-	■	■
				-	-	-	-	-	-	-	■	■
		VN-30	3.0	-	-	-	-	■	-	-	■	■
				-	-	-	-	-	-	-	■	■
	<b>Standard H with integrated vacuum switch</b>											
		VN-05-...-P	0.45	-	-	■	-	-	-	-	■	-
VN-07-...-P		0.7	-	-	■	-	-	-	-	■	-	
VN-10-...-P		0.95	-	-	■	-	-	-	-	■	-	
<b>Inline M</b>												
	VN-05	0.45	■	-	-	-	-	-	-	■	■	
			-	■	-	-	-	-	■	-	-	
			-	-	-	-	-	-	■	■	-	
	VN-07	0.7	■	-	-	-	-	-	-	■	■	
			-	■	-	-	-	-	-	■	■	
			-	-	-	-	-	-	■	■	-	
VN-10	0.95	-	-	-	-	-	-	■	■	-		
		-	-	-	-	-	-	-	■	-		
High suction rate	<b>Standard L</b>											
		VN-05	0.45	■	-	-	-	-	-	-	■	■
				-	■	-	-	-	-	-	■	■
		VN-07	0.7	-	■	-	-	-	-	-	■	■
				-	■	-	-	-	-	-	■	■
	VN-10	0.95	-	■	-	■	-	-	-	■	■	
			-	-	-	-	-	-	-	■	-	
	VN-14	1.4	-	-	-	■	-	-	-	■	■	
			-	-	-	-	-	-	-	■	■	
		VN-20	2.0	-	-	-	-	■	-	-	■	■
				-	-	-	-	-	-	-	■	■
		VN-30	3.0	-	-	-	-	■	-	-	■	■
				-	-	-	-	-	-	-	■	■
	<b>Standard L with integrated vacuum switch</b>											
		VN-05-...-P	0.45	-	-	■	-	-	-	-	■	-
VN-07-...-P		0.7	-	-	■	-	-	-	-	■	-	
VN-10-...-P		0.95	-	-	■	-	-	-	-	■	-	
<b>Inline N</b>												
	VN-05	0.45	-	■	-	-	-	-	-	■	■	
			-	-	-	-	-	-	■	■	-	

# Vacuum generators VN

Product range overview

Type	Vacuum port (2)				Exhaust port (3)			Switching function		→ Page
	Push-in connector VQ	Female thread VI	Male thread VA	Push-in sleeve VT	Push-in connector RQ	Female thread RI	Silencer RO	Fixed hysteresis O1	Variable hysteresis O2	
<b>Standard H</b>										
VN-05	■	■	- ■	-	■	■	■	-	-	6 / 1.1-8
VN-07	■	■	- ■	-	■	■	■	-	-	
VN-10	■	■ -	■	-	■	■ -	■	-	-	
VN-14	■	■	■	-	■	■	■	-	-	
VN-20	■	■	■	-	-	-	■	-	-	
VN-30	■	■	■	-	-	-	■	-	-	
<b>Standard H with integrated vacuum switch</b>										
VN-05-...-P	■	-	-	-	-	-	-	■	■	6 / 1.1-24
VN-07-...-P										
VN-10-...-P										
<b>Inline M</b>										
VN-05	■	■	-	-	■	■	■	-	-	6 / 1.1-8
	■	-	-	■	-	-	-	-	-	
VN-07	■	■	-	-	■	■	■	-	-	
	■	-	-	■	-	-	-	-	-	
VN-10	■	-	-	-	-	-	-	-	-	
<b>Standard L</b>										
VN-05	■	■	- ■	-	■	■	■	-	-	6 / 1.1-8
VN-07	■	■	■	-	■	■	■	-	-	
VN-10	■	■ -	■	-	■	■ -	■	-	-	
VN-14	■	■	■	-	■	■	-	-	-	
VN-20	■	■	■	-	-	-	■	-	-	
VN-30	-	■	■	-	-	-	■	-	-	
<b>Standard L with integrated vacuum switch</b>										
VN-05-...-P	■	-	-	-	-	-	-	■	■	6 / 1.1-24
VN-07-...-P										
VN-10-...-P										
<b>Inline N</b>										
VN-05	■	■	-	-	■	■	■	-	-	6 / 1.1-8
	■	-	-	■	-	-	-	-	-	

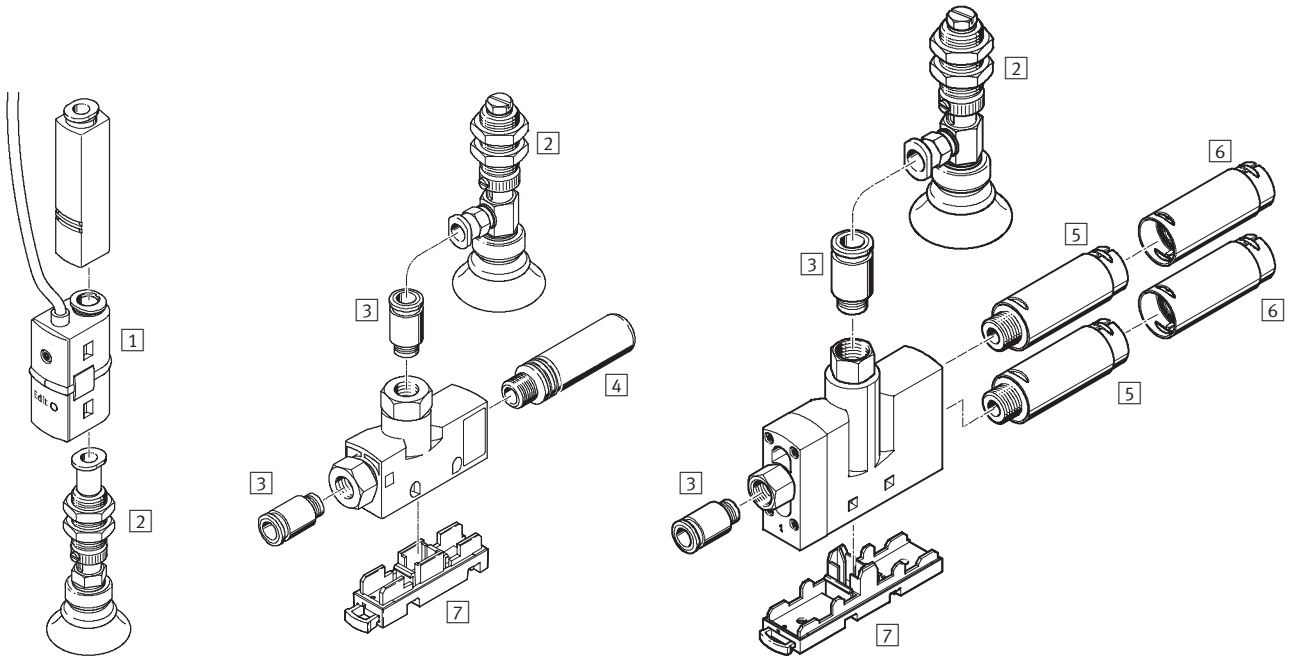
**Vacuum generators VN**

Peripherals overview

VN-05/07/10/14  
Inline

T-type

VN-20/30

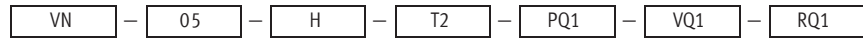


	VN-05/07/10/14		VN-20/30	→ Page
	Inline	T-type		
1 Pressure switch SDE5	■	■	■	6 / 5.1-13
2 Suction gripper ESG	■	■	■	6 / 2.1-6
3 Push-in fitting QS	-	■	■	Volume 3
4 Silencer UO	-	■	-	6 / 4.1-15
5 Silencer UOM	-	-	■	6 / 4.1-16
6 Silencer extension UOMS	-	-	■	6 / 4.1-16
7 Mounting plate VN-T	-	■	■	6 / 4.1-17
- Suction cup holder ESH	■	■	■	6 / 2.1-32
- suction cup ESS	■	■	■	6 / 2.1-47



# Vacuum generators VN

Type codes



## Type

VN	Vacuum generator
----	------------------

## Nominal laval nozzle size [mm]

05	0.45
07	0.7
10	0.95
14	1.4
20	2.0
30	3.0

## Ejector characteristic

H	High vacuum/Standard
L	High suction rate/Standard
M	High vacuum/Inline
N	High suction rate/Inline

## Housing type

I2	Inline, grid dimensions 10 mm
I3	Inline, grid dimensions 13 mm
T2	T-type, grid dimensions 10 mm
T3	T-type, grid dimensions 14 mm
T4	T-type, grid dimensions 18 mm
T6	T-type, grid dimensions 24 mm

## Supply port (1)

PQ1	Push-in connector QS4
PQ2	Push-in connector QS6
PQ4	Push-in connector QS10
PI2	Female thread M5
PI4	Female thread G $\frac{1}{8}$
PI5	Female thread G $\frac{1}{4}$

## Vacuum connection (2)

VQ1	Push-in connector QS4
VQ2	Push-in connector QS6
VQ3	Push-in connector QS8
VQ5	Push-in connector QS12
VI2	Female thread M5
VI4	Female thread G $\frac{1}{8}$
VI5	Female thread G $\frac{1}{4}$
VI6	Female thread G $\frac{3}{8}$
VA4	Male thread G $\frac{1}{8}$
VA5	Male thread G $\frac{1}{4}$
VT1	Push-in sleeve $\varnothing$ 4 mm
VT2	Push-in sleeve $\varnothing$ 6 mm

## Exhaust port (3)

RQ1	Push-in connector QS4
RQ2	Push-in connector QS6
RQ3	Push-in connector QS8
RI2	Female thread M5
RI4	Female thread G $\frac{1}{8}$
RI5	Female thread G $\frac{1}{4}$
RO1	Silencer, minimal resistance



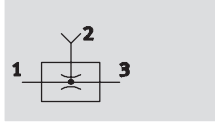
Note

Possible combinations can be found in the ordering data.

**Vacuum generators VN**

Technical data

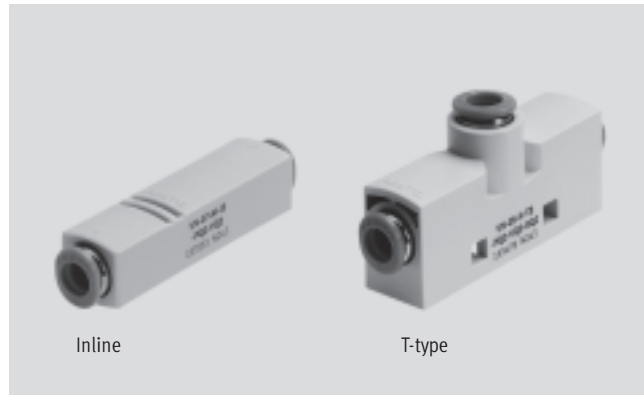
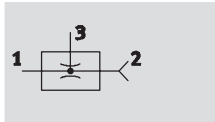
Function  
VN Standard



Temperature range  
0 ... +60 °C

Operating pressure  
1 ... 8 bar

VN Inline



Inline

T-type

General technical data – Standard										
Design		T-type								
Type		VN-05		VN-07		VN-10		VN-14	VN-20	VN-30
Grid dimension	[mm]	10	14	10	14	14	18	18	24	24
Nominal size of laval nozzle	[mm]	0.45		0.7		0.95		1.4	2.0	3.0
Ejector characteristic		High vacuum H								
		High suction rate L			High suction rate L					
Pneumatic connection 1	Push-in connector	QS4	QS6	QS4	QS6	QS6	QS6	QS6	QS10	QS10
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/8	G1/4	G1/4
Vacuum connection	Push-in connector	QS4	QS6	QS4	QS6	QS6	QS8	QS8	QS12	QS12
	Male thread	–	G1/8	–	G1/8	G1/8	G1/4	G1/4	G1/4	G1/4
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/4	G3/8	G3/8
Pneumatic connection 3	Push-in connector	QS4	QS6	QS4	QS6	QS6	QS8	QS8	–	–
	Female thread	M5	G1/8	M5	G1/8	G1/8	–	G1/4	–	–
	Silencer	min. resis.	min. resis.	min. resis.	min. resis.	min. resis.	min. resis.	min. resis.	min. resis.	min. resis.
Type of mounting		Via through-holes								
		Via H-rail								
		Via wall/surface bracket								
Assembly position		Any								

General technical data – Inline										
Design		T-type				Inline				
Type		VN-05		VN-07		VN-05		VN-07		VN-10
Grid dimension	[mm]	10	14	10	14	10	13	10	13	13
Nominal size of laval nozzle	[mm]	0.45		0.7		0.45		0.7		0.95
Ejector characteristic		High vacuum M								
		–	High suction rate N	–	–	–	High suction rate N	–	–	–
Pneumatic connection 1	Push-in connector	QS4	QS6	QS4	QS6	QS4	QS6	QS4	QS6	QS6
	Female thread	M5	G1/8	M5	G1/8	–	–	–	–	–
Vacuum connection	Push-in connector	QS4	QS6	QS4	QS6	QS4	QS6	QS4	QS6	QS6
	Female thread	M5	G1/8	M5	G1/8	–	–	–	–	–
	Push-in sleeve	–	–	–	–	4	6	4	6	–
Pneumatic connection 3	Push-in connector	QS4	QS6	QS4	QS6	–	–	–	–	–
	Female thread	M5	G1/8	M5	G1/8	–	–	–	–	–
	Silencer	min. resis.	min. resis.	min. resis.	min. resis.	–	–	–	–	–
Type of mounting		Via through-holes				Inline installation				
		Via H-rail								
		Via wall/surface bracket								
Assembly position		Any								

# Vacuum generators VN

Technical data

Operating and environmental conditions		
Pneumatic connection	with push-in fitting	without push-in fitting
Operating pressure [bar]	1 ... 8	
Nominal operating pressure [bar]	6	
Operating medium	Dried, filtered and unlubricated compressed air	
Ambient temperature [°C]	0 ... +60	
Temperature of medium [°C]	0 ... +60	
Corrosion resistance class CRC <sup>1)</sup>	1	2

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

Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

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 normal industrial environment or media such as coolants or lubricating agents.

Performance data – High vacuum										
Ejector characteristic	Standard H							Inline M		
Nominal size of laval nozzle [mm]	0.45	0.7	0.95	1.4	2.0	3.0	0.45	0.7	0.95	
Max. vacuum [%]	88	88	89	88	92	93	86	86	86	
Operating pressure for max. vacuum [bar]	4.5	4.7	4.5	5.0	3.5	3.7	6.0	5.8	5.8	
Max. suction rate with respect to atmosphere [l/min]	6.2	16	25	51.6	98	186	6.1	13.5	28	
Operating pressure for max. suction rate [bar]	2.1	2.1	3.1	5.1	2.0	5.0	6.3	7.0	5.0	
Pressurisation time for 1 l volume at p <sub>1</sub> = 6 bar [s]	4.8	1.9	1.1	0.5	0.2	0.1	4.7	2.1	0.96	

Performance data – High suction rate								
Ejector characteristic	Standard L						Inline N	
Nominal size of laval nozzle [mm]	0.45	0.7	0.95	1.4	2.0	3.0	0.45	
Max. suction rate with respect to atmosphere [l/min]	15.7	38.8	62.7	90.0	188.0	339.0	12.0	
Operating pressure for max. suction rate [bar]	5.0	6.2	4.0	8.0	3.0	6.0	6.0	
Pressurisation time for 1 l volume at p <sub>1</sub> = 6 bar [s]	1.7	0.5	0.46	0.25	0.15	0.1	1.57	

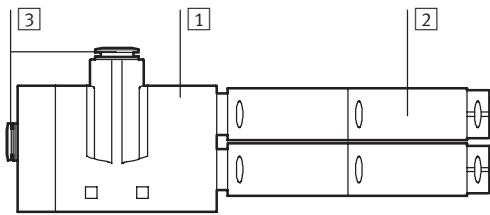
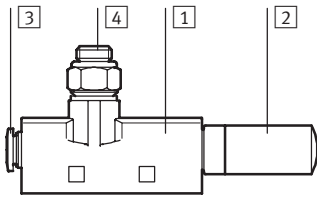
## Vacuum generators VN

Technical data

FESTO

### Materials

Sectional view



Vacuum generator VN-05/07/10/14

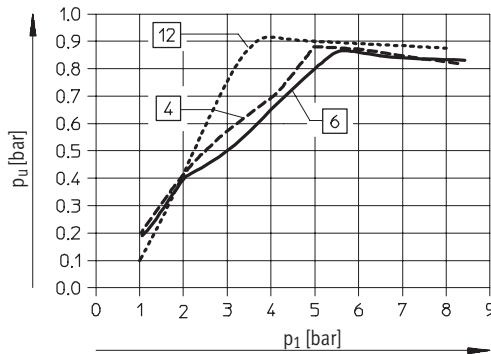
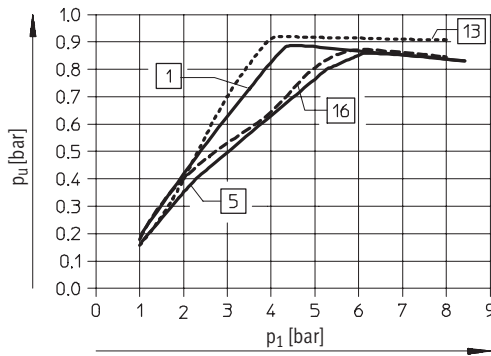
1	Housing	Polyacetate, reinforced
2	Silencer	Polyethylene
3	Push-in fitting	Plastic, nickel plated brass
4	Connecting thread	Wrought aluminium alloy
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE
		Free of paint wetting impairment substances

Vacuum generator VN-20/30

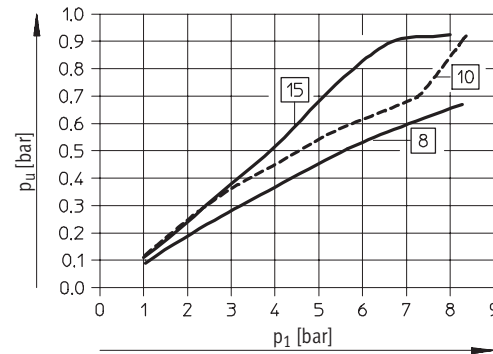
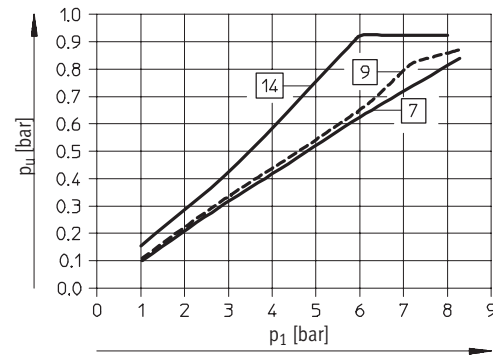
1	Housing	Polyacetate, reinforced
2	Silencer	Wrought aluminium alloy, polyacetate, PU foam
3	Push-in fitting	Plastic, nickel plated brass
-	Connecting thread	Wrought aluminium alloy
-	Seals	Nitrile rubber
Note on materials		Free of copper and PTFE
		Free of paint wetting impairment substances

### Vacuum $p_u$ as a function of operating pressure $p_1$

High vacuum



High suction rate



Standard:

- 1 VN-05-H...
- VN-07-H...
- VN-10-H...
- 4 VN-14-H...
- 12 VN-20-H...
- 13 VN-30-H...

Inline:

- 5 VN-05-M...
- 6 VN-07-M...
- 16 VN-10-M...

Standard:

- 7 VN-05-L...
- 8 VN-07-L...
- 9 VN-10-L...
- 10 VN-14-L...
- 14 VN-20-L...
- 15 VN-30-L...

Inline:

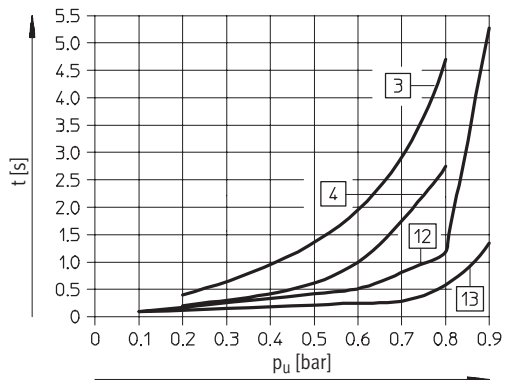
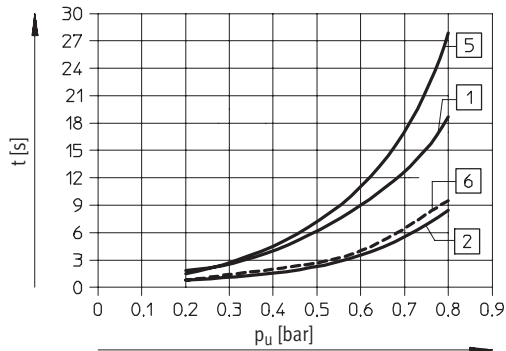
- 8 VN-05-N...

# Vacuum generators VN

Technical data

## Evacuation time $t$ as a function of vacuum $p_u$ for 1 l volume at 6 bar operating pressure

High vacuum



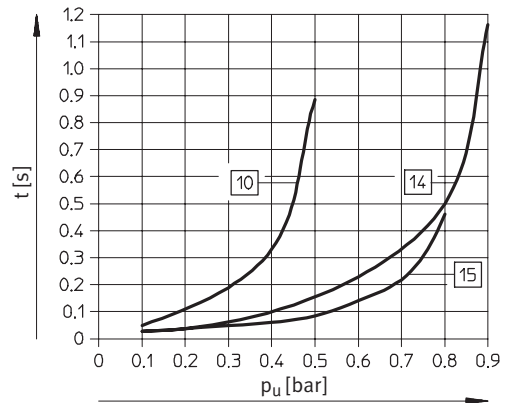
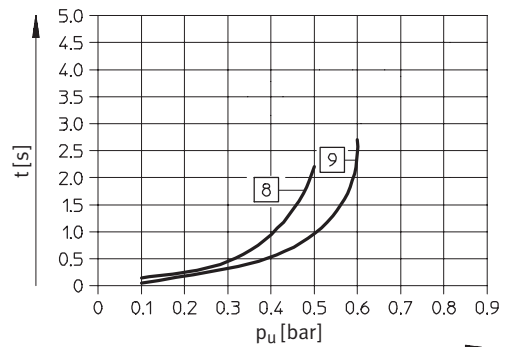
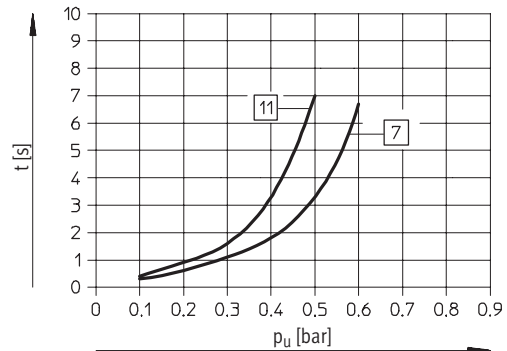
Standard:

- 1 VN-05-H...
- 2 VN-07-H...
- 3 VN-10-H...
- 4 VN-14-H...
- 12 VN-20-H...
- 13 VN-30-H...

Inline:

- 5 VN-05-M...
- 6 VN-07-M...
- 3 VN-10-M...

High suction rate



Standard:

- 7 VN-05-L...
- 8 VN-07-L...
- 9 VN-10-L...
- 10 VN-14-L...
- 14 VN-20-L...
- 15 VN-30-L...

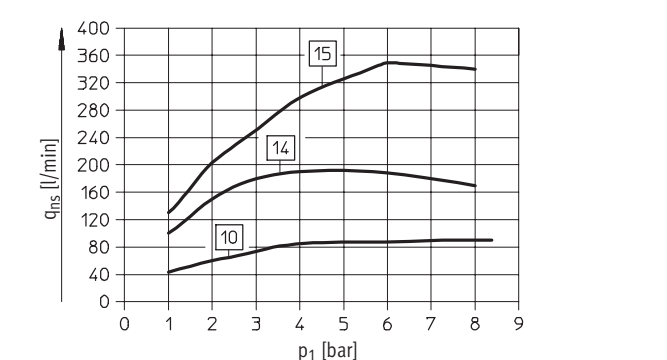
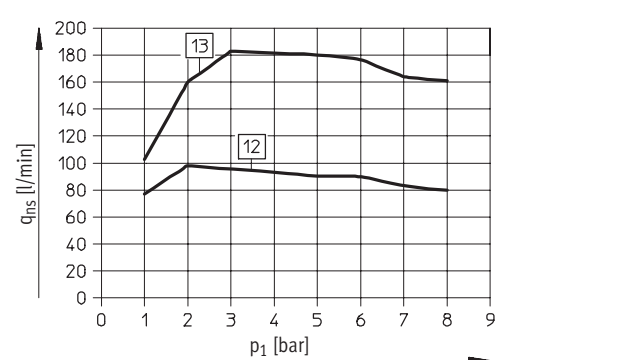
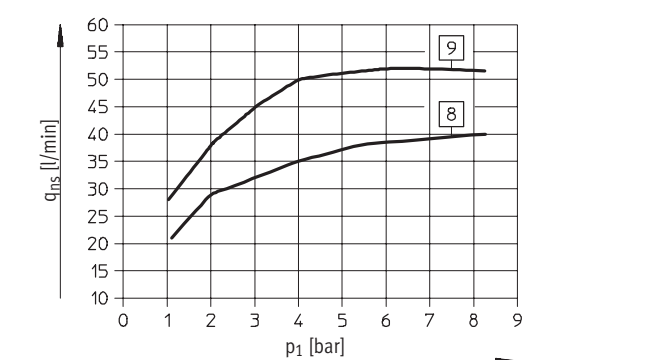
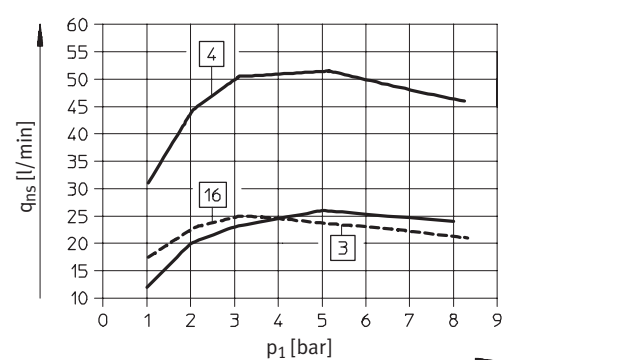
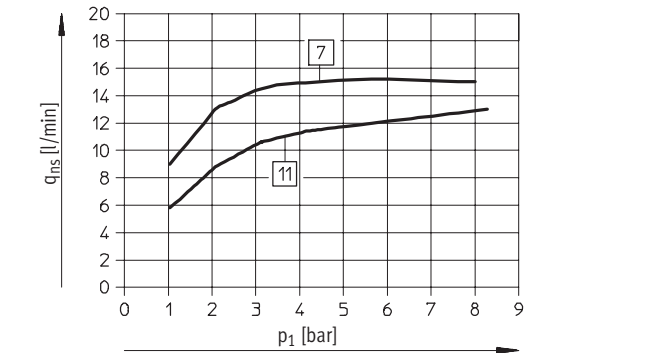
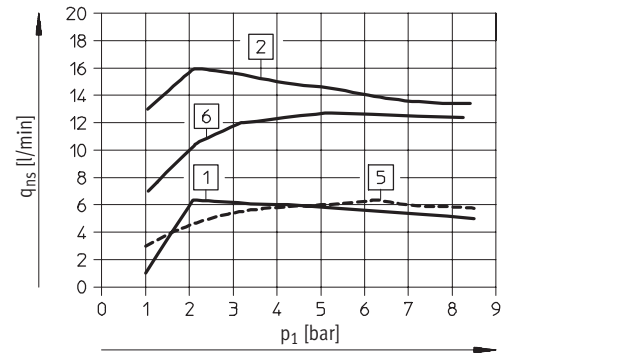
Inline:

- 11 VN-05-N...

# Vacuum generators VN

Technical data

Suction rate  $q_{ns}$  (with respect to atmosphere) as a function of operating pressure  $p_1$



Standard:

- 1 VN-05-H...
- 2 VN-07-H...
- 3 VN-10-H...
- 4 VN-14-H...
- 12 VN-20-H...
- 13 VN-30-H...

Inline:

- 5 VN-05-M...
- 6 VN-07-M...
- 16 VN-10-M...

Standard:

- 7 VN-05-L...
- 8 VN-07-L...
- 9 VN-10-L...
- 10 VN-14-L...
- 14 VN-20-L...
- 15 VN-30-L...

Inline:

- 11 VN-05-N...

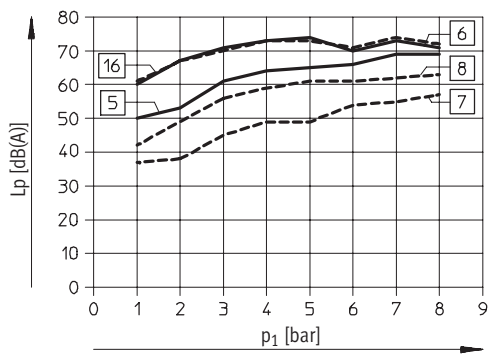
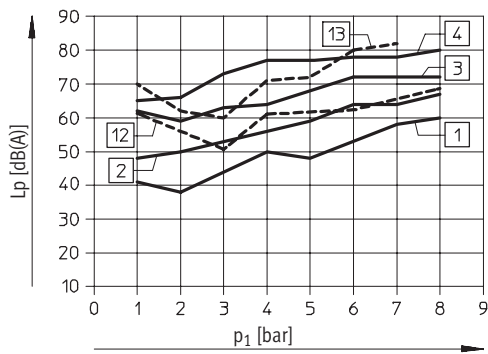
Vacuum generators  
Pneumatic  
1.1

# Vacuum generators VN

Technical data

## Noise level $L_p$ (at distance of 1 m) as a function of operating pressure $p_1$

High vacuum



Standard:

- 1 VN-05-H-...-RO1
- 2 VN-07-H-...-RO1
- 3 VN-10-H-...-RO1
- 4 VN-14-H-...-RO1
- 12 VN-20-H-...-RO1
- 13 VN-30-H-...-RO1

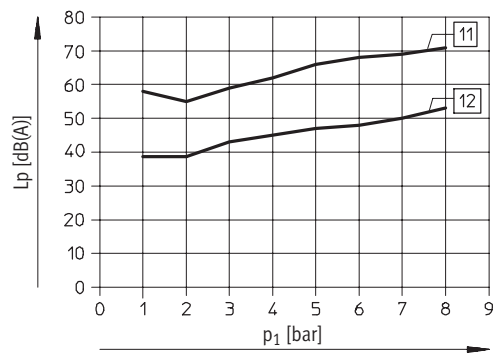
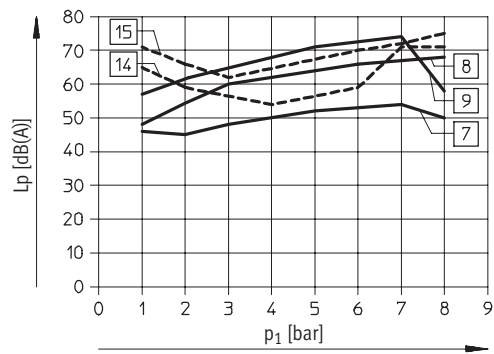
Inline:

- T-type
- 7 VN-05-M-...-RO1
- 8 VN-07-M-...-RO1
- 16 VN-10-M-...-RO1

Inline

- 5 VN-05-M-I3-...
- 6 VN-07-M-I3-...

High suction rate



Standard:

- 7 VN-05-L-...-RO1
- 8 VN-07-L-...-RO1
- 9 VN-10-L-...-RO1
- 14 VN-20-L-...-RO1
- 15 VN-30-L-...-RO1

Inline:

- T-type
- 12 VN-05-N-...-RO1

Inline

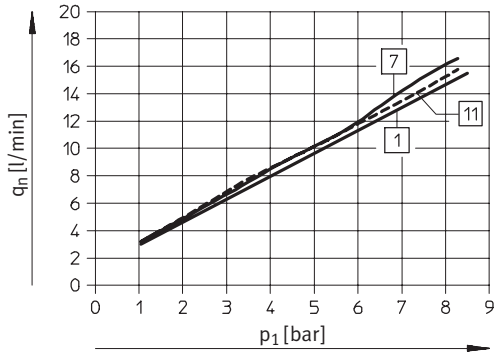
- 11 VN-05-N-I3-...

## Vacuum generators VN

Technical data

### Air consumption $q_n$ as a function of operating pressure $p_1$

High vacuum/high suction rate

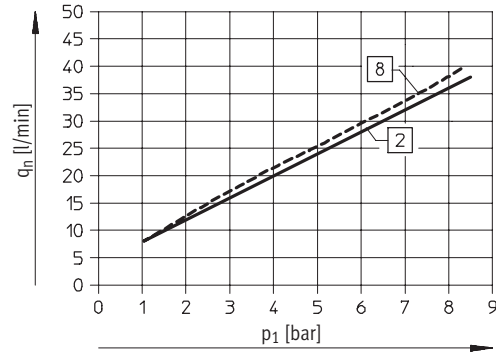


Standard:

- 1 VN-05-H...
- 7 VN-05-L...

Inline:

- 1 VN-05-M...
- 11 VN-05-N...

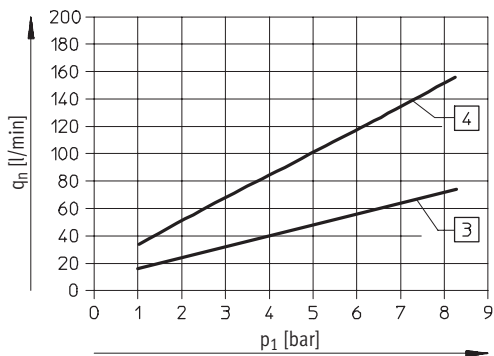


Standard:

- 2 VN-07-H...
- 8 VN-07-L...

Inline:

- 2 VN-07-M...

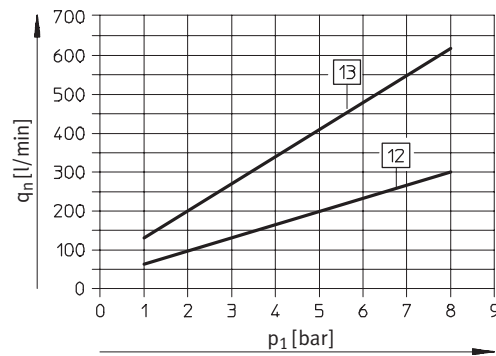


Standard:

- 3 VN-10-H...
- 3 VN-10-L...
- 4 VN-14-H...
- 4 VN-14-L...

Inline:

- 3 VN-10-M...



Standard:

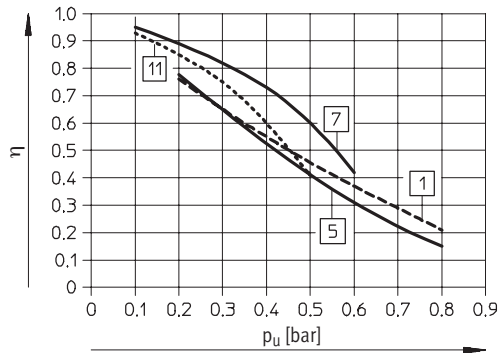
- 12 VN-20-H...
- 12 VN-20-L...
- 13 VN-30-H...
- 13 VN-30-L...



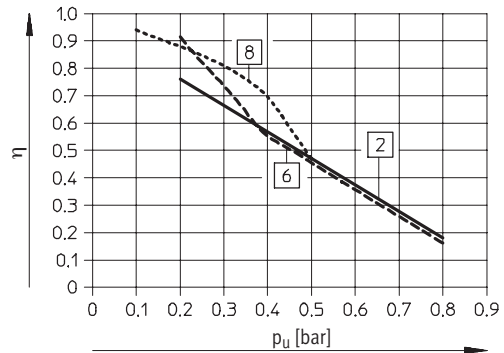
# Vacuum generators VN

Technical data

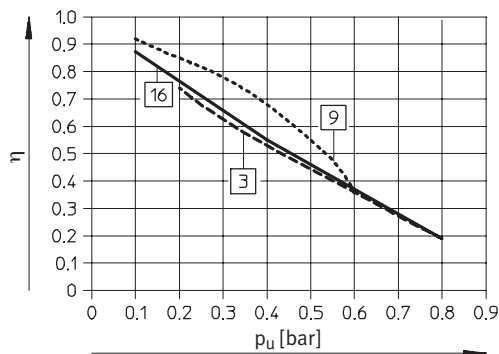
**Efficiency  $\eta$  as a function of vacuum  $p_u$  at 6 bar operating pressure**  
High vacuum/high suction rate



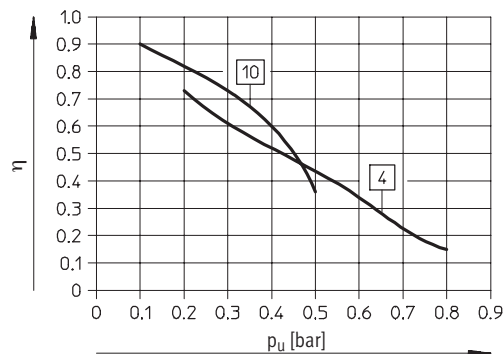
- |              |               |
|--------------|---------------|
| Standard:    | Inline:       |
| 1 VN-05-H... | 5 VN-05-M...  |
| 7 VN-05-L... | 11 VN-05-N... |



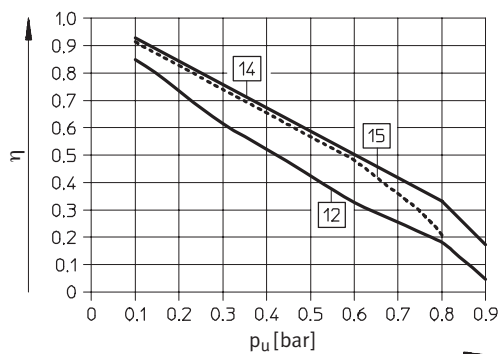
- |              |              |
|--------------|--------------|
| Standard:    | Inline:      |
| 2 VN-07-H... | 6 VN-07-M... |
| 8 VN-07-L... |              |



- |              |               |
|--------------|---------------|
| Standard:    | Inline:       |
| 3 VN-10-H... | 16 VN-10-M... |
| 9 VN-10-L... |               |



- |               |
|---------------|
| Standard:     |
| 4 VN-14-H...  |
| 10 VN-14-L... |



- |               |
|---------------|
| Standard:     |
| 12 VN-20-H... |
| VN-30-H...    |
| 14 VN-20-L... |
| 15 VN-30-L... |

**Vacuum generators VN**

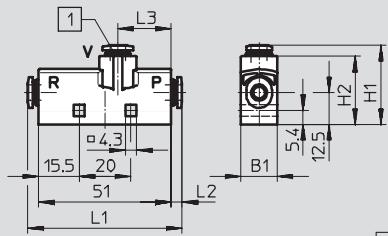
Technical data

**Dimensions – T-type/Standard, VN-05/07/10/14**

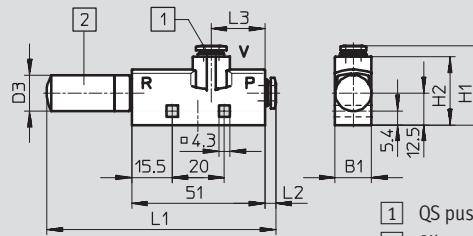
Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

VN-...-T...-PQ...-VQ...-RQ...

VN-...-T...-PQ...-VQ...-R01



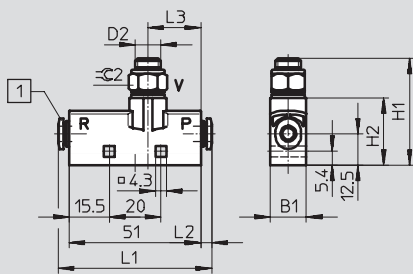
1 QS push-in connector



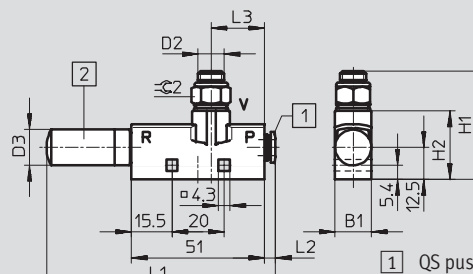
1 QS push-in connector  
2 Silencer

VN-...-T...-PQ...-VA...-RQ...

VN-...-T...-PQ...-VA...-R01



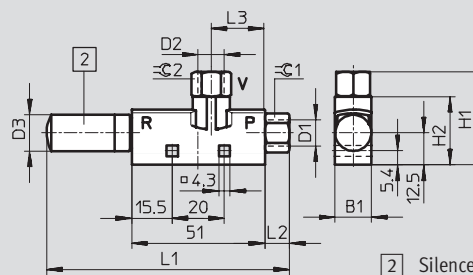
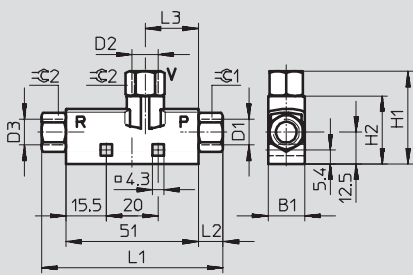
1 QS push-in connector



1 QS push-in connector  
2 Silencer

VN-...-T...-PI...-VI...-RI...

VN-...-T...-PI...-VI...-R01



2 Silencer

Type	B1	Connections			H1	H2	L1	L2	L3	∅C1	∅C2			
		P D1	V D2	R D3										
VN-...-T2-PQ1-VQ1-RQ1	10	QS4	QS4	QS4	31.3	27.7	58.2	3.6	24.3	-	-			
VN-...-T2-PQ1-VQ1-R01				9.8 <sup>1)</sup>			86.8							
VN-...-T2-PI2-VI2-RI2		M5	M5	M5	32.7	5	61							
VN-...-T2-PI2-VI2-R01				9.8 <sup>1)</sup>			88.2							
VN-...-T3-PQ2-VQ2-RQ2	14	QS6	QS6	QS6	30.4	26.2	59.4	4.2	25.5	-	-			
VN-...-T3-PQ2-VQ2-R01				13.8 <sup>1)</sup>			97.6							
VN-...-T3-PQ2-VA4-RQ2				G <sup>1</sup> / <sub>8</sub>			G <sup>1</sup> / <sub>8</sub>					QS6	41.5	59.4
VN-...-T3-PQ2-VA4-R01												13.8 <sup>1)</sup>	97.6	
VN-...-T3-PI4-VI4-RI4		G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>8</sub>	35.7	9.5	70							
VN-...-T3-PI4-VI4-R01				13.8 <sup>1)</sup>			102.9							
VN-...-T4-PQ2-VQ3-RQ3	18	QS6	QS8	QS8	35.9	30.7	63.8	4.2	25.5	-	-			
VN-...-T4-PQ2-VQ3-R01				17.8 <sup>1)</sup>			112.4							
VN-...-T4-PQ2-VA5-RQ3				G <sup>1</sup> / <sub>4</sub>			G <sup>1</sup> / <sub>4</sub>					QS8	50.5	63.8
VN-...-T4-PQ2-VA5-R01												17.8 <sup>1)</sup>	112.4	
VN-...-T4-PI4-VI5-RI5		G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>4</sub>	48.15	9.5	81.4							
VN-...-T4-PI4-VI5-R01				17.8 <sup>1)</sup>			117.7							

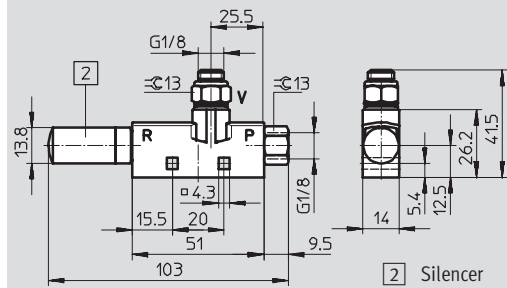
1) ∅ Silencer

# Vacuum generators VN

Technical data

Dimensions – T-type/Standard, VN-10 Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

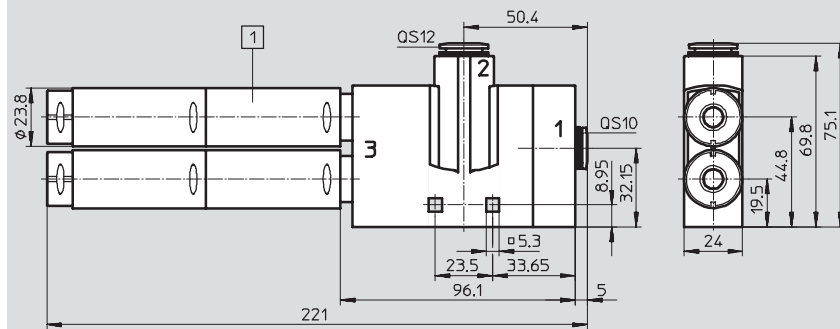
VN-10-L-T3-PI4-VA4-R01



2 Silencer

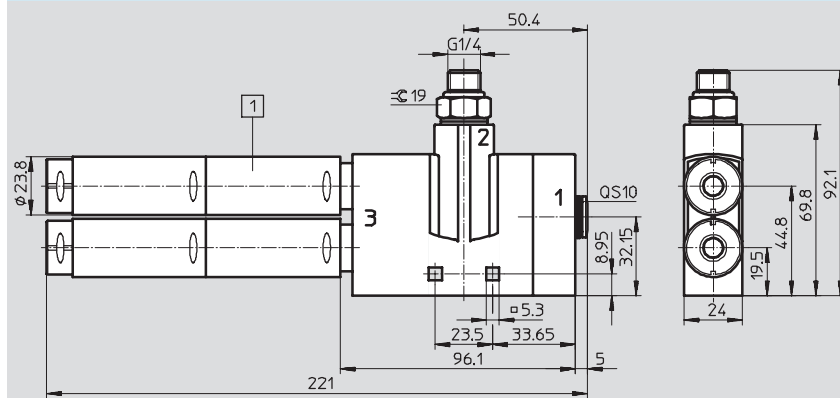
Dimensions – T-type/Standard, VN-20/30 Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

VN-...-T6-PQ4-VQ5-R01



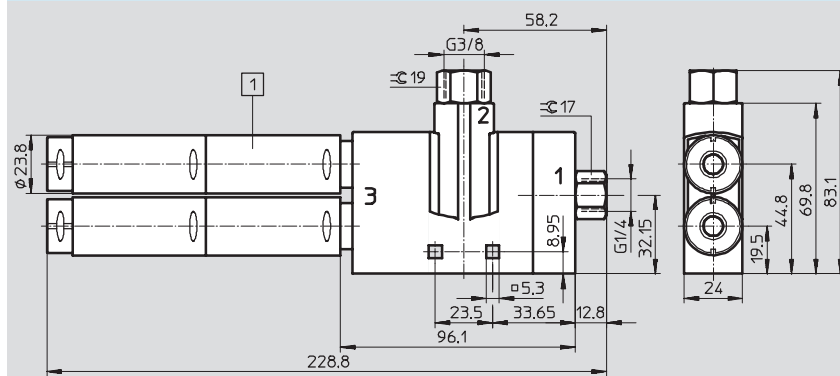
1 Silencer

VN-...-T6-PQ4-VA5-R01



1 Silencer

VN-...-T6-PI5-VI6-R01



1 Silencer

# Vacuum generators VN

Technical data

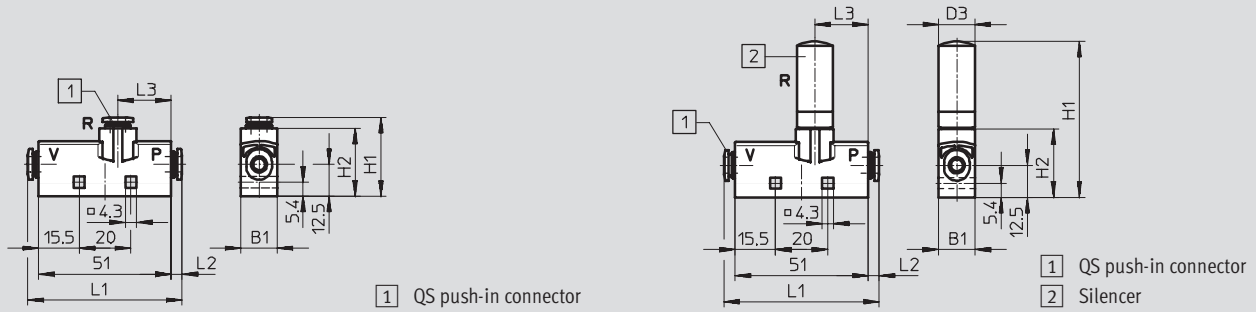


## Dimensions – T-type/Inline, VN-05/07

Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

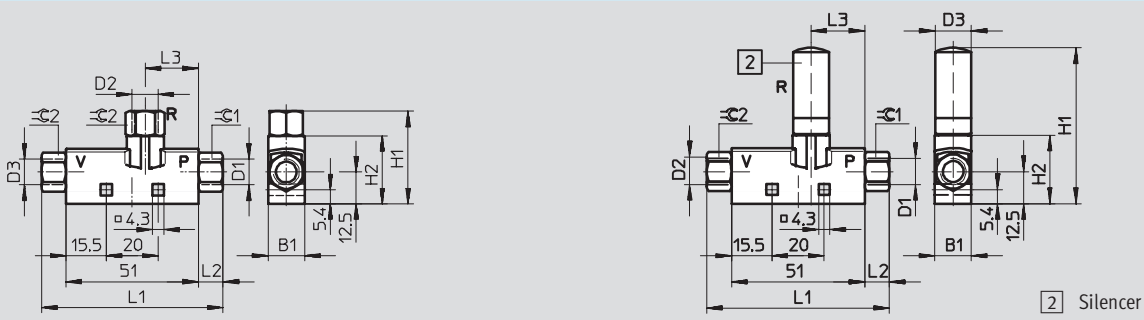
VN-...-T...-PQ...-VQ...-RQ...

VN-...-T...-PQ...-VQ...-R01



VN-...-T...-PI...-VI...-RI...

VN-...-T...-PI...-VI...-R01



Type	B1	Connections			H1	H2	L1	L2	L3	∅1	∅2
		P D1	V D2	R D3							
VN-...-T2-PQ1-VQ1-RQ1	10	QS4	QS4	QS4	31.3	27.7	58.2	3.6	24.3	-	-
VN-...-T2-PQ1-VQ1-R01				9.8 <sup>1)</sup>	59.9						
VN-...-T2-PI2-VI2-RI2		M5	M5	M5	32.7						
VN-...-T2-PI2-VI2-R01				9.8 <sup>1)</sup>	59.9						
VN-...-T3-PQ2-VQ2-RQ2	14	QS6	QS6	QS6	30.4	26.2	59.4	4.2	25.5	-	-
VN-...-T3-PQ2-VQ2-R01				13.8 <sup>1)</sup>	68.6						
VN-...-T3-PI4-VI4-RI4		G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>8</sub>	G <sup>1</sup> / <sub>8</sub>	35.7						
VN-...-T3-PI4-VI4-R01				13.8 <sup>1)</sup>	68.6						

1) ∅Silencer

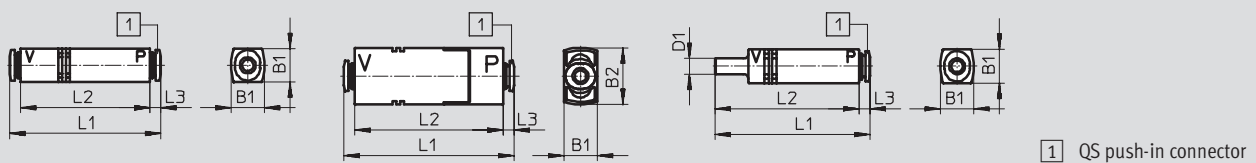
## Dimensions – Inline, VN-05/07/10

Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)

VN-05/07-...-I...-PQ...-VQ...

VN-10-M-13-PQ2-VQ2

VN-05/07-...-I...-PQ...-VT...



Type	B1	B2	Connections		D1 ∅	L1	L2	L3
			P	V				
VN-05/07-...-I2-PQ1-VQ1	10	-	QS4	QS4	-	57.4	50.2	3.6
VN-05/07-...-I2-PQ1-VT1				-	4	61.6	58	
VN-05/07-...-I3-PQ2-VQ2	13	-	QS6	QS6	-	58.6	50.2	4.2
VN-10-M-13-PQ2-VQ2		22		-	66.1	57.7		
VN-05/07-...-I3-PQ2-VT2		-		-	60.2	56		

## Vacuum generators VN






Technical data

Ordering data and weights – Standard							
T-type							
Housing width [mm]	Nominal size [mm]	Weight [g]	High vacuum H		Weight [g]	High suction rate L	
			Part No.	Type		Part No.	Type
with push-in connector							
10	0.45	15.1	526 100	VN-05-H-T2-PQ1-VQ1-RQ1	15.1	526 114	VN-05-L-T2-PQ1-VQ1-RQ1
	0.7	15.4	526 101	VN-07-H-T2-PQ1-VQ1-RQ1	–	–	–
14	0.45	22	193 478	VN-05-H-T3-PQ2-VQ2-RQ2	22	193 561	VN-05-L-T3-PQ2-VQ2-RQ2
	0.7	22	193 479	VN-07-H-T3-PQ2-VQ2-RQ2	22	193 562	VN-07-L-T3-PQ2-VQ2-RQ2
	0.95	22	193 480	VN-10-H-T3-PQ2-VQ2-RQ2	22	193 563	VN-10-L-T3-PQ2-VQ2-RQ2
18	0.95	26.9	526 147	VN-10-H-T4-PQ2-VQ3-RQ3	26.4	526 157	VN-10-L-T4-PQ2-VQ3-RQ3
	1.4	27	193 482	VN-14-H-T4-PQ2-VQ3-RQ3	27	193 565	VN-14-L-T4-PQ2-VQ3-RQ3
with push-in connector and silencer							
10	0.45	14.3	193 569	VN-05-H-T2-PQ1-VQ1-R01	14.3	193 595	VN-05-L-T2-PQ1-VQ1-R01
	0.7	14.6	193 570	VN-07-H-T2-PQ1-VQ1-R01	–	–	–
14	0.45	23	193 488	VN-05-H-T3-PQ2-VQ2-R01	22.8	193 571	VN-05-L-T3-PQ2-VQ2-R01
	0.7	23	193 489	VN-07-H-T3-PQ2-VQ2-R01	23.1	193 572	VN-07-L-T3-PQ2-VQ2-R01
	0.95	23	193 490	VN-10-H-T3-PQ2-VQ2-R01	23.3	193 573	VN-10-L-T3-PQ2-VQ2-R01
18	0.95	28.4	526 149	VN-10-H-T4-PQ2-VQ3-R01	25.2	526 159	VN-10-L-T4-PQ2-VQ3-R01
	1.4	29	193 492	VN-14-H-T4-PQ2-VQ3-R01	–	–	–
24	2.0	182	193 495	VN-20-H-T6-PQ4-VQ5-R01	182	193 578	VN-20-L-T6-PQ4-VQ5-R01
	3.0	182	193 497	VN-30-H-T6-PQ4-VQ5-R01	–	–	–
with push-in connector, vacuum connection with male thread							
14	0.45	24	193 516	VN-05-H-T3-PQ2-VA4-RQ2	24	193 599	VN-05-L-T3-PQ2-VA4-RQ2
	0.7	23	193 517	VN-07-H-T3-PQ2-VA4-RQ2	24	193 600	VN-07-L-T3-PQ2-VA4-RQ2
	0.95	24	193 518	VN-10-H-T3-PQ2-VA4-RQ2	24	193 601	VN-10-L-T3-PQ2-VA4-RQ2
18	0.95	32.5	526 153	VN-10-H-T4-PQ2-VA5-RQ3	32.5	526 163	VN-10-L-T4-PQ2-VA5-RQ3
	1.4	33	193 520	VN-14-H-T4-PQ2-VA5-RQ3	33	193 603	VN-14-L-T4-PQ2-VA5-RQ3
with push-in connector, vacuum connection with male thread and silencer							
14	0.45	24	193 526	VN-05-H-T3-PQ2-VA4-R01	24.5	193 609	VN-05-L-T3-PQ2-VA4-R01
	0.7	25	193 527	VN-07-H-T3-PQ2-VA4-R01	24.8	193 610	VN-07-L-T3-PQ2-VA4-R01
	0.95	25	193 528	VN-10-H-T3-PQ2-VA4-R01	25	193 611	VN-10-L-T3-PQ2-VA4-R01
18	0.95	34	526 155	VN-10-H-T4-PQ2-VA5-R01	34	526 165	VN-10-L-T4-PQ2-VA5-R01
	1.4	34	193 530	VN-14-H-T4-PQ2-VA5-R01	–	–	–
24	2.0	189	526 145	VN-20-H-T6-PQ4-VA5-R01	189	526 135	VN-20-L-T6-PQ4-VA5-R01
	3.0	189	526 146	VN-30-H-T6-PQ4-VA5-R01	189	526 136	VN-30-L-T6-PQ4-VA5-R01

## Vacuum generators VN

Technical data

**FESTO**

Ordering data and weights – Standard								
T-type								
Housing width [mm]	Nominal size [mm]	Weight [g]	High vacuum H		Weight [g]	High suction rate L		
			Part No.	Type		Part No.	Type	
with female thread								
10	0.45	12.9	526 102	VN-05-H-T2-PI2-VI2-RI2	13	526 116	VN-05-L-T2-PI2-VI2-RI2	
	0.7	13.2	526 103	VN-07-H-T2-PI2-VI2-RI2		–	–	–
14	0.45	21	193 498	VN-05-H-T3-PI4-VI4-RI4	21	193 581	VN-05-L-T3-PI4-VI4-RI4	
	0.7	21	193 499	VN-07-H-T3-PI4-VI4-RI4		21	193 582	VN-07-L-T3-PI4-VI4-RI4
	0.95	22	193 500	VN-10-H-T3-PI4-VI4-RI4		22	193 583	VN-10-L-T3-PI4-VI4-RI4
18	1.4	36	193 502	VN-14-H-T4-PI4-VI5-RI5	36	193 585	VN-14-L-T4-PI4-VI5-RI5	
with female thread and silencer								
10	0.45	12.9	526 104	VN-05-H-T2-PI2-VI2-RO1	12.9	526 118	VN-05-L-T2-PI2-VI2-RO1	
	0.7	13.2	526 105	VN-07-H-T2-PI2-VI2-RO1		–	–	–
14	0.45	22	193 507	VN-05-H-T3-PI4-VI4-RO1	22.3	193 590	VN-05-L-T3-PI4-VI4-RO1	
	0.7	23	193 508	VN-07-H-T3-PI4-VI4-RO1		22.6	193 591	VN-07-L-T3-PI4-VI4-RO1
	0.95	23	193 509	VN-10-H-T3-PI4-VI4-RO1		22.8	193 592	VN-10-L-T3-PI4-VI4-RO1
18	1.4	34	193 511	VN-14-H-T4-PI4-VI5-RO1	–	–	–	
24	2.0	183	526 141	VN-20-H-T6-PI5-VI6-RO1 	183	526 131	VN-20-L-T6-PI5-VI6-RO1 	
	3.0	183	526 142	VN-30-H-T6-PI5-VI6-RO1 		183	526 132	VN-30-L-T6-PI5-VI6-RO1 
with female thread, vacuum connection with male thread and silencer								
14	0.95	–	–	–	25.9	543 315	VN-10-L-T3-PI4-VA4-RO1 	

Ordering data and weights – Inline							
T-type							
Housing width [mm]	Nominal size [mm]	Weight [g]	High vacuum M		Weight [g]	High suction rate N	
			Part No.	Type		Part No.	Type
with push-in connector							
10	0.45	14.5	526 106	VN-05-M-T2-PQ1-VQ1-RQ1	–	–	–
	0.7	15.4	526 107	VN-07-M-T2-PQ1-VQ1-RQ1		–	–
14	0.45	21	193 536	VN-05-M-T3-PQ2-VQ2-RQ2	22	193 619	VN-05-N-T3-PQ2-VQ2-RQ2
	0.7	22	193 537	VN-07-M-T3-PQ2-VQ2-RQ2		–	–
with push-in connector and silencer							
10	0.45	13.7	526 108	VN-05-M-T2-PQ1-VQ1-RO1	–	–	–
	0.7	14.6	526 109	VN-07-M-T2-PQ1-VQ1-RO1		–	–
14	0.45	22	193 540	VN-05-M-T3-PQ2-VQ2-RO1	22.8	193 623	VN-05-N-T3-PQ2-VQ2-RO1
	0.7	23	193 541	VN-07-M-T3-PQ2-VQ2-RO1		–	–
with female thread							
10	0.45	12.4	526 110	VN-05-M-T2-PI2-VI2-RI2	–	–	–
	0.7	13.3	526 111	VN-07-M-T2-PI2-VI2-RI2		–	–
14	0.45	21	193 544	VN-05-M-T3-PI4-VI4-RI4	21	193 627	VN-05-N-T3-PI4-VI4-RI4
	0.7	21	193 545	VN-07-M-T3-PI4-VI4-RI4		–	–
with female thread and silencer							
10	0.45	12.3	526 112	VN-05-M-T2-PI2-VI2-RO1	–	–	–
	0.7	13.2	526 113	VN-07-M-T2-PI2-VI2-RO1		–	–
14	0.45	22	193 548	VN-05-M-T3-PI4-VI4-RO1	22.3	193 631	VN-05-N-T3-PI4-VI4-RO1
	0.7	22	193 549	VN-07-M-T3-PI4-VI4-RO1		–	–

## Vacuum generators VN

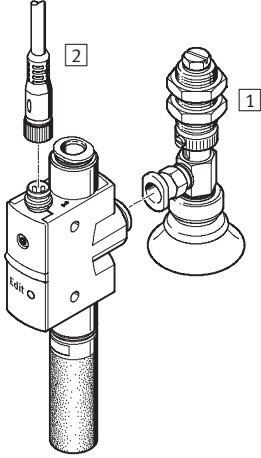
Technical data

Ordering data and weights – Inline							
Inline							
Housing width [mm]	Nominal size [mm]	Weight [g]	High vacuum M		Weight [g]	High suction rate N	
			Part No.	Type		Part No.	Type
with push-in connector							
10	0.45	10.2	<b>193 580</b>	<b>VN-05-M-I2-PQ1-VQ1</b>	-	-	-
	0.7	10.5	<b>193 586</b>	<b>VN-07-M-I2-PQ1-VQ1</b>			
13	0.45	15	<b>193 552</b>	<b>VN-05-M-I3-PQ2-VQ2</b>	16	<b>193 635</b>	<b>VN-05-N-I3-PQ2-VQ2</b>
	0.7	16	<b>193 553</b>	<b>VN-07-M-I3-PQ2-VQ2</b>	-	-	-
	0.95	23.5	<b>193 554</b>	<b>VN-10-M-I3-PQ2-VQ2</b>	-	-	-
with push-in connector and push-in sleeve							
10	0.45	7.1	<b>193 587</b>	<b>VN-05-M-I2-PQ1-VT1</b>	-	-	-
	0.7	8	<b>193 588</b>	<b>VN-07-M-I2-PQ1-VT1</b>			
13	0.45	12	<b>193 555</b>	<b>VN-05-M-I3-PQ2-VT2</b>	12	<b>193 637</b>	<b>VN-05-N-I3-PQ2-VT2</b>
	0.7	13	<b>193 556</b>	<b>VN-07-M-I3-PQ2-VT2</b>	-	-	-

# Vacuum generators VN-P, with integrated vacuum switch

Peripherals overview and type codes

## Peripherals overview



Mounting attachments and accessories		→ Page
1	Suction gripper ESG	6 / 2.1-6
2	Plug socket with cable SIM-M8	6 / 4.1-22
-	Suction cup holder ESH	6 / 2.1-32
-	suction cup ESS	6 / 2.1-47

## Type codes

VN - 05 - H - T4 - PQ2 - VQ2 - O2 - P

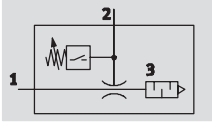
Type	
VN	Vacuum generator
Nominal size [mm]	
05	0.45
07	0.7
10	0.95
Ejector characteristic	
H	High vacuum/Standard
L	High suction rate/Standard
Housing type	
T4	T-type, grid dimensions 16 mm
Supply port (1)	
PQ2	Push-in connector QS6
Vacuum connection (2)	
VQ2	Push-in connector QS6
Switching function	
O1	Threshold value with fixed hysteresis, 2 teach-in points, NO contact
O2	Threshold value with variable hysteresis, NO contact
Electrical output	
P	Switch output PNP





# Vacuum generators VN-P, with integrated vacuum switch

Technical data

Function  
VN Standard



-  Temperature range  
0 ... +60 °C
-  Operating pressure  
1 ... 8 bar



- Threshold value comparator with fixed or variable hysteresis
- Teach-in setting option for threshold value and hysteresis

General technical data				
Design	T-type			
Type	VN-05	VN-07	VN-10	
Grid dimension [mm]	16	16	16	
Nominal size [mm]	0.45	0.7	0.95	
Ejector characteristic	High vacuum/Standard H High suction rate/Standard L			
Pneumatic connection 1	QS6			
Vacuum connection	QS6			
Pneumatic connection 3	Silencer, minimal resistance			
Measuring principle	Piezoresistive			
Measured variable	Relative pressure			
Pressure measuring range [bar]	-1 ... 0			
Type of mounting	Via through-holes			
Assembly position	Any <sup>1)</sup>			
Cleaning recommendation	Soap suds			
Product weight [g]	33	36	36	

1) The collection of condensate in the sensor should be prevented.

Operating and environmental conditions		
Operating pressure [bar]	1 ... 8	
Nominal operating pressure [bar]	6	
Operating medium	Dried, filtered and unlubricated compressed air	
Ambient temperature [°C]	0 ... +50	
Temperature of medium [°C]	0 ... +60	
Corrosion resistance class CRC <sup>1)</sup>	1	

1) Corrosion resistance class 1 according to Festo standard 940 070  
Components requiring low corrosion resistance. Transport and storage protection. Parts that do not have primarily decorative surface requirements, e.g. in internal areas that are not visible or behind covers.

Performance data							
Ejector characteristic	High vacuum/Standard H			High suction rate/Standard L			
Nominal size [mm]	0.45	0.7	0.95	0.45	0.7	0.95	
Max. vacuum [%]	92	92	93	-	-	-	
Operating pressure for max. vacuum [bar]	4.9	4.4	3.5	-	-	-	
Max. suction rate with respect to atmosphere [l/min]	7.2	16.2	21.8	13.6	30.9	41.5	
Operating pressure for max. suction rate [bar]	3	3	3	5	4	5	

# Vacuum generators VN-P, with integrated vacuum switch

Technical data

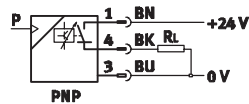
Electrical data		
Operating voltage range	[V DC]	15 ... 30
Residual ripple	[%]	10
Electrical connection		M8x1, 3-pin
Switch-on/switch-off times	[ms]	≤ 4
Switch output		PNP
Max. output current	[mA]	100
Residual current	[mA]	≤ 0.3
Voltage drop	[V]	≤ 1.5
Switching element function		NO contact
Switching function		Threshold value comparator with fixed hysteresis
		Threshold value comparator with variable hysteresis
Threshold value setting range	[bar]	-1 ... 0
Accuracy	[% FS] <sup>1)</sup>	1.5
Hysteresis	[% FS] <sup>1)</sup>	2 (threshold value comparator with fixed hysteresis)
Long-term drift	[% FS] <sup>1)</sup>	Max. ±0.5
Temperature coefficient of switching point	[%/K]	0.05
Type of display/switching status display		LED
Inductive protective circuit		Adapted to MZ, MY, ME coils
Protection against short circuit		Pulsed
Protection against polarity reversal		For all electrical connections
Protection against overloading		Yes
Protection class		IP40 (to EN 60 529)
CE symbol		EU conformity in accordance with the directive 89/336/EEC (EMC)

1) % FS = % of the measuring range final value (full scale)

## Electrical outputs<sup>1)</sup> Pin allocations

### 1 switch output PNP

Plug M8x1



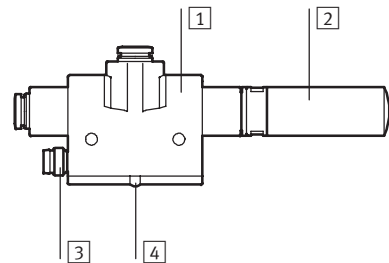
1 = +24 V  
3 = 0 V  
4 = Output A



1) Core colours indicated apply when using plug sockets with cable SIM-M8-3... → 6 / 4.1-22

## Materials

General view

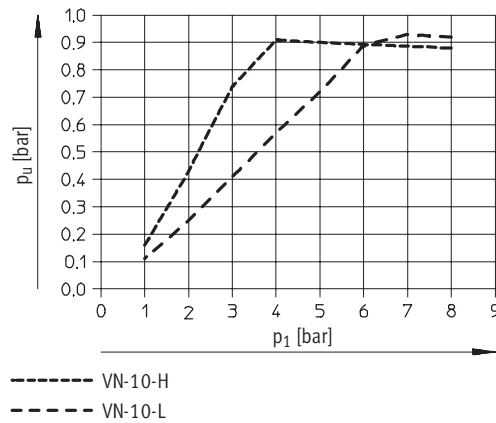
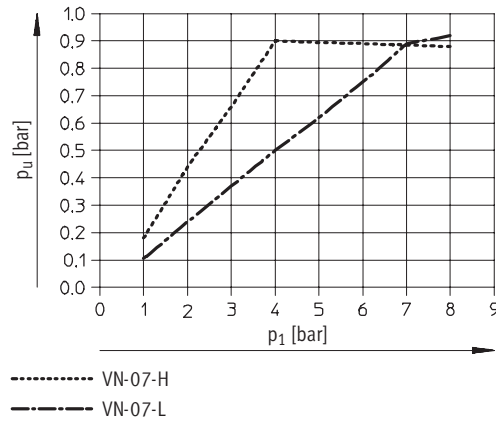
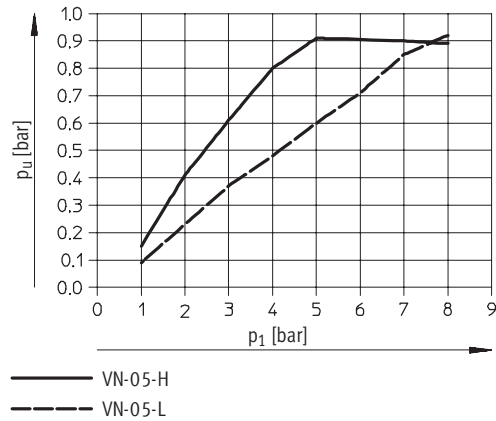


Vacuum generator		
1	Housing	Polyacetate, reinforced
2	Silencer	Polyethylene
3	Plug housing	Polyamide, nickel and chrome plated brass
4	Fibre optics	Polycarbonate
-	Key pad	Silicone rubber
-	Seals	Nitrile rubber
	Note on materials	Contains paint-wetting impairment substances

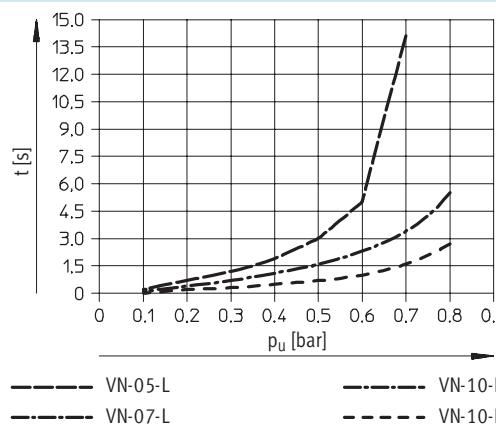
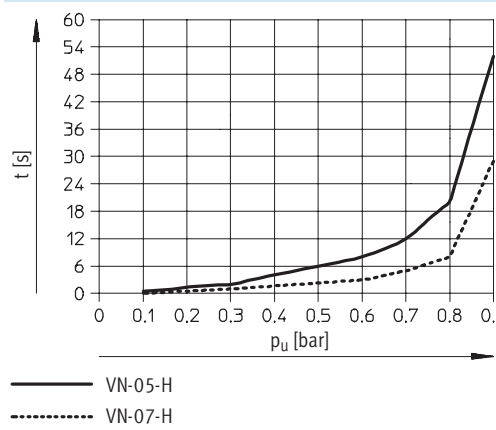
# Vacuum generators VN-P, with integrated vacuum switch

Technical data

## Vacuum $p_u$ as a function of operating pressure $p_1$ High vacuum/high suction rate



## Evacuation time $t$ as a function of vacuum $p_u$ for 1 l volume at 6 bar operating pressure High vacuum/high suction rate

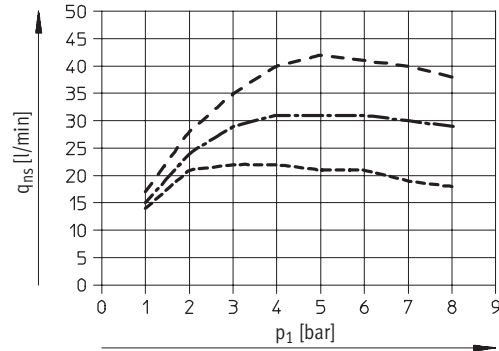
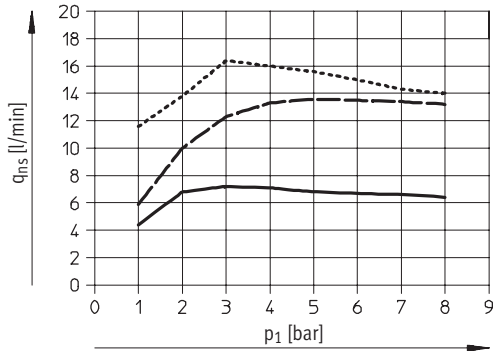


# Vacuum generators VN-P, with integrated vacuum switch

Technical data

## Suction rate $q_{ns}$ (with respect to atmosphere) as a function of operating pressure $p_1$

High vacuum/high suction rate

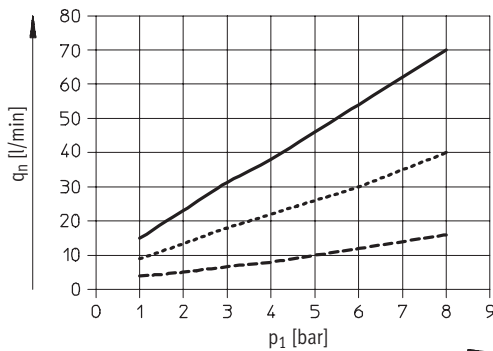


- VN-05-H
- - - VN-05-L
- ..... VN-07-H

- · - · - VN-07-L
- ..... VN-10-H
- - - VN-10-L

## Air consumption $q_n$ as a function of operating pressure $p_1$

High vacuum/high suction rate

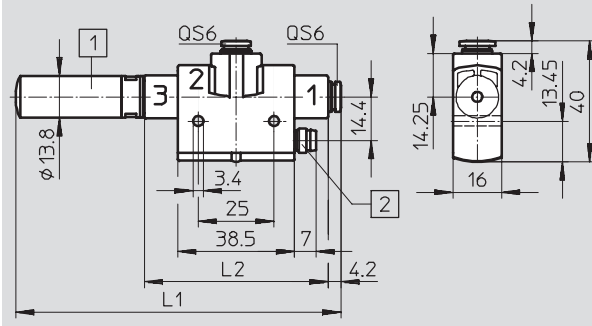


- VN-05
- ..... VN-07
- - - VN-10

# Vacuum generators VN-P, with integrated vacuum switch

Technical data

**FESTO**
**Dimensions**

 Download CAD data → [www.festo.com/en/engineering](http://www.festo.com/en/engineering)


- 1 Silencer
- 2 Plug, M8x1, 3-pin

Type	L1	L2
VN-05	93.6	44.2
VN-07	107	60.5
VN-10		

**Ordering data**

with push-in connector and silencer

Nominal size [mm]	Switching function		High vacuum/Standard H		High suction rate/Standard L	
	Threshold value with fixed hysteresis	Threshold value with variable hysteresis	Part No.	Type	Part No.	Type
0.45	■	–	536 796	VN-05-H-T4-PQ2-VQ2-01-P	536 798	VN-05-L-T4-PQ2-VQ2-01-P
	–	■	536 797	VN-05-H-T4-PQ2-VQ2-02-P	536 799	VN-05-L-T4-PQ2-VQ2-02-P
0.7	■	–	536 800	VN-07-H-T4-PQ2-VQ2-01-P	536 802	VN-07-L-T4-PQ2-VQ2-01-P
	–	■	536 801	VN-07-H-T4-PQ2-VQ2-02-P	536 803	VN-07-L-T4-PQ2-VQ2-02-P
0.95	■	–	536 804	VN-10-H-T4-PQ2-VQ2-01-P	536 806	VN-10-L-T4-PQ2-VQ2-01-P
	–	■	536 805	VN-10-H-T4-PQ2-VQ2-02-P	536 807	VN-10-L-T4-PQ2-VQ2-02-P