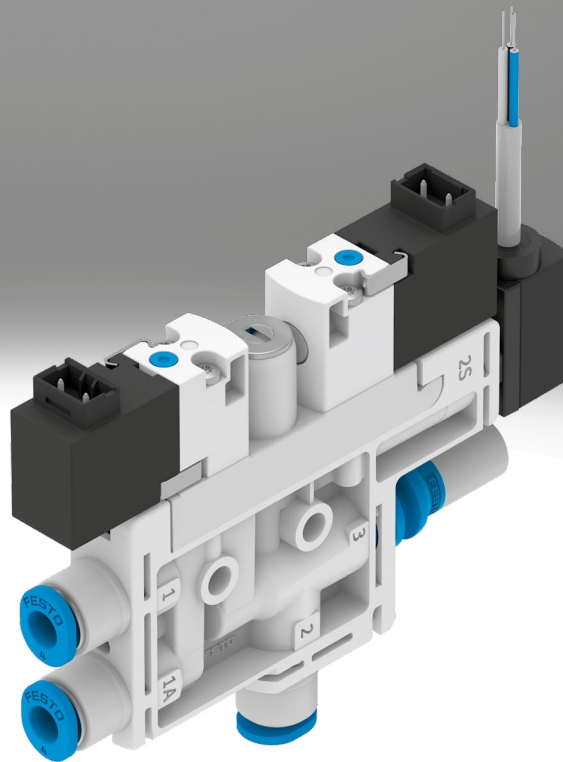


Vacuum generators OVEL

FESTO



Key features

At a glance

Rapid purging of vacuum for safe placement of the workpiece by a solenoid valve to control the ejector pulse, optional

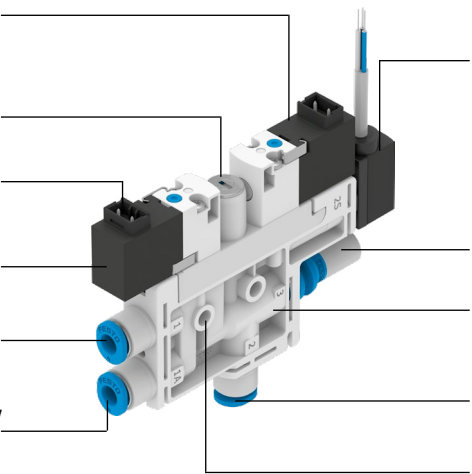
Flow control screw to adjust the ejector pulse

Electrical connection via H3 plug or an M8 plug

Fast vacuum build-up using a solenoid valve to control the compressed air supply

Supply port, secured with clamping clip

Additional compressed air port for the separate supply of the ejector pulse, optional, secured with clamping clip



Pressure transmitter SPTE/pressure sensor SPAE for monitoring the vacuum, optional, secured with clamping clip

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

Vacuum generator cartridge, secured with clamping clip

Vacuum connection, secured with clamping clip

Housing with mounting holes

The compact vacuum generator

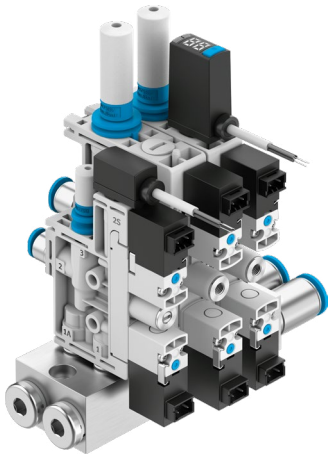
OVEL → page 3

- Low-cost, compact vacuum generator
- Low weight
- Various performance levels and vacuum types
- Short switching times thanks to integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Easy to install using H3 plugs and push-in fittings
- Straightforward mounting with retaining screws
- Quiet operation thanks to integrated silencer
- Integrated filter
- Reduced contamination of the vacuum generator thanks to an open silencer
- Solenoid valves are switched by mechanical manual override
- Monitoring of the vacuum by a vacuum sensor
- Link up to 8 vacuum generators on a single common supply manifold.

OVTL → ovtl

The vacuum generator OVTL is a configurable module comprising vacuum generator OVEL, the common supply manifold OABM-P and connection accessories.

All products are available from the factory fully assembled.



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 N/C (normally closed) switching function, i.e. the vacuum is not generated until the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

Optional ejector pulse

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 with connection and to purge the vacuum quickly.

The compressed air for the ejector pulse can be supplied either via the supply port or a separate connection.

Vacuum sensor, optional

The set or taught-in setpoint value for the generated vacuum is monitored by a vacuum sensor.

If the setpoint value is reached or if it is not reached due to malfunctions (e.g. leakages, dropped workpiece), the vacuum sensor emits an electrical signal.

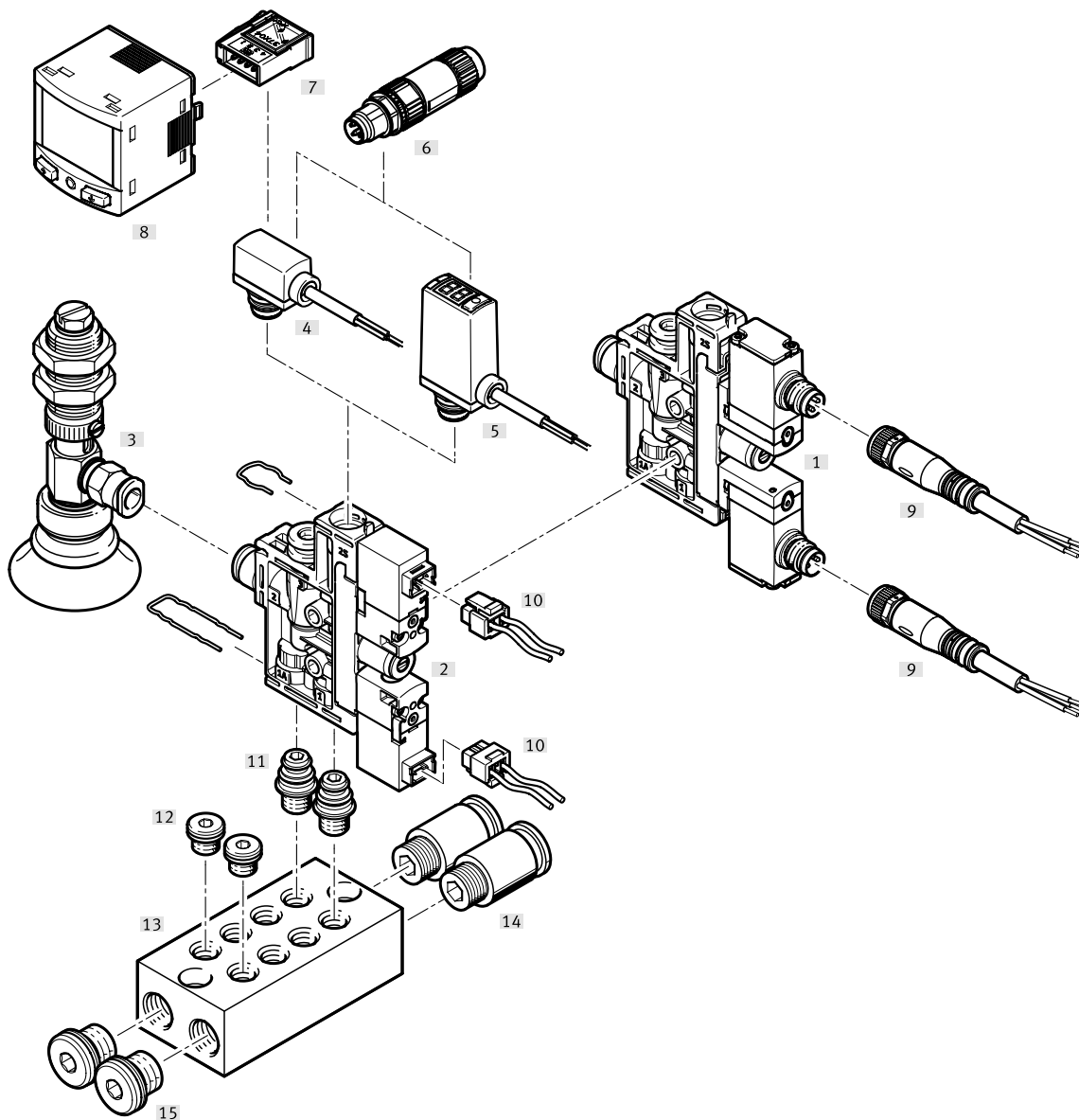
OVEL-...-V1B/V1V/B2B/B2V:

Pressure transmitter SPTE with an analogue output (→ page 18). Detection of analogue signals and conversion into digital signals with downstream signal converter SCDN with LCD display (→ page 23).

OVEL-...-V1PNLK/B2PNLK:

Pressure sensor SPAE with various switching outputs and LCD display, IO-Link® and teach-in function (→ page 20).

Peripherals overview



Mounting attachments and accessories

	OVEL-...PQ	OVEL-...P	→ Page/Internet
[1] Vacuum generators OVEL-...R8	■	■	ovel
[2] Vacuum generators OVEL-...H3	■	■	ovel
[3] Vacuum suction gripper ESG	■	■	esg
[4] Pressure transmitter SPTE	■	■	18
[5] Pressure sensor SPAE	■	■	20
[6] Plug NECU-S-M8G3/M12G3	■	■	23
[7] Plug NECU-S-ECG4	■	■	23
[8] Signal converter SCDN	■	■	23
[9] Plug socket with cable NEBA	■	■	23
[10] Plug socket with cable NEBV	■	■	23
[11] Mounting kit OABM-MK	–	■	16
[12] Blanking plug B-M7	–	■	23
[13] Common supply manifold OABM-P	–	■	14
[14] Push-in fitting QS	–	■	23
[15] Blanking plug B-1/8	–	■	23
– Suction cup holder ESH	■	■	esh
– Vacuum suction cup ESS	■	■	ess
– Vacuum filter OAFF	■	■	17

Type codes

001	Series	
OVEL	Vacuum suction nozzle, electropneumatic	
002	Vacuum generation	
5	Laval nozzle 0.45 mm	
7	Laval nozzle 0.7 mm	
10	Laval nozzle 0.95 mm	
003	Vacuum type	
H	High vacuum	
L	High suction rate	
004	Size [mm]	
10	10	
15	15	
005	Supply air connection	
P	For P linking	
PQ	QS connections, metric	
006	Vacuum connection	
VM7	Female thread M7	
VQ3	Push-in connector 3 mm	
VQ4	Push-in connector 4 mm	
VQ6	Push-in connector 6 mm	
007	Exhaust connection	
RQ	QS connections, metric	
UA	Open silencer UO	
UC	Closed silencer UC	

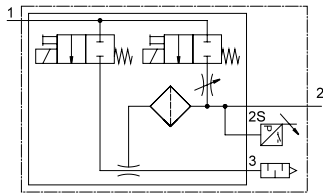
008	Ejector pulse connection	
	Via supply air connection	
Z	Additional connection	
009	Vacuum valve	
C	Normally closed	
010	Additional function	
	Without ejector pulse	
A	Electric ejector pulse	
011	Pressure measuring range vacuum sensor	
	Without vacuum sensor	
V1	0 ... -1 bar	
B2	-1 ... 1 bar	
012	Output signal vacuum sensor	
	Without vacuum sensor	
B	1 ... 5 V	
V	0 ... 10 V	
PNLK	PNP or NPN or IO-Link®	
013	Electrical connection	
H3	Connection pattern H, vertical plug	
R8	Individual connector M8, 3-pin	
014	Robot connection	
	None	
RA1	Universal robots	



Note

The ordering data include possible combinations.

Datasheet

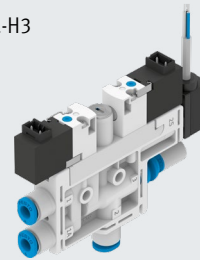


Function

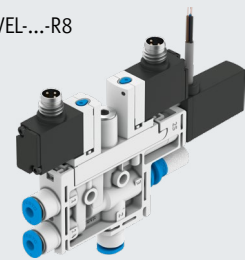
N/C, normally closed:

- With/without ejector pulse
- Push-in connectors
- Open silencer
- With/without vacuum sensor
- Prepared for common supply manifold

OVEL-...-H3



OVEL-...-R8



General technical data

Type	OVEL-5-H	OVEL-5-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	With through-hole On manifold rail				
Pneumatic connection 1	OVEL-...-P	Common line via manifold rail			
	OVEL-...-PQ-VQ3	For tubing O.D. 3 mm	–	–	–
	OVEL-...-PQ	For tubing O.D. 4 mm	For tubing O.D. 4 mm	For tubing O.D. 6 mm	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	For tubing O.D. 6 mm
Port for ejector pulse ¹⁾	OVEL-...-Z-A	Corresponds to the selected size of pneumatic port 1			

1) If there is no ejector pulse or the ejector pulse is generated via pneumatic port 1, the additional port for the ejector pulse is sealed 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	On/off valve, electric	
	Filter	
	Open silencer	
	OVEL-...-A	Ejector pulse, electrical
	OVEL-...-A	Flow control valve
	OVEL-...-V1B/V1V/B2B/B2V	Pressure transmitter
	OVEL-...-V1PNLK/B2PN-LK	Pressure sensor
Valve function	Closed	
Manual override	Non-detenting	

Datasheet

Operating and environmental conditions		OVEL with vacuum sensor	OVEL without vacuum sensor
Operating pressure	[bar]	2 ... 7	
Nominal operating pressure	[MPa]	0.4	
	[bar]	4	
	[psi]	58	
Operating medium		Compressed air to ISO 8573-1:2010 [7:4:4]	
Note on the 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 conformity) ²⁾		To EU EMC Directive	–
UKCA marking (see declaration of conformity) ²⁾		To UK EMC regulations	–
Certification ²⁾		c UL us - Listed (OL)	
KC marking ³⁾		KC EMC	–
Degree of protection		IP40	

1) More information www.festo.com/x/topic/crc

2) More information: www.festo.com/catalogue/ovel → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

3) Applies to products with vacuum sensor.

Performance data – High vacuum				
Type		OVEL-5-H	OVEL-7-H	OVEL-10-H
Max. vacuum	[%]	89	92	92
Operating pressure for max. vacuum	[MPa]	0.42	0.45	0.38
	[bar]	4.2	4.5	3.8
	[psi]	60.9	65.25	55.1
Operating pressure for max. suction rate	[MPa]	0.3	0.4	0.4
	[bar]	3	4	4
	[psi]	43.5	58	58
Max. suction rate with respect to atmosphere	[l/min]	4	17	21
Pressurisation time at nominal operating pressure 4 bar (for 1 l volume) ¹⁾	[s]	2	1.2	1
Sound pressure level at $p_1 = 4$ bar	[db(A)]	64	61	68

1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar

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
Pressurisation time at nominal operating pressure 4 bar (for 1 l volume) ¹⁾	[s]	0.8	0.4	0.4
Sound pressure level at $p_1 = 4$ bar	[db(A)]	52	64	67

1) Time required to reduce the vacuum to a residual vacuum of –0.05 bar

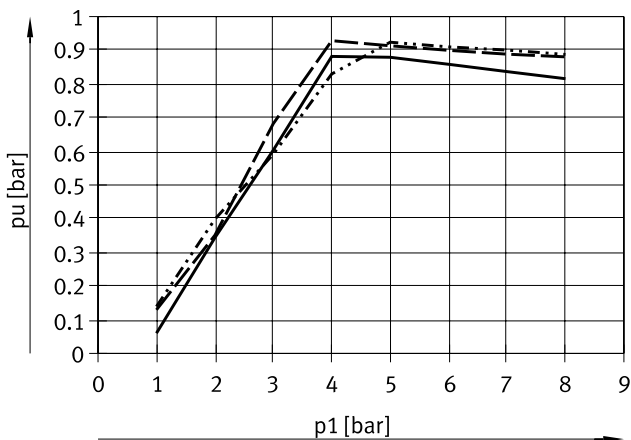
Datasheet

Technical data – Electrical connection						
Type	OVEL without ejector pulse		OVEL with ejector pulse			
Solenoid valve						
Electrical connection input	Function	Vacuum generation				
		–	Ejector pulse			
	Connection type	Plug	2x plugs			
	Connection technology	Plug pattern H				
	Number of pins/cores	2				
	Plug pattern					
	Type of mounting	Snap-locking				
Operating voltage range	[V DC]	21.6 ... 26.4				
Duty cycle	[%]	100				
Characteristic coil data, 24 V DC	[W]	1.0 (...H3), 1.28 (...R8)				
Vacuum sensor						
Electrical connection output	Function	Sensor				
	Connection type	Cable				
	Connection technology	Open end				
	Number of pins/cores	3				
Cable diameter	[mm]	2.9 ±0.1				
Cable length	[m]	2.5				
Nominal conductor cross section	[mm²]	0.14				
Cable characteristic		Suitable for energy chains				
Technical data – Vacuum sensor						
Type	OVEL-...-V1B	OVEL-...-V1V	OVEL-...-B2B	OVEL-...-B2V	OVEL-...-V1PNLK	OVEL-...-B2PNLK
Mechanical system						
Measurement method		Piezoresistive pressure sensor			Piezoresistive pressure sensor with display	
Pressure measuring range	[MPa]	–0.1 ... 0		–0.1 ... 0.1	–0.1 ... 0	–0.1 ... 0.1
	[bar]	–1 ... 0		–1 ... 1	–1 ... 0	–1 ... 1
	[psi]	–14.5 ... 0		–14.5 ... 14.5	–14.5 ... 0	–14.5 ... 14.5
Setting options		–			Teach-in	
					IO-Link®	
					Via display and buttons	
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/C or N/O, switchable	
Switching function		–			Freely programmable	
Analogue output	[V]	1 ... 5	0 ... 10	1 ... 5	0 ... 10	–
Materials						
Housing		Reinforced PA				
Silencer		PE				
Jet nozzle		Wrought aluminium alloy				
Female nozzle		POM				
Filter		POM				
Adjusting screw		Steel				
Connecting thread		POM				
Screws		Steel				
Cable sheath		PVC (colour: grey)				
Seals		NBR				
Note on materials		RoHS-compliant				
LABS (PWIS) conformity		VDMA24364-B1/B2-L				

Datasheet

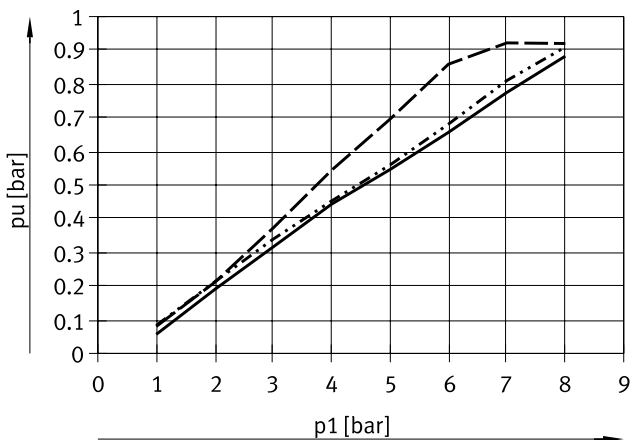
Vacuum p_u as a function of operating pressure p_1

High vacuum



— OVEL-5-H
 OVEL-7-H
 - - - OVEL-10-H

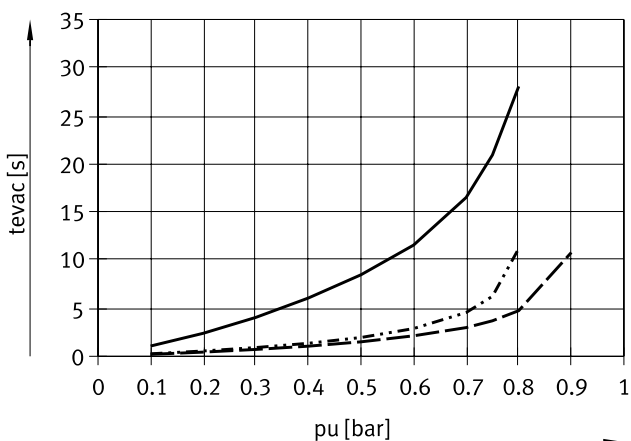
High suction rate



— OVEL-5-L
 OVEL-7-L
 - - - OVEL-10-L

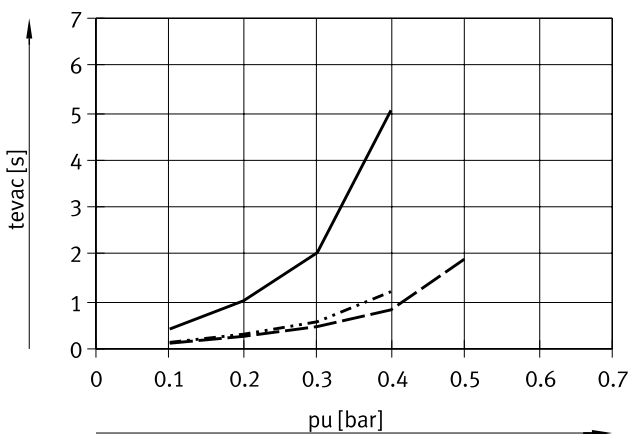
Evacuation time t_{evac} as a function of vacuum p_u for 1 l volume at 4 bar operating pressure

High vacuum



— OVEL-5-H
 OVEL-7-H
 - - - OVEL-10-H

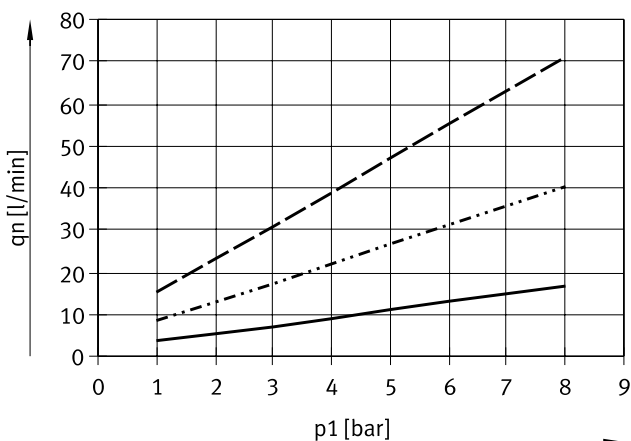
High suction rate



— 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

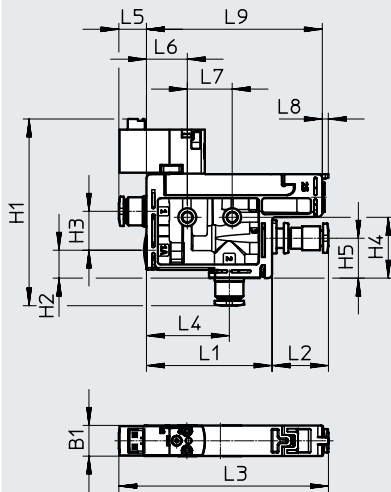
Datasheet

Dimensions

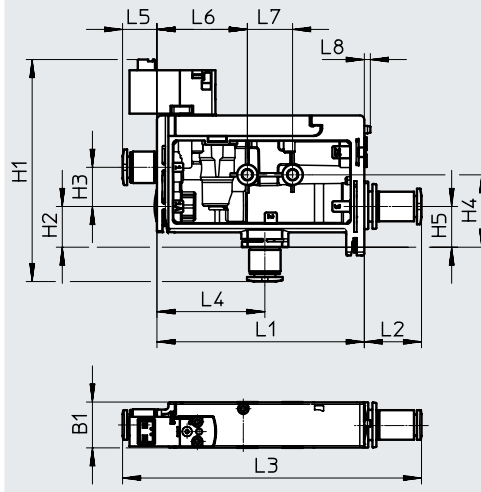
Download CAD data → www.festo.com

- [] Without ejector pulse and vacuum sensor
 [RQ] Push-in connector on pneumatic connection 3
 [H3] Electrical connection via vertical plug, plug pattern H

OVEL-5

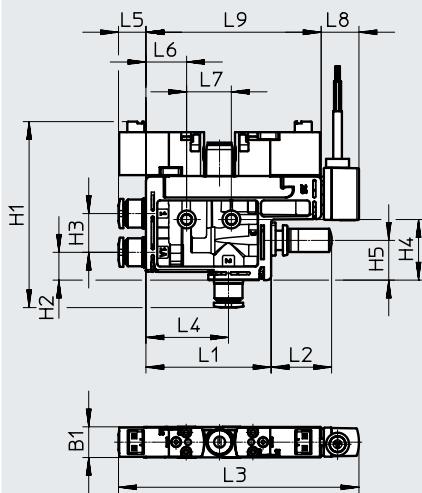


OVEL-7/10

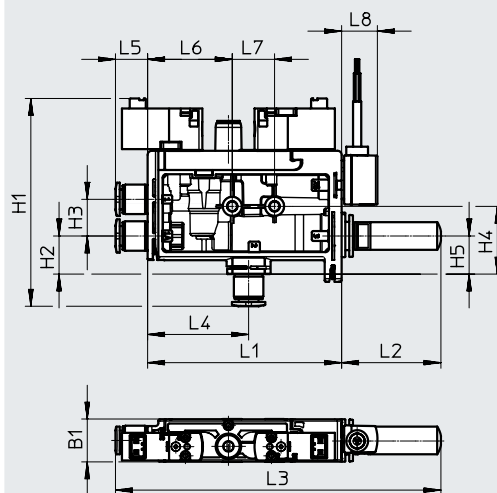


- [A] With ejector pulse
 [UA] Open silencer on pneumatic port 3
 [V1B]/[V1V]/[B2B]/[B2V]/[V1PNLK]/[B2PNLK] Vacuum sensor
 [H3] Electrical connection via vertical plug, plug pattern H

OVEL-5



OVEL-7/10



Type	B1 ±0.3	H1 ±0.8	H2 ±0.5	H3 ±0.5	H4 ±0.2	H5 ±0.5	L1 ±0.8	L2 ±0.8		L3 ±2		L4 ±0.5	L5 ±0.5	L6 ±0.2	L7 ±0.2	L8 ±0.8	L9 ±0.8
								[RQ]	[UA]	[RQ]	[UA]						
OVEL-5-...H3	10.3	62	9.4	13	20.4	13	42	19	20.2	70	71	27.7	9.4	13.7	15	2	59
OVEL-5-...V1B/V1V/B2B/B2V-H3										81	81					13	
OVEL-5-...V1PNLK/B2PNLK-H3										99	99					31	
OVEL-7-H-...H3	15.2	72	13.5	13	24	13.5	68.8	19	35.5	97	114	35.8	9.4	30	15	2	-
OVEL-7-H-...V1B/V1V/B2B/B2V-H3										97	114					13	
OVEL-7-H-...V1PNLK/B2PNLK-H3										109	114					31	
OVEL-7-L-...H3	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15	2	-
OVEL-7-L-...V1B/V1V/B2B/B2V-H3										99	116					13	
OVEL-7-L-...V1PNLK/B2PNLK-H3										111	116					31	
OVEL-10-...H3	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15	2	-
OVEL-10-...V1B/V1V/B2B/B2V-H3										99	116					13	
OVEL-10-...V1PNLK/B2PNLK-H3										111	116					31	

Datasheet

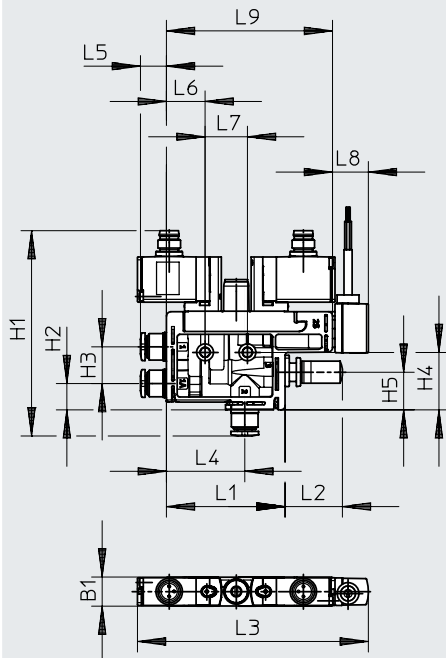
Dimensions

Download CAD data → www.festo.com

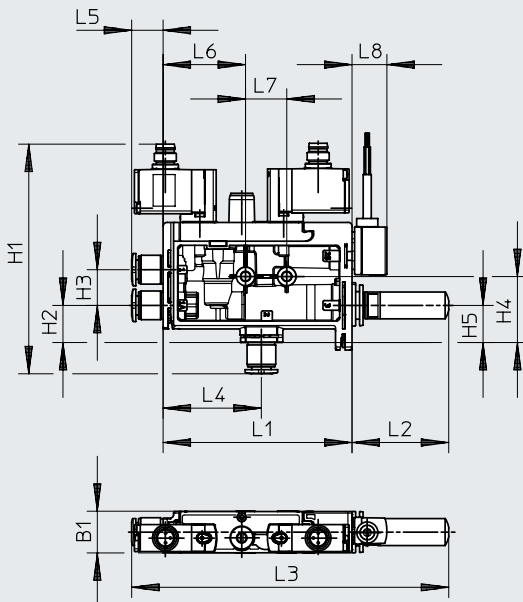
[A] With ejector pulse

[R8] Electrical connection via individual plug M8, 3-pin

OVEL-5



OVEL-7/10



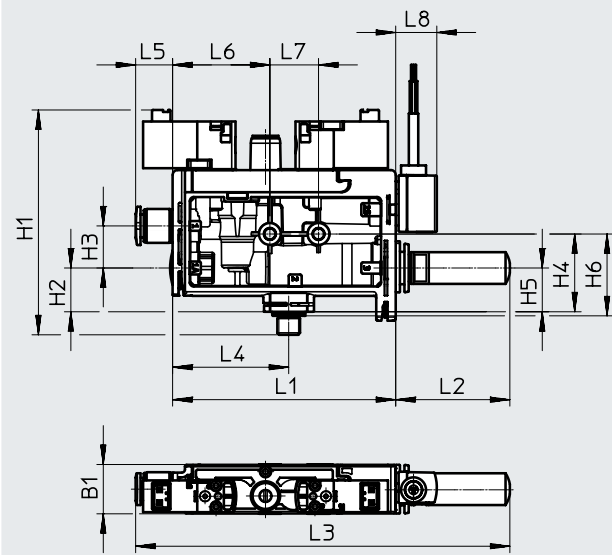
	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L9
	±0.3	±0.8	±0.5	±0.5	±0.2	±0.5	±0.8	±0.8	±2	±0.5	±0.5	±0.2	±0.2	±0.8	±0.8
OVEL-5-H/L-10-P-...-VQ...-UA-...-B/V...-R8	10.3	73	9.4	13	20.4	13	42	20.2	82	27.7	10.3	13.7	15	13	59
OVEL-5-H/L-10-P-...-VQ...-UA-...-PNLK-R8									99					31	
OVEL-5-H/L-10-P-...-VQ...-UA-...-R8									72					2	
OVEL-5-H-10-P-...-VQ...-UA-...-B/V...-R8									82					13	
OVEL-5-H-10-P-...-VQ...-UA-...-PNLK-R8									99					31	
OVEL-5-H-10-P-...-VQ...-UA-...-R8									73					2	
OVEL-7-H-...-VQ4-UA-...-B/V...-R8	15.2	84	13.5	13	24	13.5	68.8	35.5	114	35.8	10.3	30	15	13	-
OVEL-7-L-...-VQ6-UA-...-B/V...-R8		86							116		11.4			31	
OVEL-10-H/L-...-VQ6-UA-...-B/V...-R8		84							114		10.3			2	
OVEL-7-H-...-VQ4-UA-...-PNLK...-R8		86							116		11.4			13	
OVEL-7-L-...-VQ6-UA-...-PNLK...-R8		84							114		10.3			31	
OVEL-10-H/L-...-VQ6-UA-...-PNLK...-R8		86							116		11.4			2	
OVEL-7-H-...-VQ4-UA-...-R8		84							114		10.3			13	
OVEL-7-L-...-VQ6-UA-...-R8		86							116		11.4			31	
OVEL-10-H/L-...-VQ6-UA-...-R8		84							108		10.3			2	
OVEL-7-H-...-VQ4-UC-...-B/V...-R8		86							110		11.4			13	
OVEL-10-H-...-VQ6-UC-...-B/V...-R8		84							109		10.3			31	
OVEL-7-H-...-VQ4-UC-...-PNLK...-R8		86							111		11.4			2	
OVEL-10-H-...-VQ6-UC-...-PNLK...-R8		84							108		10.3			13	
OVEL-7-H-...-VQ4-UC-...-R8		86							110		11.4			31	
OVEL-10-H-...-VQ6-UC-...-R8		84							110		11.4			2	

Datasheet

Dimensions

Download CAD data → www.festo.com

Vacuum generators for UR-Plus gripper

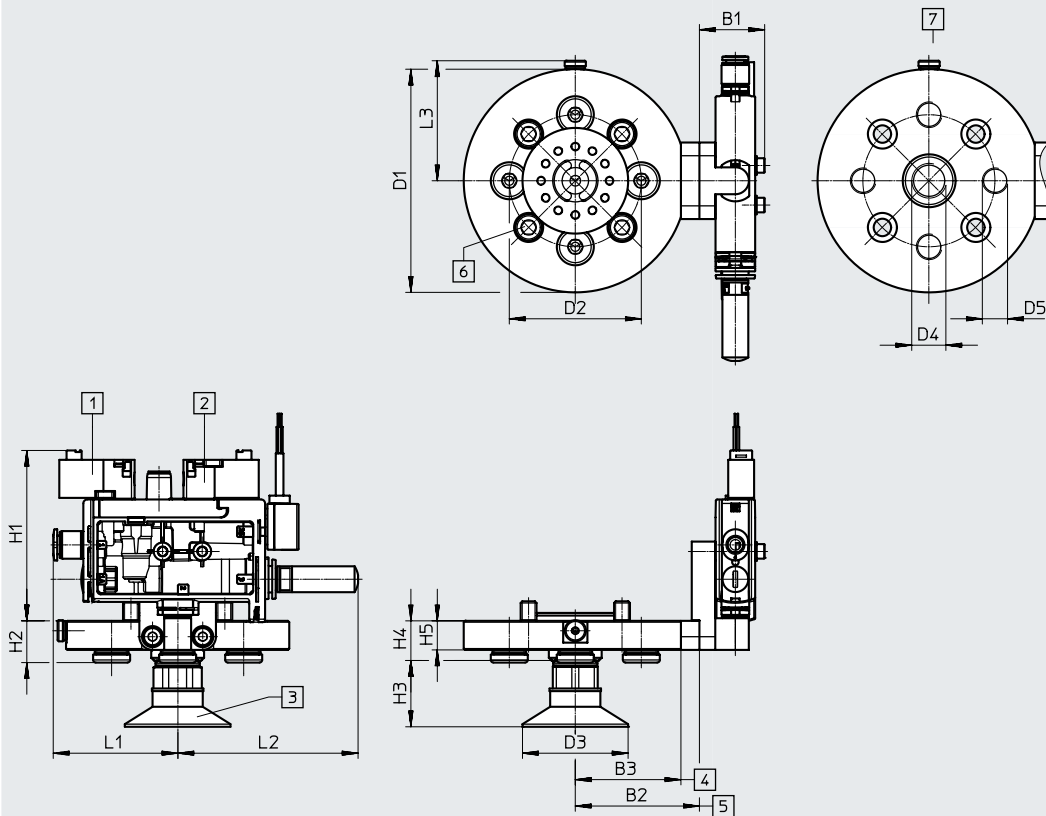


Type	B1	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8
OVEL-10-...-VM7-UA-CA-V1V-H3	±0.3	±0.8	±0.5	±0.5	±0.2	±0.5	±0.2	±0.8	±0.8	±2	±0.5	±0.5	±0.2	±0.2	±0.8
OVEL-10-...-VM7-UA-CA-V1V-H3	15.2	62	13.5	13	24	13.5	25.3	68.8	35.5	116	35.8	11.4	30	15	13

Dimensions

Download CAD data → www.festo.com

Suction gripper kit for robots



Type	B1	B2	B3	D1 Ø	D2 Ø	D3 Ø	D4	D5	H1	H2	H3	H4	H5	L1	L2	L3
OVEL-10-...-VM7-UA-CA-V1V-H3-RA1	24.7	47	40	84.5	50	40	G1/4	G1/8	64.5	15.8	25.1	15	11	47.2	68.2	45.5

Datasheet

Ordering data – high vacuum						
Vacuum sensor pressure measuring range	Vacuum sensor output signal	Exhaust port	Nominal width of Laval nozzle	Weight	Part no.	Type
[bar]			[mm]	[g]		
Vacuum generators, for pneumatic links						
-1 ... 0	PNP or NPN or IO-Link®	UC	0.45	78	8141086	OVEL-5-H-10-P-VQ4-UC-C-A-V1PNLK-H3
			0.7	93	8141087	OVEL-7-H-15-P-VQ4-UC-C-A-V1PNLK-H3
			0.95	93	8141089	OVEL-10-H-15-P-VQ6-UC-C-A-V1PNLK-H3
–	–	UC	0.45	44	8141094	OVEL-5-H-10-P-VQ4-UC-C-A-H3
			0.7	59	8141095	OVEL-7-H-15-P-VQ4-UC-C-A-H3
			0.95	59	8141097	OVEL-10-H-15-P-VQ6-UC-C-A-H3
Vacuum generators, for metric QS connections (electrical connection: plug pattern H, vertical plug)						
-1 ... 0	1 ... 5 V	UA	0.45	74	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	89	8049048	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1B-H3
	0 ... 10 V	UA	0.45	74	8049049	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-H3
			0.7	89	8049050	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-H3
			0.95	89	8049051	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-H3
	PNP or NPN or IO-Link®	UA	0.45	77	8049052	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-H3
		UA	0.7	92	8049053	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-H3
		UC	0.7	92	8141092	OVEL-7-H-15-PQ-VQ4-UC-C-A-V1PNLK-H3
		UA	0.95	92	8049054	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-H3
		UC	0.95	92	8141093	OVEL-10-H-15-PQ-VQ6-UC-C-A-V1PNLK-H3
	-1 ... 1	0 ... 10 V	UA	0.45	74	8069567
0.7				89	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®		UA	0.45	77	8069570	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2PNLK-H3
			0.7	92	8069571	OVEL-7-H-15-PQ-VQ4-UA-C-A-B2PNLK-H3
			0.95	92	8069572	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3
–	–	UC	0.45	43	8141099	OVEL-5-H-10-PQ-VQ4-UC-C-A-H3
			0.7	58	8141100	OVEL-7-H-15-PQ-VQ4-UC-C-A-H3
			0.95	58	8142126	OVEL-10-H-15-PQ-VQ6-UC-C-A-H3
Vacuum generators, for metric QS connections (electrical connection: individual plug M8, 3-pin)						
-1 ... 0	0 ... 10 V	UA	0.45	94	8152243	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-R8
			0.7	109	8152244	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-R8
			0.95	109	8152245	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-R8
	PNP or NPN or IO-Link®		0.45	97	8152240	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-R8
			0.7	112	8152241	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-R8
			0.95	112	8152242	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-R8
Vacuum generators for UR-Plus gripper						
-1 ... 0	0 ... 10 V	UA	0.95	88	8129122	OVEL-10-H-15-PQ-VM7-UA-C-A-V1V-H3
Suction gripper kit for robots						
-1 ... 0	0 ... 10 V	UA	0.95	300	8121043	OVEL-10-H-15-PQ-VM7-UA-C-A-V1V-H3-RA1

Ordering data – Modular product system

Ordering table		Conditions	Code	Enter code
Type	OVEL			
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 links 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	
	Silencer closed	[8]	-UC	
Ejector pulse connection	Via pneumatic connection 1			
	Additional port (as pneumatic connection 1)		-Z	
Vacuum valve	Normally closed		-C	-C
Additional function	Without ejector pulse			
	Ejector pulse, electrical	[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	
Electrical connection	Plug pattern H, vertical plug		-H3	-H3
	M8 individual plug, 3-pin		-R8	

- [1] 10 Not with Laval nozzle nominal width 7, 10.
 [2] 15 Not with Laval nozzle nominal width 5.
 [3] VQ3 Only with Laval nozzle nominal width 5.
 [4] VQ4 Only with Laval nozzle nominal width 5 or Laval nozzle nominal width 7 in combination with ejector characteristic H.
 [5] VQ6 Only with Laval nozzle nominal width 10 or Laval nozzle nominal width 7 in combination with ejector characteristic L.
 [6] A Mandatory information in combination with ejector pulse port Z.
 [7] B, V, PNLK Mandatory information in combination with vacuum sensor pressure measuring range B2, V1.
 [8] UC Only with vacuum type H, high vacuum

Accessories

Common supply manifold OABM-P

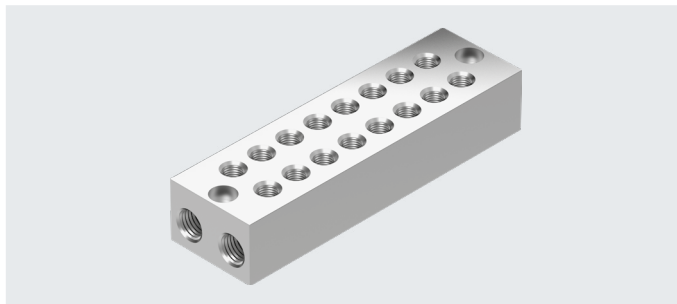
For vacuum generator

OVEL-...-P

- Up to 8 vacuum generators OVEL on a common supply manifold
- Common compressed air supply via common supply manifold

 **Note**

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



General technical data

Pneumatic connection 1	G1/8
Type of mounting	With through-hole
Min. tightening torque [Nm]	0.3
Max. tightening torque [Nm]	3.3

Operating and environmental conditions

Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress
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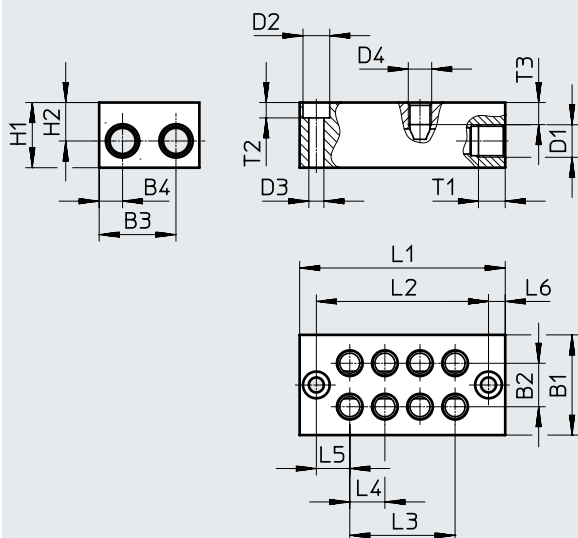
1) More information www.festo.com/x/topic/crc

Materials

Sub-base	Wrought aluminium alloy
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Dimensions

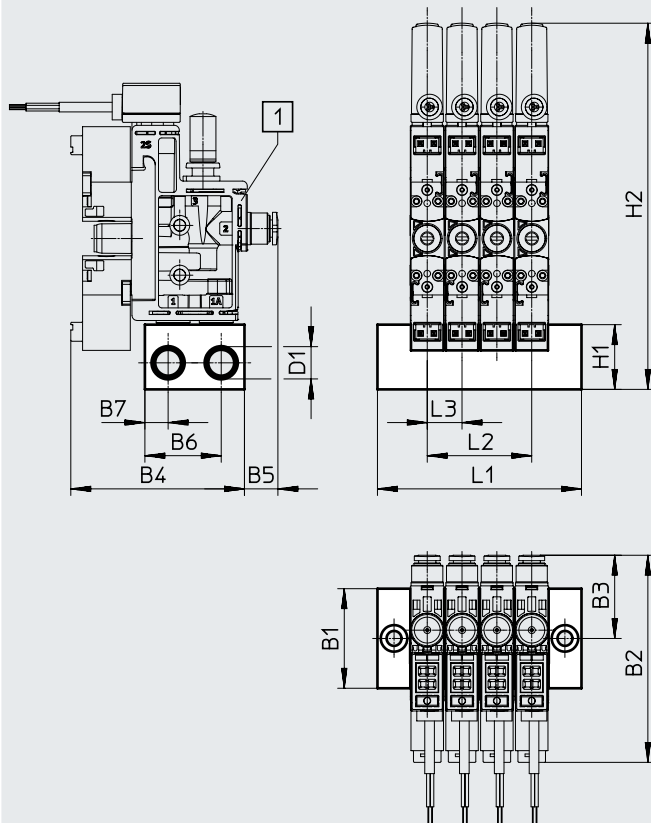
Download CAD data → www.festo.com



Type	B1	B2	B3	B4	D1	D2 ø	D3 ø	D4	H1	H2	L1	L2	L3	L4	L5	L6	T1	T2	T3
OABM-P-G3-10-2	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5	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	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5	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						

Accessories

Dimensions

Download CAD data → www.festo.com**Note**

Combined allocation with OVEL-5 and OVEL-7/-10 is possible only with common supply manifolds OABM-...-15.

Use mounting kit OABM-MK for mounting 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

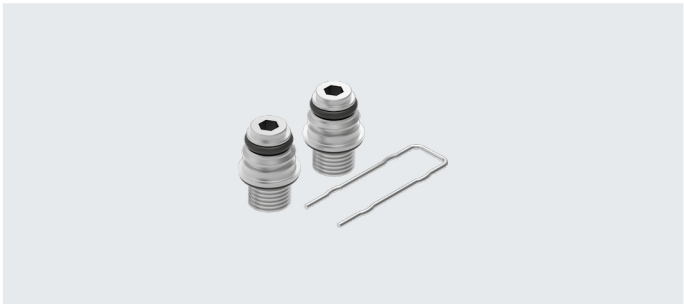
Type		B1	B2	B3	B4	B5	B6	B7	D1	H1	H2	L1	L2	L3
OABM-P-G3-10-2	with OVEL-5	30	62	25	52	10	23	7	G1/8	19.5	110	40.5	10.5	10.5
OABM-P-G3-10-4												61.5	31.5	
OABM-P-G3-10-8												103.5	73.5	
OABM-P-G3-15-2	with OVEL-7/10	30	74	31	57	16	23	7	G1/8	19.5	125	51.5	15.5	15.5
OABM-P-G3-15-4											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

Ordering data					
Common supply manifold	Number of device positions	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) More information www.festo.com/x/topic/crc

Accessories

Mounting kit OABM-MK
For common supply manifold OABM-P



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

Operating and environmental conditions	
Corrosion resistance class CRC ¹⁾	2 - Moderate corrosion stress

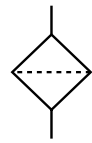
1) More information www.festo.com/x/topic/crc

Materials	
Hollow bolt	Wrought aluminium alloy
Seals	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

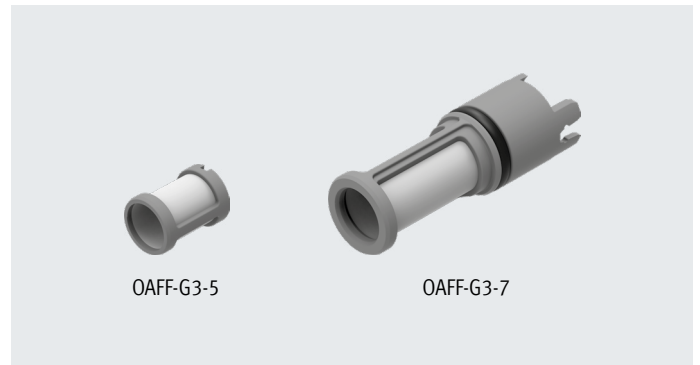
Ordering data			
	Weight [g]	Part no.	Type
For common supply manifold OABM-P	7	8065850	OABM-MK-G3

Accessories

Vacuum filter OAFF



-  - Operating pressure
-95 ... 0 kPa



OAFF-G3-5

OAFF-G3-7

General technical data

Type of mounting		Push-on
		Snap-in
Grade of filtration	[µm]	40
Ejector pulse suitability	[bar]	≤7

Operating and environmental conditions

Operating pressure	[kPa]	-95 ... 0
	[bar]	-0.95 ... 0
	[psi]	-13.775 ... 0
Operating medium		Atmospheric air based on ISO 8573-1:2010 [7:-:-]
Ejector pulse suitability	[MPa]	0.7
	[bar]	7
	[psi]	101.5

Materials

Type	OAFF-G3-5	OAFF-G3-7
Housing	POM	
Filter	Fabric, PA	
Seals	-	NBR
Note on materials	RoHS-compliant	
LABS (PWIS) conformity	VDMA24364-B1/B2-L	

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

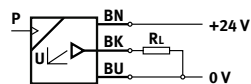
1) Packaging unit

Accessories

Pressure transmitter SPTE

(Order code in modular product system: OVEL-...-V1B/V1V/B2B/B2V, OVTL-...-V)

- Pressure measuring ranges
–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 23).

**General technical data**

Certification	RCM
	c UL us - Recognized (OL)
CE marking (see declaration of conformity) ¹⁾	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) ¹⁾	To UK EMC regulations To UK RoHS regulations
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L

1) More information: www.festo.com/catalogue/spte → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element

Type	SPTE-V1R	SPTE-B2R
Measured variable	Relative pressure	
Measurement method	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 the operating/pilot medium	Lubricated operation 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 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

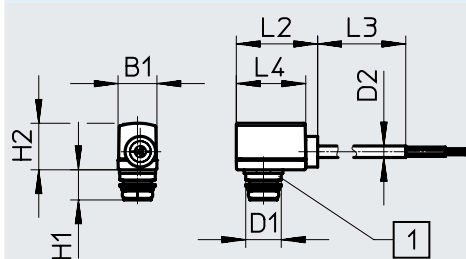
Type	SPTE-...-V-2.5K	SPTE-...-B-2.5K
Analogue output [V]	0 ... 10	1 ... 5
Rise time [ms]	1	
Min. load resistance of voltage output [kΩ]	15	

Accessories

Output, additional data		
Short circuit current rating	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	
Electromechanics		
Electrical connection	Cable, 3-core, 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	Reinforced PA	
Immission/Emission		
Degree of protection	IP40	
Corrosion resistance class CRC ¹⁾	2	

1) More information www.festo.com/x/topic/crc

Dimensions

Download CAD data → www.festo.com

[1] Pressure supply port: pin-type cartridge 10 mm

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

Ordering data

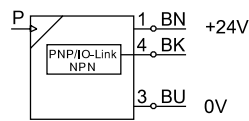
Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Analogue output [V]	Order code in the modular product system		Part no.	Type
				OVEL	OVTL		
Cartridge 10 mm	Cable, 3-core, open end	-1 ... 0	0 ... 10	V1V	V	8025974	SPTE-V1R-PC10-V-2.5K
			1 ... 5	V1B	–	8025975	SPTE-V1R-PC10-B-2.5K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

Accessories

Pressure sensor SPAE

(Order code in the modular product system: OVEL-...-V1PNLK/B2PNLK, OVTL-...-PNLK)

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

**General technical data**

Certification	RCM
	c UL us - Recognized (OL)
CE marking (see declaration of conformity) ¹⁾	To EU EMC Directive To EU RoHS Directive
UKCA marking (see declaration of conformity) ¹⁾	To UK EMC regulations To UK RoHS regulations
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B2-L

1) More information: www.festo.com/catalogue/spae → Support/Downloads.

If the devices are subject to usage restrictions in residential, commercial or light-industrial environments, further measures for the reduction of the emitted interference may be necessary.

Input signal/measuring element

Type	SPAE-V1R	SPAE-B2R
Measured variable	Relative pressure	
Measurement method	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 the operating/pilot medium	Lubricated operation 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 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, switchable
Max. output current [mA]	100

Accessories

Measured value display		
Display range start value	[% FS]	0
Display range end value	[% FS]	99
Output, additional data		
Short circuit current rating	For all electrical connections	
Communication interface		
Protocol	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 kBd)	
IO-Link®, SIO mode support	Yes	
IO-Link®, port class	A	
IO-Link®, process data width OUT	0 bytes	
IO-Link®, process data width IN	2 bytes	
IO-Link®, process data contents IN	2 bit BDC (pressure monitoring)	
	14 bit PDV (pressure measured value)	
IO-Link®, minimum cycle time	[ms]	3
IO-Link®, data memory required	0.5 KB	
Electronics		
Operating voltage range DC	[V]	18 ... 30
Reverse polarity protection	For all electrical connections	
Electromechanics		
Electrical connection	Cable, 3-core, 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	

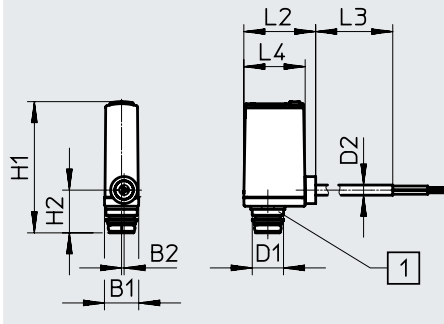
Accessories

Immission/Emission	
Degree of protection	IP40
Corrosion resistance class CRC ¹⁾	2

1) More information www.festo.com/x/topic/crc

Dimensions

Download CAD data → www.festo.com

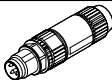
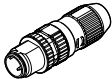


[1] Pressure supply port: pin-type cartridge 10 mm

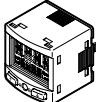
Type	B1	B2	D1 Ø	D2 Ø	H1	H2	L2	L3	L4
SPAE-...-PC10	9.8	0.7	8.9	2.9	~37.5	12.2	20.5	2500	17.5

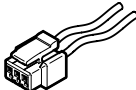
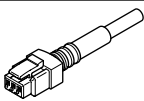
Ordering data						
Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Order code in the modular product system		Part no.	Type
			OVEL	OVTL		
Cartridge 10 mm	Cable, 3-core, open end	-1 ... 0	V1PNLK	PNLK	8025978	SPAE-V1R-PC10-PNLK-2.5K
		-1 ... 1	B2PNLK	—	8025979	SPAE-B2R-PC10-PNLK-2.5K

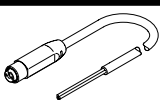
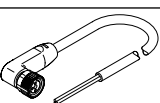
Accessories

Ordering data – Plug NECU-S-M8G3/M12G3			Datasheets → 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			Datasheets → 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			Datasheets → Internet: scdn	
	Measured variable	Part no.	Type	
	Voltage	8035555	SCDN-2V-EC4-PNLK-L1	

Ordering data – Plug socket with cable NEBV					Datasheets → Internet: nebv	
	Electrical connection		Cable length [m]	Part no.	Type	
	2-pin socket 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	
	2-pin socket 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 – Connecting cable NEBA					Datasheets → Internet: neba	
	Electrical connection	Number of cores	Cable length [m]	Part no.	Type	
	M8x1, straight socket	3	1	8078222	NEBA-M8G3-U-1-N-LE3	
			2,5	8078223	NEBA-M8G3-U-2.5-N-LE3	
			5	8078224	NEBA-M8G3-U-5-N-LE3	
			2,5	8078264	NEBA-M8CG3-U-2.5-N-LE3	
	Ø8 mm, straight socket (snap-locking)		5	8078265	NEBA-M8CG3-U-5-N-LE3	
			2,5	8078230	NEBA-M8W3-U-2.5-N-LE3	
			5	8078231	NEBA-M8W3-U-5-N-LE3	

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.