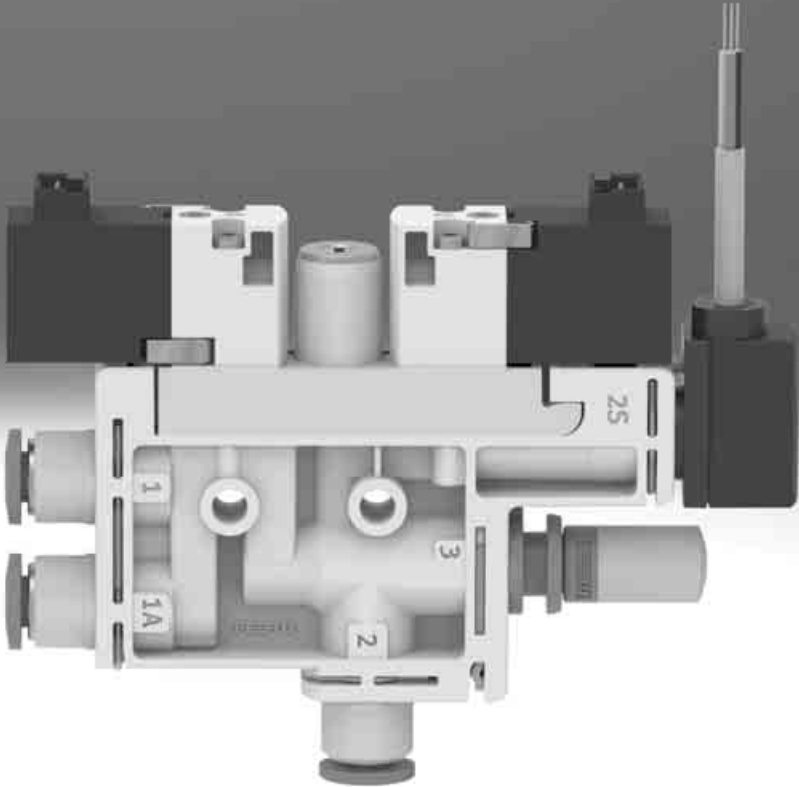


Vacuum generators OVEL



Vacuum generators OVEL

Key features

At a glance

Rapid purging of vacuum for safe placement of the workpiece using a solenoid valve for controlling the ejector pulse, optional

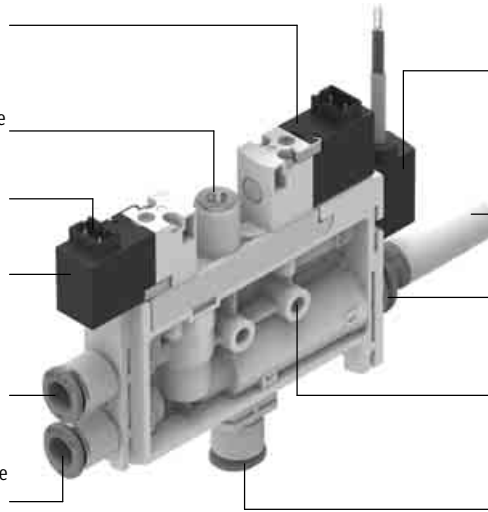
Flow control screw for adjusting the ejector pulse

Electrical connection via H3 plug connector

Fast vacuum build-up using a solenoid valve for controlling the compressed air supply

Supply port, secured with wire clamp

Additional supply port for separate supply for the ejector pulse, optional, secured with wire clamp



Pressure transmitter SPTE/pressure sensor SPAE for monitoring the vacuum, optional, secured with wire clamp

Maintenance-free operation and reduced noise level thanks to an open silencer, optional

Vacuum generator cartridge, secured with wire clamp

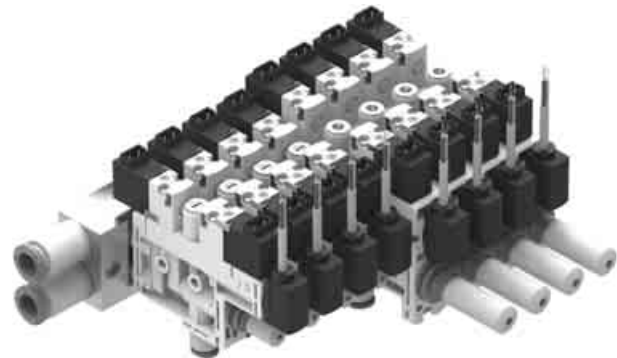
Housing with mounting holes

Vacuum connection, secured with wire clamp

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:

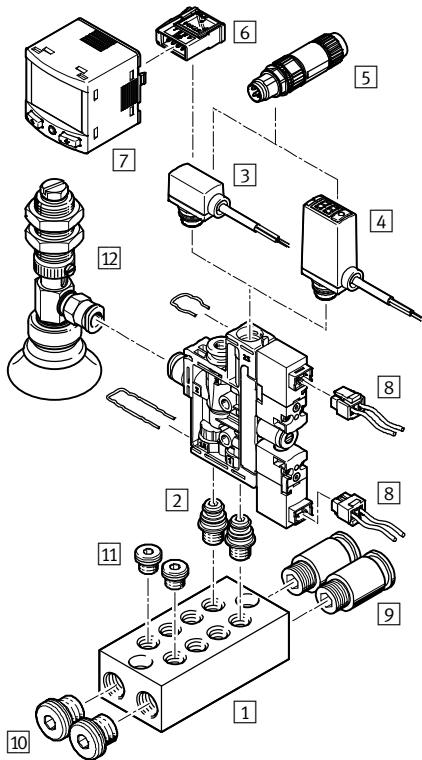
Pressure transmitter SPTE with an analogue output (→ page 16). Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (→ page 21).

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	■	■	LEERER MERKER
6	Plug NECU-S-ECG4	■	■	LEERER MERKER
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	■	■	esh
-	Suction cup holder ESH	■	■	esh
-	Suction cup ESS	■	■	ess
-	Vacuum filter OAFF	■	■	15

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



Vacuum generators OVEL

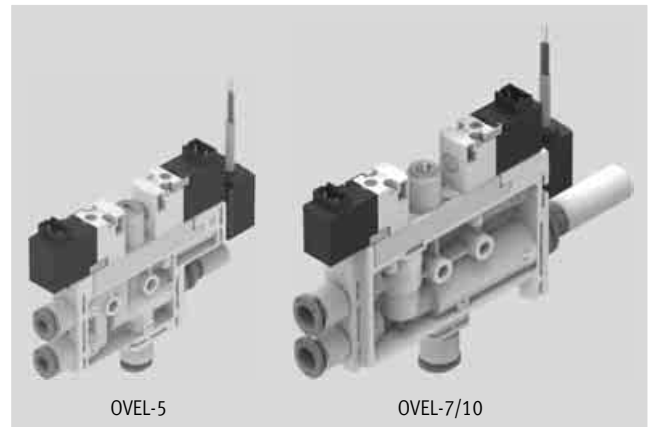
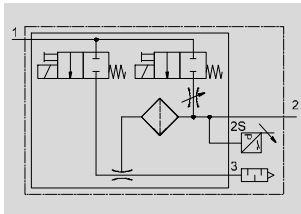
Technical data

Function

NC, normally closed:

- Ejector pulse
- Push-in connectors
- Open silencer
- Vacuum sensor

-  - Temperature range
0 ... +50 °C
-  - Operating pressure
2 ... 7 bar



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

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 → User documentation.
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	-

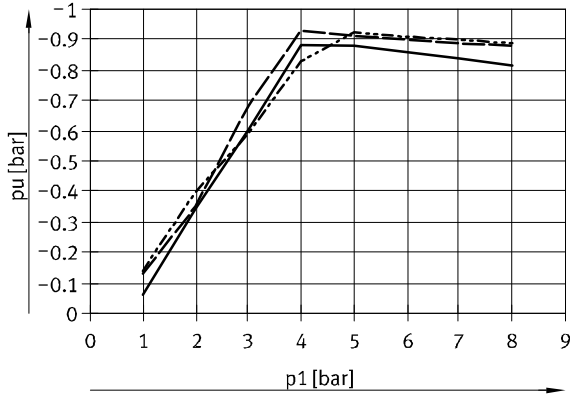
Materials	
Housing	PA reinforced
Silencers	PE
Jet nozzle	Wrought aluminium alloy
Collector nozzle	POM
Filter	POM
Adjusting screw	Steel
Connecting thread	POM
Screws	Steel
Cable sheath	PVC (colour: grey)
Seals	NBR
Note on materials	RoHS compliant

Vacuum generators OVEL

Technical data

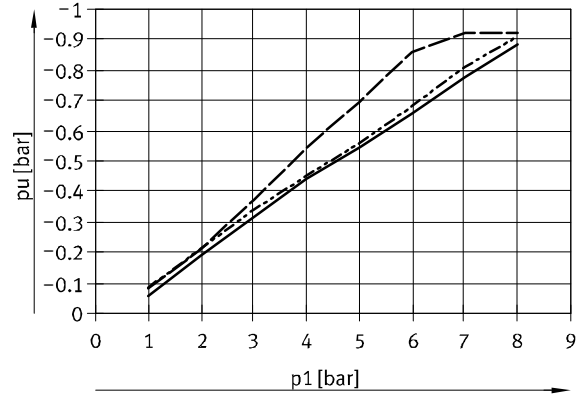
Vacuum p_u as a function of operating pressure p_1

High vacuum



- OVEL-5-H
- - - OVEL-7-H
- · - OVEL-10-H

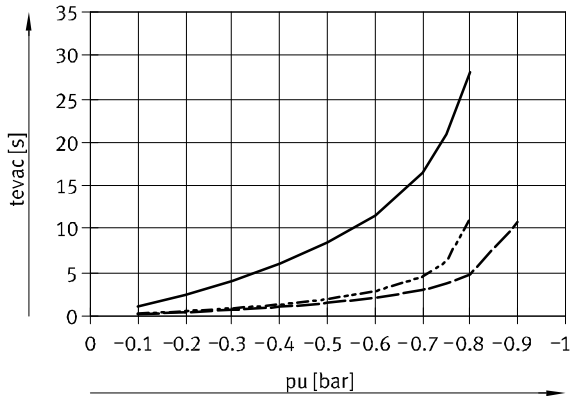
High suction rate



- OVEL-5-L
- - - OVEL-7-L
- · - OVEL-10-L

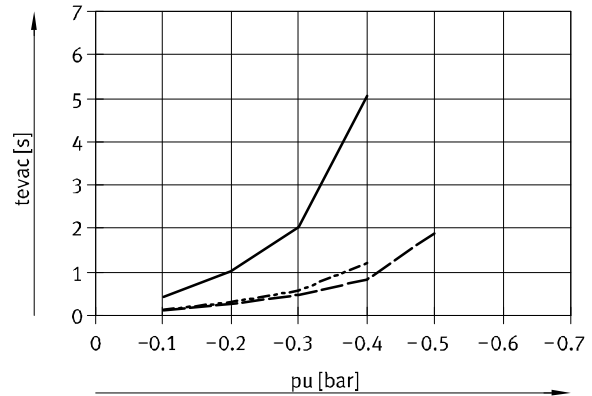
Evacuation time t_{evac} as a function of vacuum p_u for 1 l volume at 4 bar operating pressure

High vacuum



- OVEL-5-H
- - - OVEL-7-H
- · - OVEL-10-H

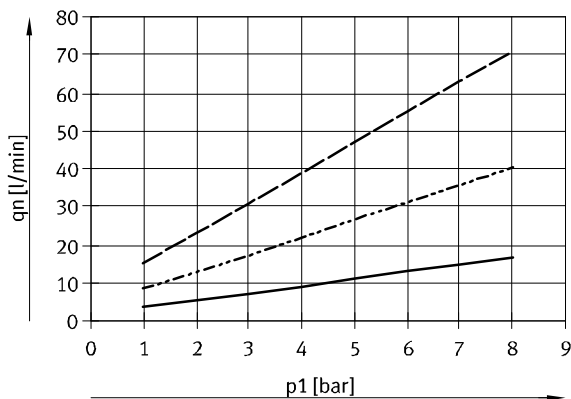
High suction rate



- OVEL-5-L
- - - OVEL-7-L
- · - OVEL-10-L

Air consumption q_n as a function of operating pressure p_1

High vacuum/high suction rate



- OVEL-5
- - - OVEL-7
- · - OVEL-10

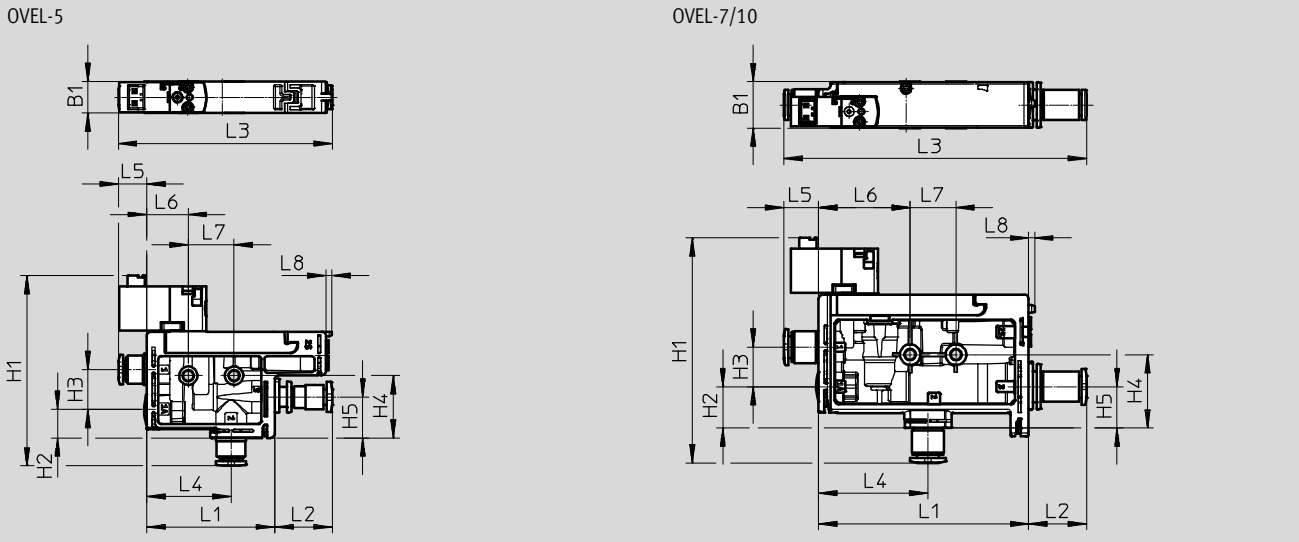
Vacuum generators OVEL

Technical data

Dimensions – Without ejector pulse and vacuum sensor

Download CAD data → www.festo.com

Push-in connector RQ on pneumatic connection 3

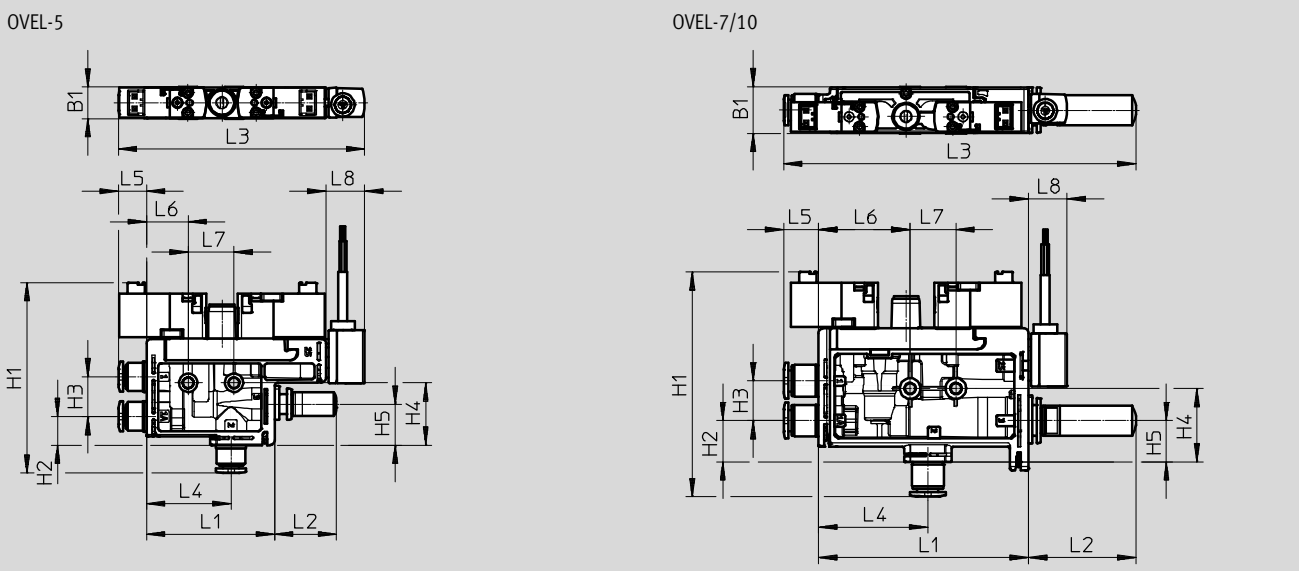


Type	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8
OVEL-5-...-RQ	103	62.4	9.4	13	20.4	13	42	19	70	28	9.2	13.7	15	2
OVEL-7/10-...-RQ	15.2	73.7	13.5	13	24	13.5	68.8	19	99.2	35.8	11.4	30	15	2

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



Type	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8													
OVEL-5-...-UA-...-V1B/V1V	103	62.4	9.4	13	20.4	13	42	20	81	28	9.2	13.7	15	~12.7													
OVEL-5-...-UA-...-B2B/B2V									99					~30.8													
OVEL-5-...-UA-...-V1PLNK														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-...-V1B/V1V									~30.8																		
OVEL-7/10-...-UA-...-B2B/B2V	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-...-V1PLNK														15.2	73.7	13.5	13	24	13.5	68.8	35.2	115.4	35.8	11.4	30	15	~30.8
OVEL-7/10-...-UA-...-B2PLNK																											~30.8

Vacuum generators OVEL

Technical data

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

Ordering table		Condi- tions	Code	Entry code
OVEL-...				
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

Vacuum generators OVEL

Accessories

Common supply manifold OABM-P

For vacuum generator OVEL-...-P



Note

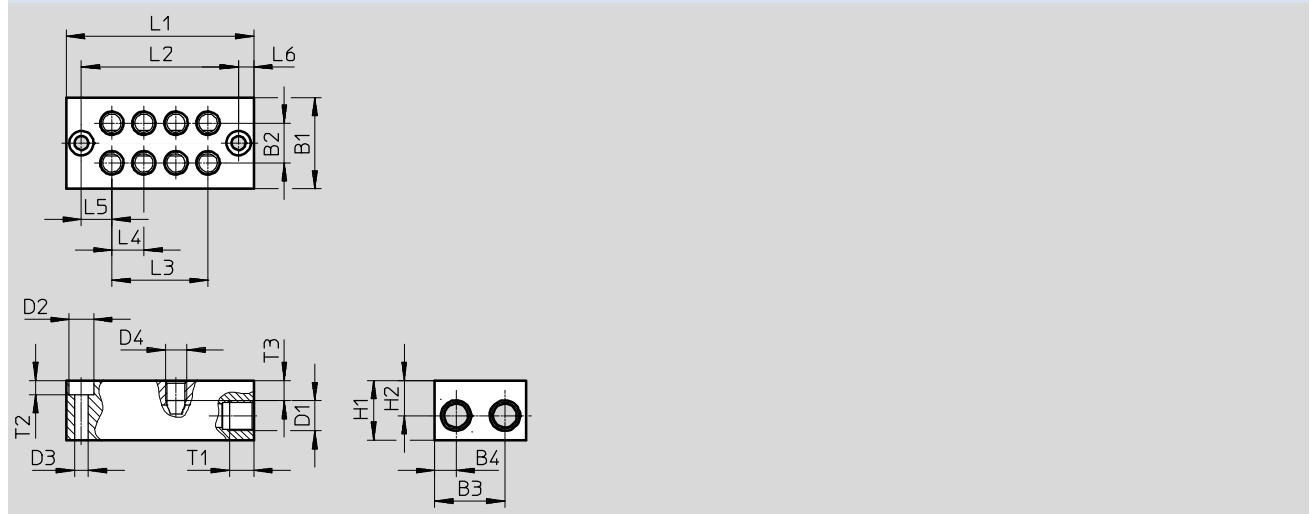
Vacuum generators with additional connection for ejector pulse (OVEL-...-Z-C-A) cannot be combined on the common supply manifold with vacuum generators without an additional connection (OVEL-...-C-A).



General technical data	
Pneumatic connection 1	G $\frac{1}{8}$
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 Ø	D3 Ø	D4	H1	H2
OABM-P-G3-10-2	30	13	23	7	G $\frac{1}{8}$	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	G $\frac{1}{8}$	8	4.5	M7	19.5	11.5
OABM-P-G3-15-4										
OABM-P-G3-15-8										

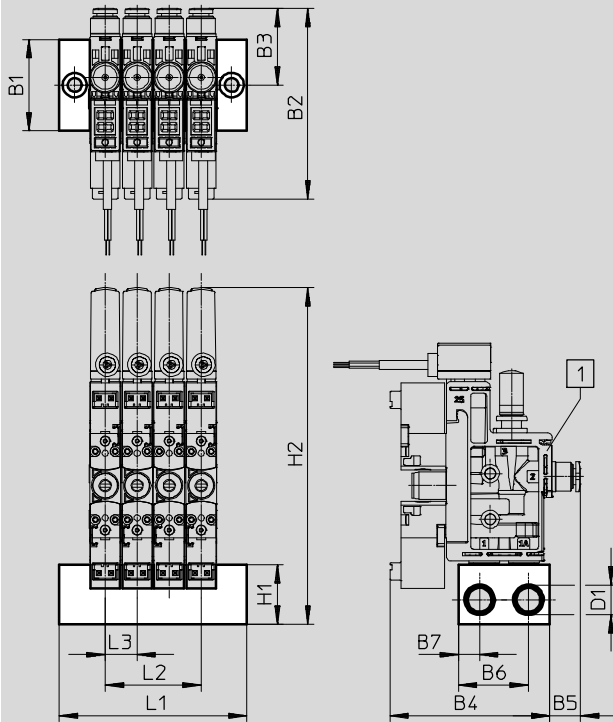
Type	L1	L2	L3	L4	L5	L6	T1	T2	T3
OABM-P-G3-10-2	40.5	30.5	10.5	10.5	10	5	8	4.6	6.6
OABM-P-G3-10-4	61.5	51.5	31.5						
OABM-P-G3-10-8	103.5	93.5	73.5						
OABM-P-G3-15-2	51.5	41.5	15.5	15.5	13	5	8	4.6	6.6
OABM-P-G3-15-4	82.5	72.5	46.5						
OABM-P-G3-15-8	144.5	134.5	108.5						


Vacuum generators OVEL

Accessories


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

 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

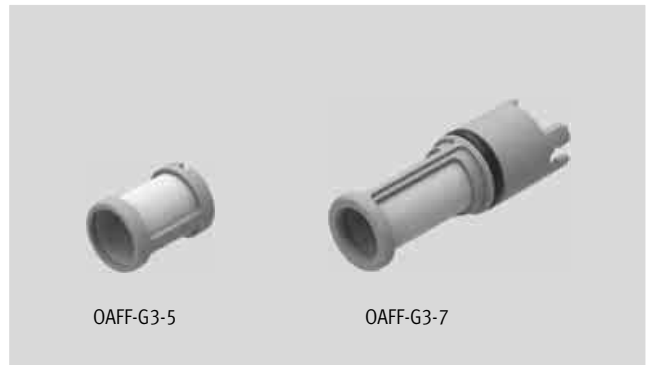
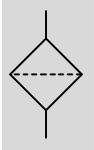
	CRC ¹⁾	Weight [g]	Part No.	Type
For common supply manifold OABM-P	2	7	8065850	OABM-MK-G3

1) Corrosion resistance class CRC 2 to Festo standard FN 940070
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Vacuum generators OVEL

Accessories

Vacuum filter OAFF



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

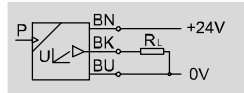
Vacuum generators OVEL

Accessories

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 → User documentation.
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 [bar]	0	-1
start value		
Pressure measuring range end [bar]	-1	1
value		
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/κ 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	

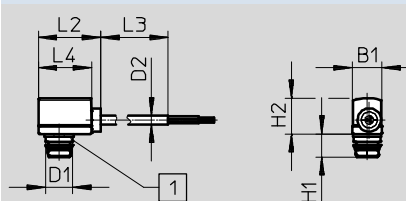
Electromechanical components	
Electrical connection	Cable, 3-wire, open end
Cable length [m]	2.5

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

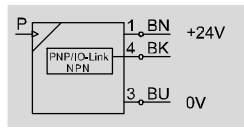
Vacuum generators OVEL

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 → User documentation.
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 [bar] start value	0	-1
Pressure measuring range end [bar] value	-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

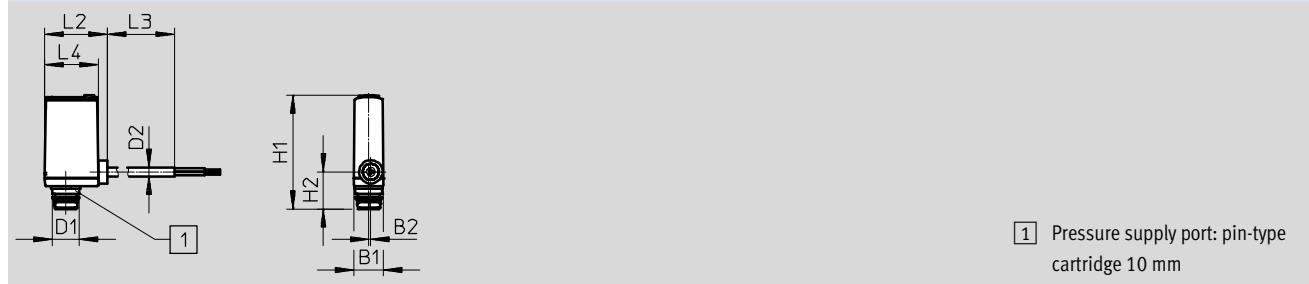
Vacuum generators OVEL

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

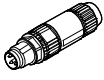
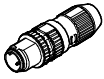


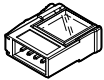
Type	B1	B2	D1	D2	H1	H2	L2	L3	L4
SPAE-...-PC10	9.8	0.7	8.9	2.9	~37.5	12.2	20.5	2500	17.5


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

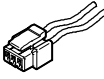
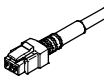
Vacuum generators OVEL


Accessories

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	

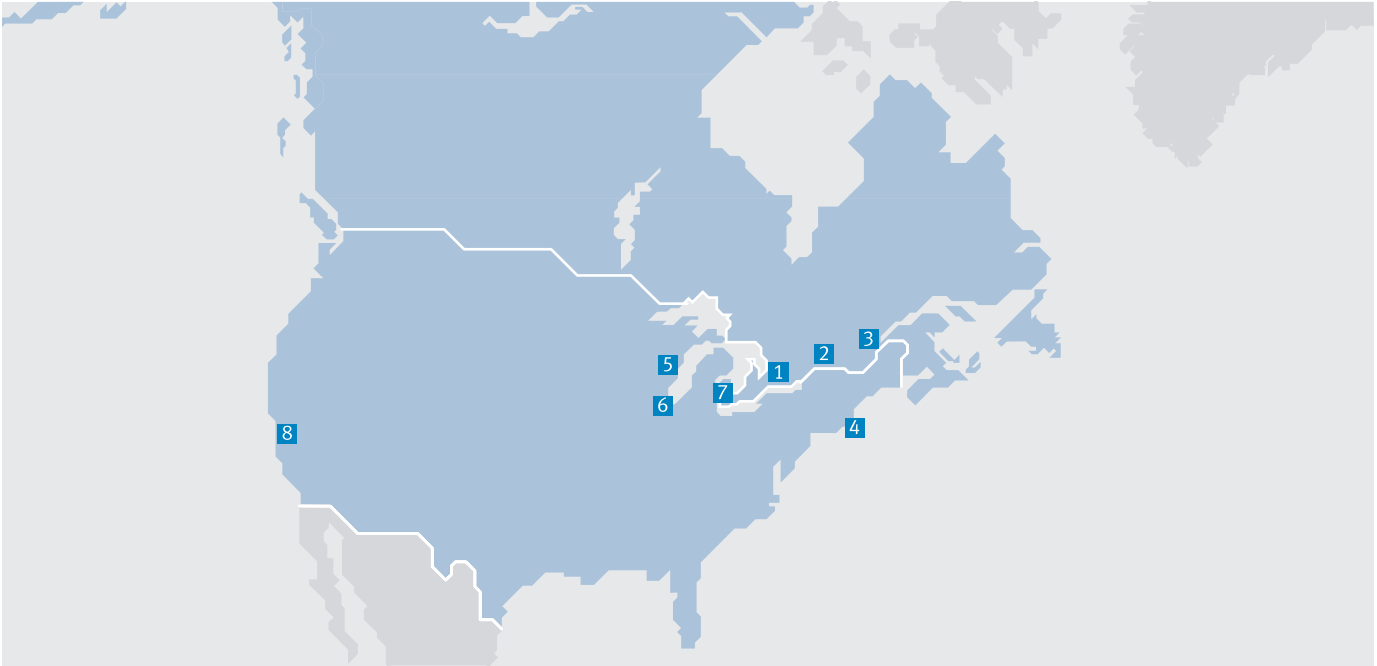
Ordering data – Blanking plug B				
	Pneumatic connection	Part No.	Type	PU ¹⁾
	M7	174309	B-M7	10
	G1/8	3568	B-1/8	10

1) Packaging unit.

Ordering data – Push-in fitting QS					
	Pneumatic connection		Part No.	Type	PU ¹⁾
	G1/8	Tubing O.D. 8 mm	186098	QS-G1/8-8	10
	G1/8	Tubing O.D. 8 mm	186109	QS-G1/8-8-I	10

1) Packaging unit.

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