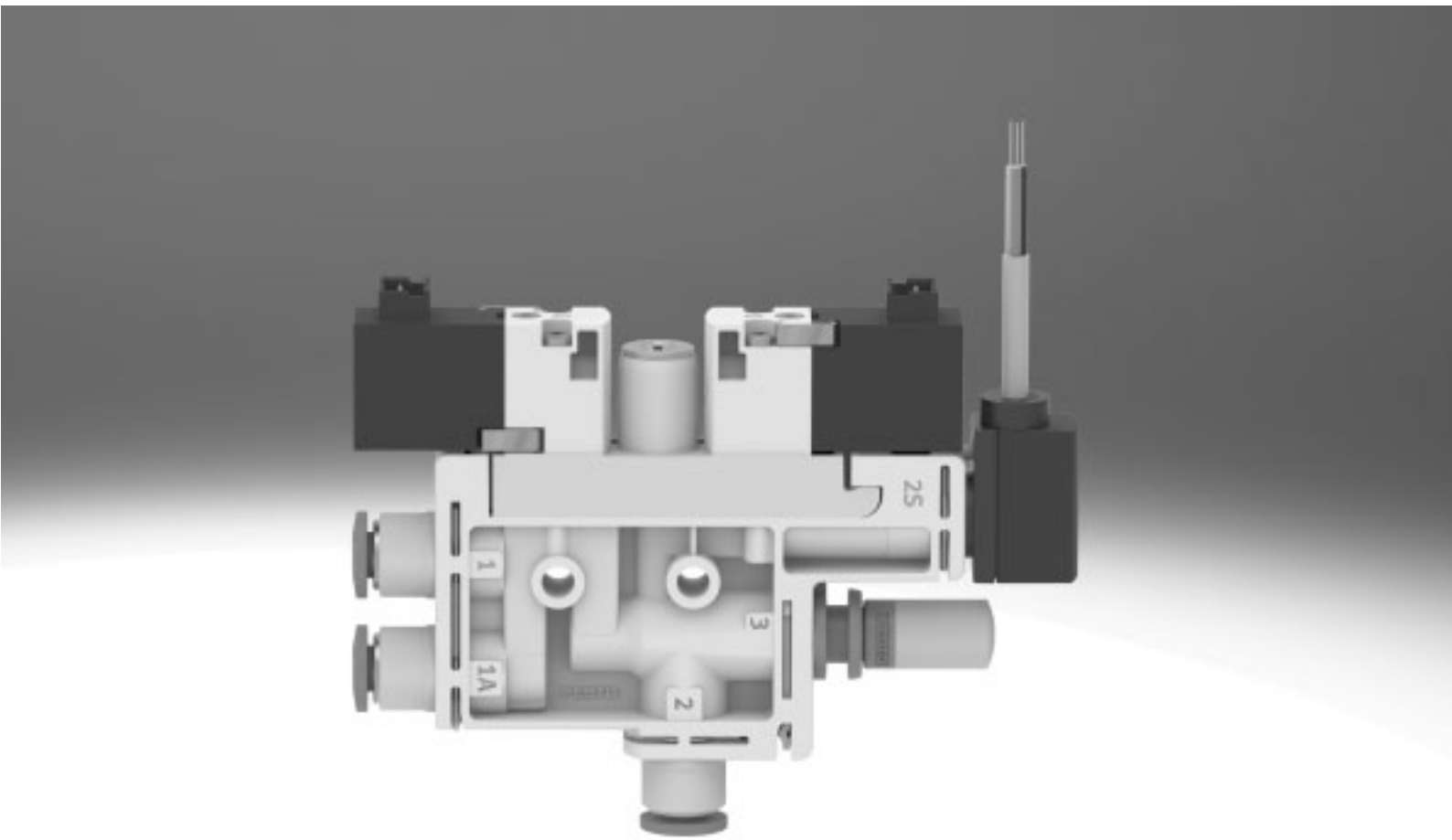
Vacuum generators OVEL

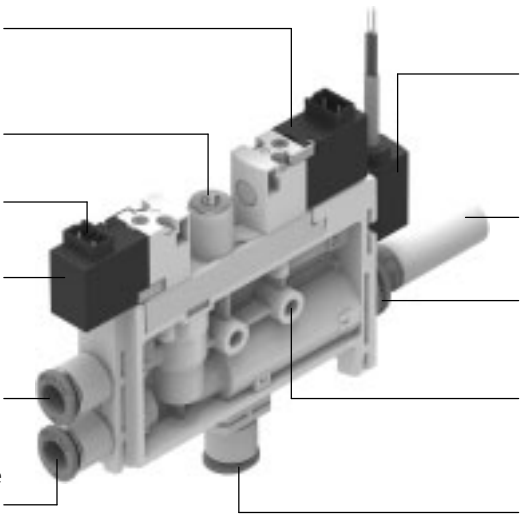


New

Vacuum generators OVEL

Key features

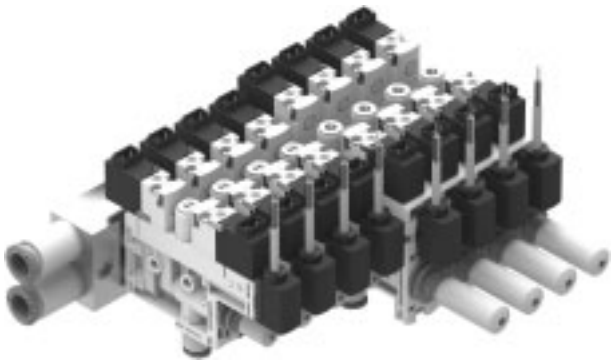
At a glance



Compact vacuum generator

- Inexpensive, lightweight vacuum generator
- Light weight
- Various output stages and vacuum types
- Short switching times thanks to integrated solenoid valves
  - Vacuum on/off
  - Ejector pulse
- Quick, precise and safe placement of the workpiece via the ejector pulse
- Simple installation via H3 plug connectors and push-in fittings
- Simple mounting via screws
- Quiet operation thanks to integrated silencer
- Integrated filter
- Reduced contamination of the vacuum generator thanks to an open silencer
- Solenoid valves can be switched with mechanical manual override
- Monitoring of the vacuum by vacuum sensor
- Linking of multiple vacuum generators on a common supply manifold (➔ page 12)

Vacuum generators OVEL on common supply manifold OABM-P



Functional principle of OVEL

Vacuum ON/OFF

The compressed air supply is controlled by a solenoid valve. The solenoid valve can be supplied with the switching function NC (normally closed), i.e. a vacuum is only generated when the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

Ejector pulse, optional

After the vacuum is switched off, an ejector pulse is activated and generated by a second solenoid valve to release the workpiece safely from the suction cup and to purge the vacuum rapidly.
The compressed air supply for the ejector pulse can either be provided via the supply port or via a separate connection.

Vacuum sensor, optional

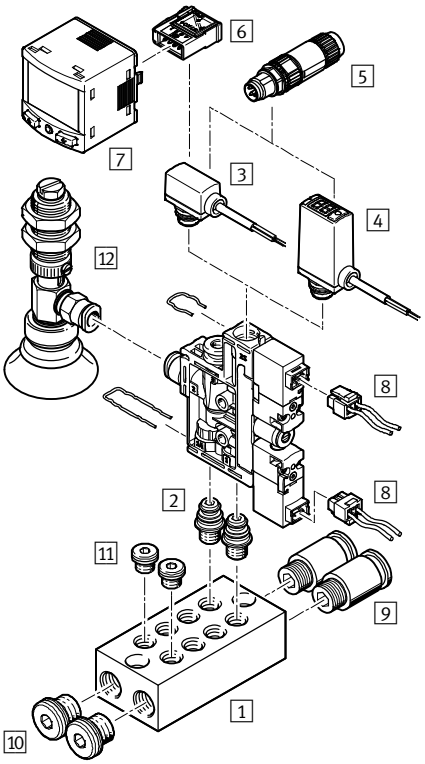
The set or taught-in setpoint value for the generated vacuum is monitored via a vacuum sensor. If the setpoint value is reached, or if it is not reached due to malfunctions (e.g. leakage, dropped workpiece), the vacuum sensor emits an electrical signal.

OVEL-...-V1B/V1V/B2B/B2V:
Pressure transmitter SPTE with an analogue output (➔ page 16).
Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (➔ page 21).

OVEL-...-V1PNLK/B2PNLK:
Pressure sensor SPAE with various switching outputs and LCD display, IO-Link® and teach-in function (➔ page 18).

Vacuum generators OVEL

Peripherals overview



Mounting components and accessories			
	OVEL-...-PQ	OVEL-...-P	→ Page/Internet
1 Common supply manifold OABM-P	–	■	12
2 Mounting kit OABM-MK	–	■	14
3 Pressure transmitter SPTE	■	■	16
4 Pressure sensor SPAE	■	■	18
5 Plug NECU-S-M8G3/M12G3	■	■	21
6 Plug NECU-S-ECG4	■	■	21
7 Signal converter SCDN	■	■	21
8 Plug socket with cable NEBV	■	■	21
9 Push-in fitting QS	–	■	21
10 Blanking plug B-1/8	–	■	21
11 Blanking plug B-M7	–	■	21
12 Suction gripper ESG	■	■	esg
– Suction cup holder ESH	■	■	esh
– Suction cup ESS	■	■	ess
– Vacuum filter OAFF	■	■	15

New

Vacuum generators OVEL

Type codes

OVEL	–	10	–	H	–	15	–	PQ	–	VQ6	–	UA	–	C	–	A	–	V1	B	–	H3

Type	
OVEL	Vacuum generator, electropneumatic

Nominal width of Laval nozzle [mm]	
5	0.45
7	0.7
10	0.95

Ejector characteristic	
H	High vacuum

Housing width	
10	Grid dimension: 10 mm
15	Grid dimension: 15 mm

Pneumatic connection 1	
PQ	QS connections, metric

Vacuum connection	
VQ4	Push-in connector 4 mm
VQ6	Push-in connector 6 mm

Pneumatic connection 3	
UA	Open silencer

Vacuum valve	
C	Normally closed

Additional function	
A	Electrical ejector pulse

Vacuum sensor pressure measuring range	
B2	–1 … 1 bar
V1	–1 … 0 bar

Vacuum sensor output signal	
B	1 … 5 V
V	0 … 10 V
PNLK	PNP or NPN or IO-Link®

Electrical connection	
H3	Connection pattern H, vertical plug connector

Note

Possible combinations are given in the ordering data.

Additional variants can be ordered using the modular product system ➔ 11

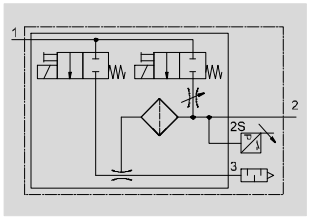
- Ejector characteristic
- Pneumatic connection 1
- Vacuum connection
- Pneumatic connection 3
- Ejector pulse connection

Vacuum generators OVEL

Technical data

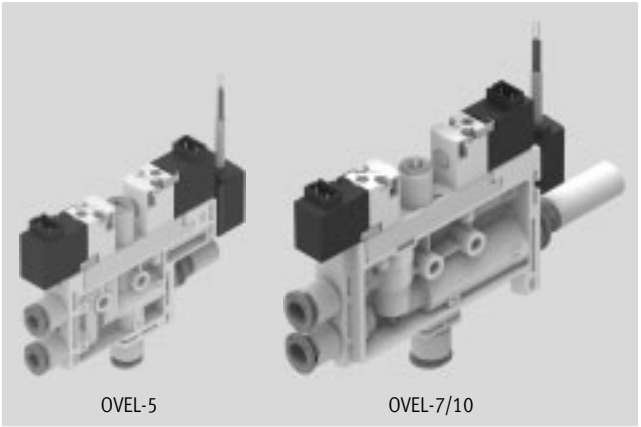
FESTO

Function
NC, normally closed:
- Ejector pulse
- Push-in connectors
- Open silencer
- Vacuum sensor



Temperature range
0 ... +50 °C

Operating pressure
2 ... 7 bar



OVEL-5 OVEL-7/10

General technical data					
Type		OVEL-5-H/L	OVEL-7-H	OVEL-7-L	OVEL-10-H/L
Nominal width of Laval nozzle	[mm]	0.45	0.7		0.95
Grid dimension	[mm]	10	15		15
Grade of filtration	[µm]	40			
Mounting position		Any			
Type of mounting		Via through-hole			
		On manifold rail			
Pneumatic connection 1	OVEL-...-P	Common connection via manifold rail			
	OVEL-...-PQ-VQ3	For tubing O.D. 3 mm	–		–
	OVEL-...-PQ-VQ4	For tubing O.D. 4 mm	For tubing O.D. 4 mm		–
	OVEL-...-PQ-VQ6	–	–		For tubing O.D. 6 mm
Vacuum connection	OVEL-...-VQ3	For tubing O.D. 3 mm	–	–	–
	OVEL-...-VQ4	For tubing O.D. 4 mm	For tubing O.D. 4 mm	–	–
	OVEL-...-VQ6	–	–	For tubing O.D. 6 mm	For tubing O.D. 6 mm
Pneumatic connection 3	OVEL-...-UA	Open silencer			
	OVEL-...-RQ	For tubing O.D. 4 mm	For tubing O.D. 6 mm		For tubing O.D. 6 mm
Ejector pulse connection[1)]	OVEL-...-Z-A	Corresponds to the selected connection size for pneumatic connection 1			

1) If there is no ejector pulse, or if the ejector pulse is generated via pneumatic connection 1, the additional connection for the ejector pulse is closed with a blanking plug.

Technical data – Design			
Type		OVEL-...-UA	OVEL-...-RQ
Design		T-shape	
Ejector characteristic	OVEL-...-H	High vacuum/standard	
	OVEL-...-L	High suction rate/standard	
Silencer design		Open	–
Integrated function		Electric on-off valve	
		Filter	
		Open silencer	–
	OVEL-...-A	Electrical ejector pulse	
	OVEL-...-A	Flow control valve	
	OVEL-...-V1B/V1V/B2B/B2V	Pressure transmitter	
	OVEL-...-V1PNLK/B2PNLK	Pressure sensor	
Valve function		Closed	
Manual override		Non-detenting	

Vacuum generators OVEL

Technical data

FESTO

Operating and environmental conditions		
Operating pressure	[bar]	2 ... 7
Nominal operating pressure	[bar]	4
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]
Note on operating/pilot medium		Lubricated operation not possible
Ambient temperature	[°C]	0 ... +50
Temperature of medium	[°C]	0 ... +50
Corrosion resistance class CRC[1)]		2
CE marking (see declaration of atmosphere)		To EU EMC Directive[2)]
Degree of protection		IP40

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.
2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Performance data – High vacuum				
Type		OVEL-5-H	OVEL-7-H	OVEL-10-H
Max. vacuum	[%]	89	92	92
Operating pressure for max. vacuum	[bar]	4.2	4.5	3.8
Operating pressure for max. suction rate	[bar]	3	4	4
Max. suction rate with respect to atmosphere	[l/min]	4	17	21
Air supply time at nominal operating pressure 4 bar (for 1 l volume)[1)]	[s]	2	1.2	1
Noise level at p_1 = 4 bar	[db(A)]	64	61	68

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate				
Type		OVEL-5-L	OVEL-7-L	OVEL-10-L
Operating pressure for max. suction rate	[bar]	5	5	6
Max. suction rate with respect to atmosphere	[l/min]	11	33	45
Air supply time at nominal operating pressure 4 bar (for 1 l volume)[1)]	[s]	0.8	0.4	0.4
Noise level at p_1 = 4 bar	[db(A)]	52	64	67

1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Vacuum generators OVEL

Technical data

Technical data – Electrical connection		
Solenoid valve		
Electrical connection, input	Function	Ejector pulse
		Vacuum generation
	Connection type	2x plug connector
	Connection technology	Plug pattern H
	Number of pins/wires	2
	Type of mounting	Snap-locking
Operating voltage range [V DC]		21.6 … 26.4
Duty cycle [%]		100
Coil characteristics, 24 V DC [W]		1.0
Vacuum sensor		
Electrical connection, output	Function	Sensor
	Connection type	Cable
	Connection technology	Open end
	Number of pins/wires	3
Cable diameter [mm]		2.9 ±0.1
Cable length [m]		2.5
Conductor nominal cross section [mm^2]		0.14
Cable characteristic		Suitable for use with energy chains

Technical data – Vacuum sensor							
Type		OVEL-…-V1B	OVEL-…-V1V	OVEL-…-B2B	OVEL-…-B2V	OVEL-…-V1PNLK	OVEL-…-B2PNLK
Mechanical							
Method of measurement		Piezoresistive pressure sensor				Piezoresistive pressure sensor with display	
Pressure measuring range	[bar]	–1 … 0		–1 … 1		–1 … 0	–1 … 1
Setting options		–				Teach-in	
						IO-Link®	
						Via display and keys	
Display type		–				LED display, 2-digit	
Electrical							
Operating voltage range, sensor	[V DC]	10 … 30	18 … 30	10 … 30	18 … 30	18 … 30	
Switching output		–				PNP/NPN, switchable	
Switching element function		–				N/O or N/C contact, switchable	
Switching function		–				Freely programmable	
Analogue output	[V]	1 … 5	0 … 10	1 … 5	0 … 10	–	

Materials	
Housing	PA reinforced
Silencers	PE
Jet nozzle	Wrought aluminium alloy
Collector nozzle	POM
Filter	POM
Adjusting screw	Steel
Connecting thread	POM
Screws	Steel
Cable sheath	PVC (colour: grey)
Seals	NBR
Note on materials	RoHS compliant

Vacuum generators OVEL

Technical data

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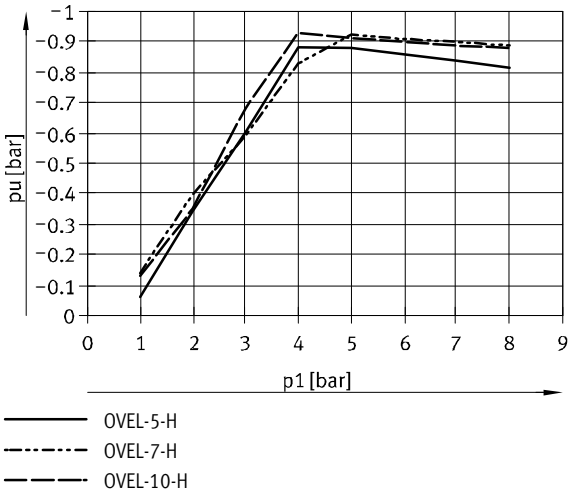
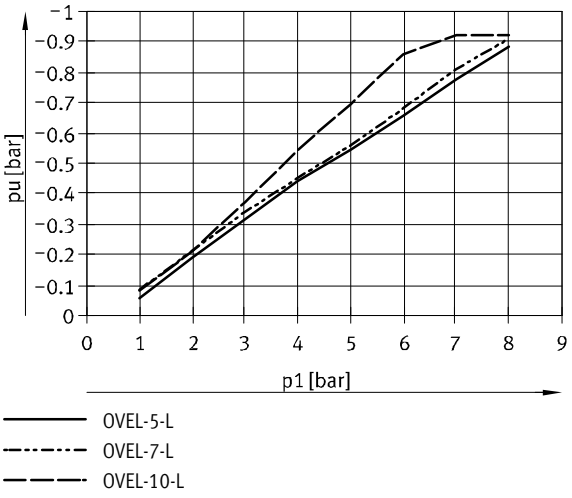
Vacuum p_u as a function of operating pressure p_1

High vacuum

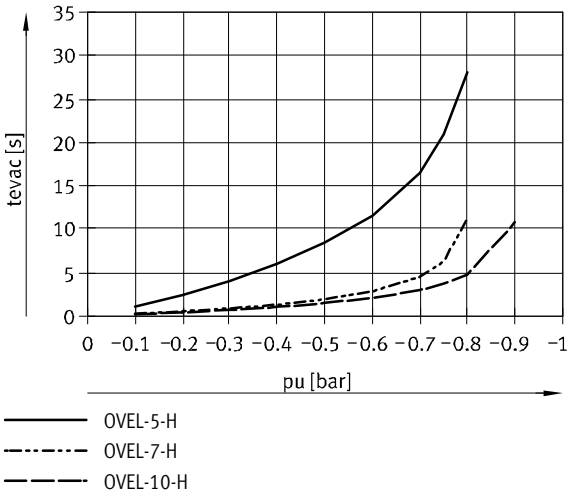


High suction rate

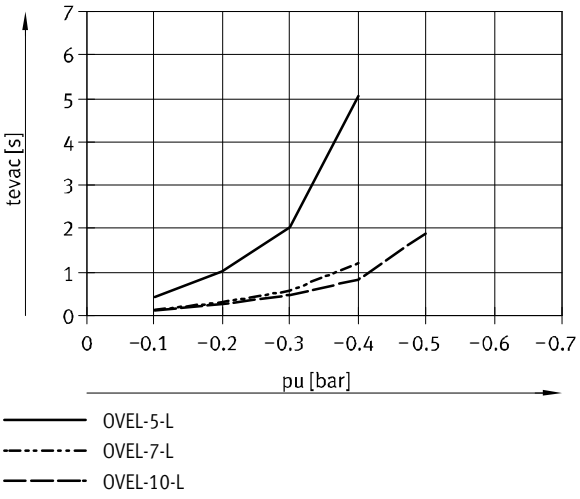


Evacuation time t_{evac} as a function of vacuum p_u for 1 l volume at 4 bar operating pressure

High vacuum

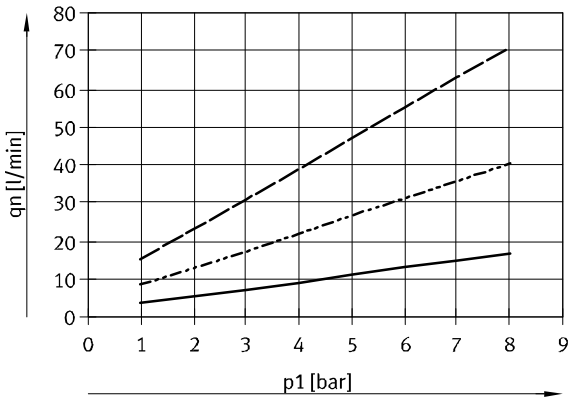


High suction rate



Air consumption q_n as a function of operating pressure p_1

High vacuum/high suction rate



Vacuum generators OVEL

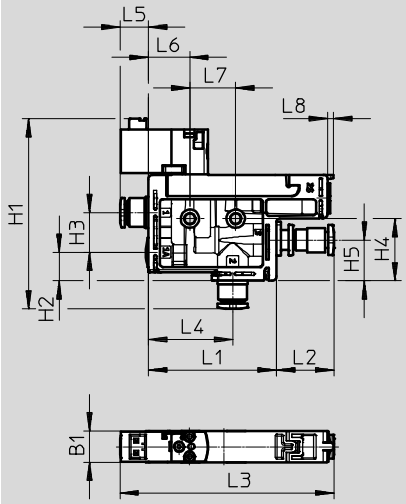
Technical data

FESTO

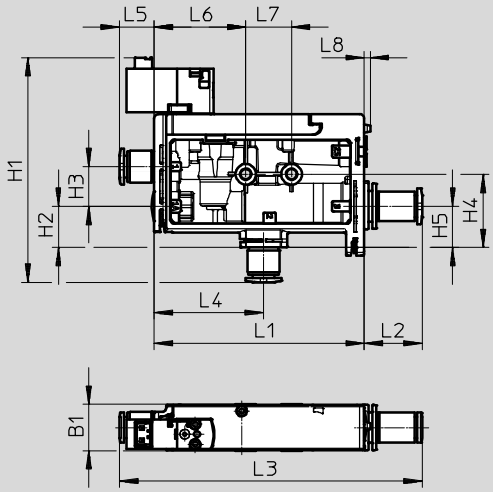
Dimensions – Without ejector pulse and vacuum sensor Download CAD data ➔ **www.festo.com**

Push-in connector RQ on pneumatic connection 3

OVEL-5



OVEL-7/10

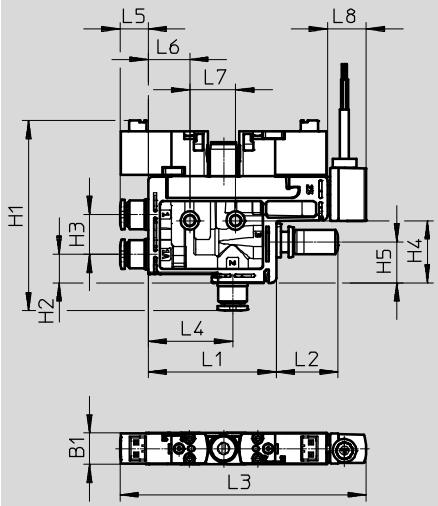


Type	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8
OVEL-5-...-RQ	10.3	62.4	9.4	13	20.4	13	42	19	70	28	9.2	13.7	15	2
OVEL-7/10-...-RQ	15.2	73.7	13.5	13	24	13.5	68.8	19	99.2	35.8	11.4	30	15	2

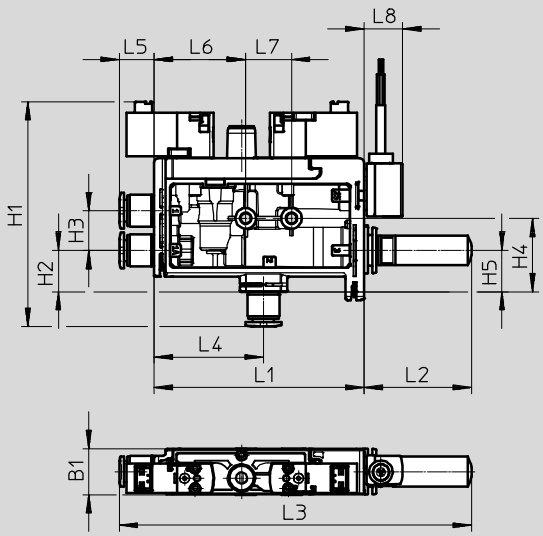
Dimensions – With ejector pulse and vacuum sensor Download CAD data ➔ **www.festo.com**

Open silencer UA on pneumatic connection 3, vacuum sensor V1B/V1V/B2B/B2V/V1PLNK/B2PLNK

OVEL-5



OVEL-7/10



Type	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8
OVEL-5-...-UA-...-V1B/V1V	10.3	62.4	9.4	13	20.4	13	42	20	81	28	9.2	13.7	15	~12.7
OVEL-5-...-UA-...-B2B/B2V														
OVEL-5-...-UA-...-V1PNLK									99					~30.8
OVEL-5-...-UA-...-B2PLNK														
OVEL-7/10-...-UA-...-V1B/V1V	15.2	73.7	13.5	13	24	13.5	68.8	35.2	115.4	35.8	11.4	30	15	~12.7
OVEL-7/10-...-UA-...-B2B/B2V														
OVEL-7/10-...-UA-...-V1PNLK														~30.8
OVEL-7/10-...-UA-...-B2PLNK														

Vacuum generators OVEL

Technical data

FESTO

Ordering data – High vacuum						
Push-in connector on pneumatic connection 1 and vacuum connection, open silencer on pneumatic connection 3						
Description	Vacuum sensor pressure measuring range [bar]	Vacuum sensor output signal	Nominal width of Laval nozzle [mm]	Weight [g]	Part No.	Type
NC – normally closed						
With vacuum sensor and ejector pulse	–1 … 0	1 … 5 V	0.45	72	**8049046**	**OVEL-5-H-10-PQ-VQ4-UA-C-A-V1B-H3**
			0.7	89	**8049047**	**OVEL-7-H-15-PQ-VQ4-UA-C-A-V1B-H3**
			0.95	88	**8049048**	**OVEL-10-H-15-PQ-VQ6-UA-C-A-V1B-H3**
		0 … 10 V	0.45	72	**8049049**	**OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-H3**
			0.7	87	**8049050**	**OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-H3**
			0.95	88	**8049051**	**OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-H3**
		PNP or NPN or IO-Link®	0.45	75	**8049052**	**OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-H3**
			0.7	91	**8049053**	**OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-H3**
			0.95	91	**8049054**	**OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-H3**
	–1 … 1	0 … 10 V	0.45	72	**8069567**	**OVEL-5-H-10-PQ-VQ4-UA-C-A-B2V-H3**
			0.7	87	**8069568**	**OVEL-7-H-15-PQ-VQ4-UA-C-A-B2V-H3**
			0.95	88	**8069569**	**OVEL-10-H-15-PQ-VQ6-UA-C-A-B2V-H3**
		PNP or NPN or IO-Link®	0.45	75	**8069570**	**OVEL-5-H-10-PQ-VQ4-UA-C-A-B2PNLK-H3**
			0.7	91	**8069571**	**OVEL-7-H-15-PQ-VQ4-UA-C-A-B2PNLK-H3**
			0.95	88	**8069572**	**OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3**

Vacuum generators OVEL

Ordering data – Modular product system

FESTO

Ordering table

	OVEL-...		Condi-tions	Code		Entry code
M	Module no.	**8049045**				
	Vacuum generator	Vacuum generator, electropneumatic		**OVEL**		OVEL
	Nominal width of Laval nozzle [mm]	0.45		**-5**		
		0.7		**-7**		
		0.95		**-10**		
	Ejector characteristic	High vacuum		**-H**		
		High suction rate		**-L**		
	Housing size/width [mm]	10	1	**-10**		
		15	2	**-15**		
	Pneumatic connection 1	For pneumatic linking via manifold rail		**-P**		
		Push-in connectors, metric		**-PQ**		
	Vacuum connection	Push-in connector 3 mm	3	**-VQ3**		
		Push-in connector 4 mm	4	**-VQ4**		
		Push-in connector 6 mm	5	**-VQ6**		
	Pneumatic connection 3	Push-in connectors, metric		**-RQ**		
		Open silencer		**-UA**		
O	Ejector pulse connection	Via pneumatic connection 1				
		Additional connection (as pneumatic connection 1)		**-Z**		
M	Vacuum valve	Normally closed		**-C**		-C
O	Additional function	Without ejector pulse				
		Electrical ejector pulse	6	**-A**		
	Vacuum sensor pressure measuring range	Without vacuum sensor				
		–1 ... 0 bar		**-V1**		
		–1 ... 1 bar		**-B2**		
	Vacuum sensor output signal	Without vacuum sensor				
		1 ... 5 V	7	**B**		
		0 ... 10 V	7	**V**		
		PNP or NPN or IO-Link®	7	**PNLK**		
M	Electrical connection	Connection pattern H, vertical plug		**-H3**		-H3

1 **10** Not with Laval nozzle of nominal width 7, 10
2 **15** Not with Laval nozzle of nominal width 5
3 **VQ3** Only with Laval nozzle of nominal width 5
4 **VQ4** Only with Laval nozzle of nominal width 5 or Laval nozzle of nominal width 7 in combination with ejector characteristic H
5 **VQ6** Only with Laval nozzle of nominal width 10 or Laval nozzle of nominal width 7 in combination with ejector characteristic L
6 **A** Mandatory specification in combination with ejector pulse connection Z
7 **B, V, PNLK** Mandatory specification in combination with vacuum sensor pressure measuring range B2, V1

M Mandatory data
O Options

Transfer order code

8049045	**OVEL**	–		–		–		–		–		–		–		–	**C**	–		–			–	**H3**

New

Vacuum generators OVEL

Accessories

Common supply manifold OABM-P
For vacuum generator OVEL-...-P

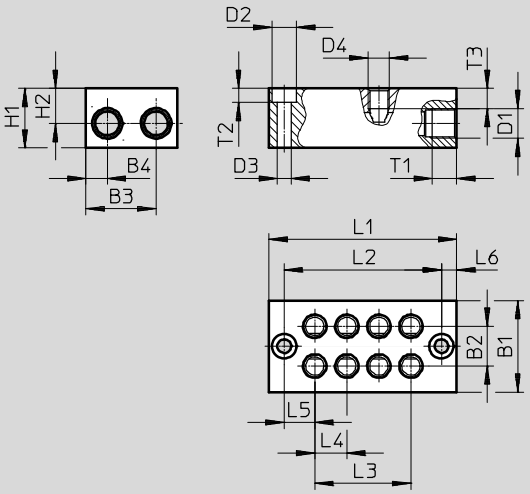
Note

Vacuum generators with additional connection for ejector pulse (OVEL-...-Z-C-A) cannot be combined on the common supply manifold with vacuum generators without an additional connection (OVEL-...-C-A).

General technical data	
Pneumatic connection 1	G1⁄8
Type of mounting	Via through-hole

Materials	
Sub-base	Wrought aluminium alloy
Note on materials	RoHS compliant

Dimensions Download CAD data ➔ **www.festo.com**



Type	B1	B2	B3	B4	D1	D2 ∅	D3 ∅	D4	H1	H2
OABM-P-G3-10-2	30	13	23	7	G1⁄8	8	4.5	M7	19.5	11.5
OABM-P-G3-10-4										
OABM-P-G3-10-8										
OABM-P-G3-15-2	30	13	23	7	G1⁄8	8	4.5	M7	19.5	11.5
OABM-P-G3-15-4										
OABM-P-G3-15-8										

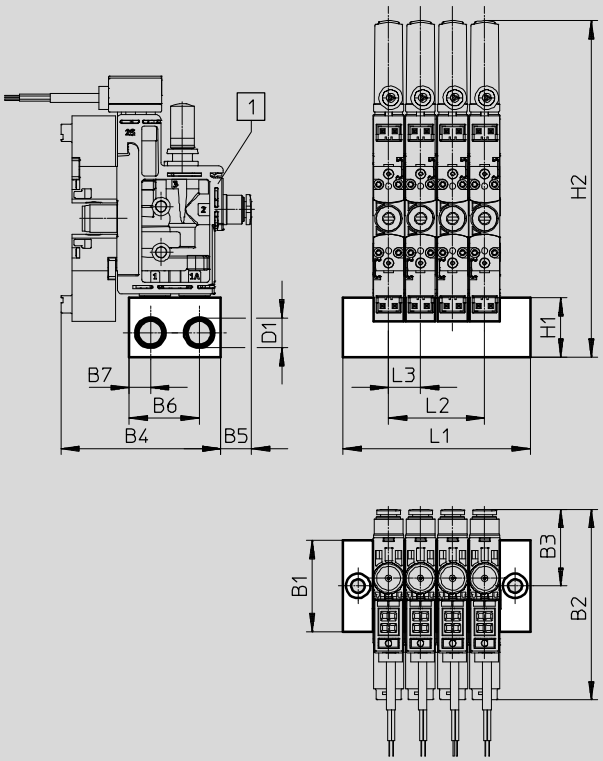
Type	L1	L2	L3	L4	L5	L6	T1	T2	T3
OABM-P-G3-10-2	40.5	30.5	10.5	10.5	10	5	8	4.6	6.6
OABM-P-G3-10-4	61.5	51.5	31.5						
OABM-P-G3-10-8	103.5	93.5	73.5						
OABM-P-G3-15-2	51.5	41.5	15.5	15.5	13	5	8	4.6	6.6
OABM-P-G3-15-4	82.5	72.5	46.5						
OABM-P-G3-15-8	144.5	134.5	108.5						

Vacuum generators OVEL

Accessories

FESTO

Dimensions Download CAD data ➔ **www.festo.com**



Note

Joint allocation of OVEL-5 and OVEL-7/-10 is possible only for common supply manifolds OABM-...-15.

Use mounting kit OABM-MK for fastening the OVEL on the common supply manifold.
Min. tightening torque 0.3 Nm
Max. tightening torque: 3.3 Nm

1 Vacuum generator OVEL-5/7/10

Type		B1	B2	B3	B4	B5	B6	B7	D1	H1	H2	L1	L2	L3
OABM-P-G3-10-2	With OVEL-5	30	62	25	52	10	23	7	G1⁄8	19.5	110	40.5	10.5	10.5
OABM-P-G3-10-4												61.5	31.5	
OABM-P-G3-10-8												103.5	73.5	
OABM-P-G3-15-2	With OVEL-7/10	30	74	31	57	16	23	7	G1⁄8	19.5	125	51.5	15.5	15.5
OABM-P-G3-15-4												82.5	46.5	
OABM-P-G3-15-8												144.5	108.5	

Ordering data

Common supply manifold	Number of device locations	CRC[1)]	Weight [g]	Part No.	Type
For OVEL-5	2	2	45.2	**8049141**	**OABM-P-G3-10-2**
	4	2	69.6	**8049142**	**OABM-P-G3-10-4**
	8	2	118.6	**8049143**	**OABM-P-G3-10-8**
For OVEL-5/7/10	2	2	59.6	**8049144**	**OABM-P-G3-15-2**
	4	2	97.1	**8049145**	**OABM-P-G3-15-4**
	8	2	172	**8049146**	**OABM-P-G3-15-8**

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.

Vacuum generators OVEL

Accessories

Mounting kit OABM-MK

For common supply manifold OABM-P

General technical data		
Type of mounting		Retaining clips
		Can be screwed onto manifold rail
Min. tightening torque	[Nm]	0.3
Max. tightening torque	[Nm]	3.3

Materials	
Hollow bolt	Wrought aluminium alloy
Seals	NBR
Note on materials	RoHS compliant

Ordering data				
	CRC[1)]	Weight [g]	Part No.	Type
For common supply manifold OABM-P	2	7	**8065850**	**OABM-MK-G3**

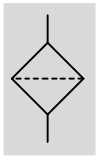
1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial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

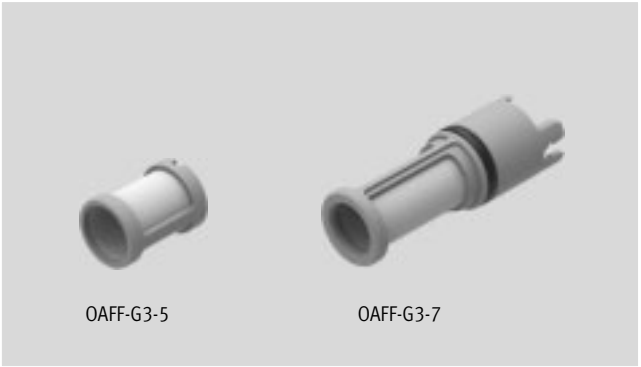
Vacuum generators OVEL

Accessories

FESTO

Vacuum filter OAFF





OAFF-G3-5 OAFF-G3-7

General technical data		
Type of mounting		Push-on
		Snapping in
Grade of filtration	[µm]	40
Ejector pulse suitability	[bar]	≤7

Operating and environmental conditions		
Operating pressure	[bar]	–0.95
Operating medium		Atmospheric air based on ISO 8573-1:2010 [7:-:-]

Materials		
Type	OAFF-G3-5	OAFF-G3-7
Housing	POM	
Filter	Fabric, PA	
Seals	–	NBR
Note on materials	RoHS compliant	

Ordering data				
	Weight [g]	Part No.	Type	PU[1]
For vacuum generator OVEL-5	1	**8068944**	**OAFF-G3-5**	**10**
For vacuum generator OVEL-7/10	1.5	**8068945**	**OAFF-G3-7**	**10**

1) Packaging unit

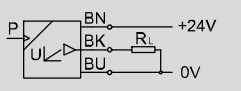
Vacuum generators OVEL

Accessories

FESTO

Pressure transmitter SPTE
(Order code in the modular product system: V1B/V1V/B2B/B2V)

- Pressure measuring range –1 … 0 bar or –1 … 1 bar
- Analogue outputs 1 … 5 V or 0 … 10 V



Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (➔ page 21).

General technical data		
Certification	RCM	
	c UL us - Recognized (OL)	
CE mark (see declaration of conformity)[1)]	To EU EMC Directive	
Note on materials	RoHS compliant	

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal/measuring element			
Type		SPTE-V1R	SPTE-B2R
Measured variable		Relative pressure	
Method of measurement		Piezoresistive pressure sensor	
Pressure measuring range start value	[bar]	0	–1
Pressure measuring range end value	[bar]	–1	1
Max. overload pressure	[bar]	5	5
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Operation with lubricated medium possible	
Temperature of medium	[°C]	0 … 50	
Ambient temperature	[°C]	0 … 50	

Output, general		
Accuracy ±FS[1)]	[%]	3 (at room temperature of approx. 23 °C)
		4 (in the ambient temperature range 0 … 50 °C)
Repetition accuracy ±FS[1)]	[%]	0.3
Temperature coefficient ±FS/K[1)]	[%]	0.05

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

Analogue output			
Type		SPTE-...-V-2.5K	SPTE-...-B-2.5K
Analogue output	[V]	0 … 10	1 … 5
Rise time	[ms]	1	
Min. load resistance of voltage output	[kΩ]	15	

Vacuum generators OVEL

Accessories

Output, additional data	
Short circuit protection	For all electrical connections

Electronics			
Type		SPTE-...-V-2.5K	SPTE-...-B-2.5K
Operating voltage range DC	[V]	18 ... 30	10 ... 30
Reverse polarity protection		For all electrical connections	

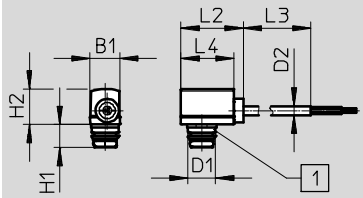
Electromechanical components		
Electrical connection		Cable, 3-wire, open end
Cable length	[m]	2.5

Mechanical components		
Type of mounting		Pin-type connection
Mounting position		Any
Pneumatic connection		Cartridge 10 mm
Product weight	[g]	35
Information on housing materials		PA reinforced

Immissions/emissions	
Degree of protection	IP40
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.

Dimensions Download CAD data ➔ **www.festo.com**



1 Pressure supply port: pin-type cartridge 10 mm

Type	B1	D1 ∅	D2 ∅	H1	H2	L2	L3	L4
SPTE-...-PC10	9.8	8.9	2.9	7.6	11.7	20.5	2500	17.5

Ordering data

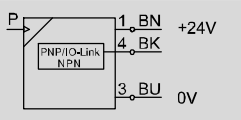
Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Analogue output [V]	Order code in the modular product system	Part No.	Type
Cartridge 10 mm	Cable, 3-wire, open end	–1 ... 0	0 ... 10	V1V	**8025974**	**SPTE-V1R-PC10-V-2.5K**
			1 ... 5	V1B	**8025975**	**SPTE-V1R-PC10-B-2.5K**
		–1 ... 1	0 ... 10	B2V	**8025976**	**SPTE-B2R-PC10-V-2.5K**
			1 ... 5	B2B	**8025977**	**SPTE-B2R-PC10-B-2.5K**

Vacuum generators OVEL

Accessories

Pressure sensor SPAE
(Order code in the modular product system: V1PNLK/B2PNLK)

- Pressure measuring range –1 … 0 bar or –1 … 1 bar
- Switching output PNP/NPN, switchable
- IO-Link®
- LCD display
- Teach-in function



General technical data		
Certification	RCM	
	c UL us - Recognized (OL)	
CE mark (see declaration of conformity)[1)]	To EU EMC Directive	
Note on materials	RoHS compliant	

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com/sp ➔ Certificates.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal/measuring element			
Type		SPAE-V1R	SPAE-B2R
Measured variable		Relative pressure	
Method of measurement		Piezoresistive pressure sensor	
Pressure measuring range start value	[bar]	0	–1
Pressure measuring range end value	[bar]	–1	1
Max. overload pressure	[bar]	5	5
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Operation with lubricated medium possible	
Temperature of medium	[°C]	0 … 50	
Ambient temperature	[°C]	0 … 50	

Signal processing		
Resolution ADC		10 bits

Output, general		
Accuracy ±FS[1)]	[%]	1.5 (at room temperature of approx. 23 °C)
		2.5 (in the ambient temperature range 0 … 50 °C)
Repetition accuracy ±FS[1)]	[%]	0.3
Temperature coefficient ±FS/K[1)]	[%]	0.05

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

Switching output		
Switching output		PNP/NPN, switchable
Switching function		Freely programmable
Switching element function		N/C or N/O contact, switchable
Max. output current	[mA]	100

Vacuum generators OVEL

Accessories

Measured value display		
Display range start value	[% FS]	0
Display range end value	[% FS]	99

Output, additional data	
Short circuit protection	For all electrical connections

Communication interface	
Log	IO-Link®
IO-Link®, protocol version	Device V 1.1
IO-Link®, profile	Smart sensor profile
IO-Link®, function classes	Binary data channel (BDC)
	Diagnostics
	Identification
	Process data variable (PDV)
	Teach channel
IO-Link®, communication mode	COM2 (38.4 kBaud)
IO-Link®, SIO mode support	Yes
IO-Link®, port class	A
IO-Link®, process data width OUT	0 byte
IO-Link®, process data width IN	2 bytes
IO-Link®, process data content IN	2 bit BDC (pressure monitoring)
	14 bit PDV (pressure reading)
IO-Link®, minimum cycle time [ms]	3
IO-Link®, data memory required	0.5 KB

Electronic components		
Operating voltage range DC	[V]	18 ... 30
Reverse polarity protection		For all electrical connections

Electromechanical components		
Electrical connection		Cable, 3-wire, open end
Cable length	[m]	2.5

Mechanical components		
Type of mounting		Pin-type connection
Mounting position		Any
Pneumatic connection		Cartridge 10 mm
Product weight	[g]	40
Information on housing materials		Reinforced PA

Display/operation		
Display type		LED display, 2-digit
Displayable units		% FS
Switching status indication		Yellow LED
Setting options		Via display and keys, teach-in, IO-Link®
Threshold value setting range	[%]	1 ... 98
Protection against tampering		PIN code

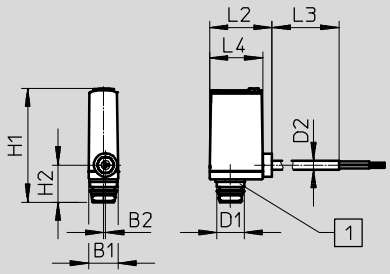
Vacuum generators OVEL

Accessories

Immissions/emissions	
Degree of protection	IP40
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.

Dimensions Download CAD data ➔ **www.festo.com**



1 Pressure supply port: pin-type cartridge 10 mm

Type	B1	B2	D1 ∅	D2 ∅	H1	H2	L2	L3	L4
SPAE-...-PC10	9.8	0.7	8.9	2.9	~37.5	12.2	20.5	2500	17.5

Ordering data

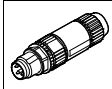
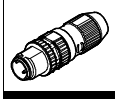
Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Order code in the modular product system	Part No.	Type
Cartridge 10 mm	Cable, 3-wire, open end	–1 ... 0	V1PNLK	**8025978**	**SPAE-V1R-PC10-PNLK-2.5K**
		–1 ... 1	B2PNLK	**8025979**	**SPAE-B2R-PC10-PNLK-2.5K**

Vacuum generators OVEL

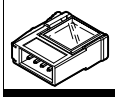
Accessories

FESTO

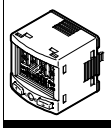
Ordering data – Plug NECU-S-M8G3/M12G3 — Technical data ➔ Internet: necu

	Electrical connection	Part No.	Type
	Plug M8x1, 3-pin, straight, insulation displacement connector	**562024**	**NECU-S-M8G3-HX**
	Plug M12x1, A-coded, 3-pin, straight, insulation displacement connector	**562027**	**NECU-S-M12G3-HX**

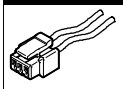
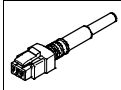
Ordering data – Plug NECU-S-ECG4 — Technical data ➔ Internet: necu

	Electrical connection	Part No.	Type
	Plug square design, 4-pin, straight, insulation displacement connector	**570922**	**NECU-S-ECG4-HX-Q3**

Ordering data – Signal converter SCDN — Technical data ➔ Internet: scdn

	Measured variable	Part No.	Type
	Voltage	**8035555**	**SCDN-2V-EC4-PNLK-L1**

Ordering data – Plug socket with cable NEBV — Technical data ➔ Internet: nebv

	Electrical connection		Cable length [m]	Part No.	Type
	Socket, 2-pin Plug pattern H	Flying leads Open end	0.5	**566654**	**NEBV-H1G2-KN-0.5-N-LE2**
			1	**566655**	**NEBV-H1G2-KN-1-N-LE2**
			2.5	**566656**	**NEBV-H1G2-KN-2.5-N-LE2**
			5	**566657**	**NEBV-H1G2-KN-5-N-LE2**
	Socket, 2-pin Plug pattern H	Cable Open end	0.5	**566658**	**NEBV-H1G2-P-0.5-N-LE2**
			1	**566659**	**NEBV-H1G2-P-1-N-LE2**
			2.5	**566660**	**NEBV-H1G2-P-2.5-N-LE2**
			5	**566661**	**NEBV-H1G2-P-5-N-LE2**

Ordering data – Blanking plug B

	Pneumatic connection	Part No.	Type	PU[1]
	M7	**174309**	**B-M7**	**10**
	G⅛	**3568**	**B-1/8**	**10**

1) Packaging unit.

Ordering data – Push-in fitting QS

	Pneumatic connection		Part No.	Type	PU[1]
	G⅛	Tubing O.D. 8 mm	**186098**	**QS-G1/8-8**	**10**
	G⅛	Tubing O.D. 8 mm	**186109**	**QS-G1/8-8-I**	**10**

1) Packaging unit.