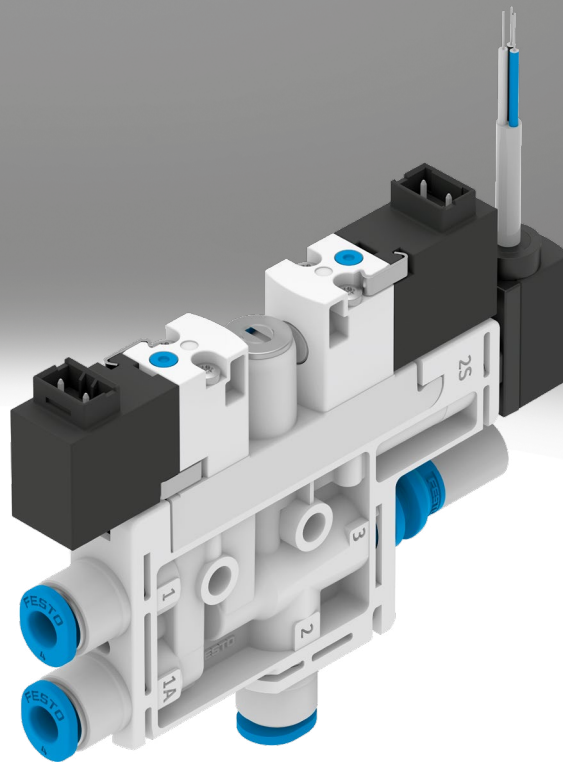


Vacuum generators OVEL

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

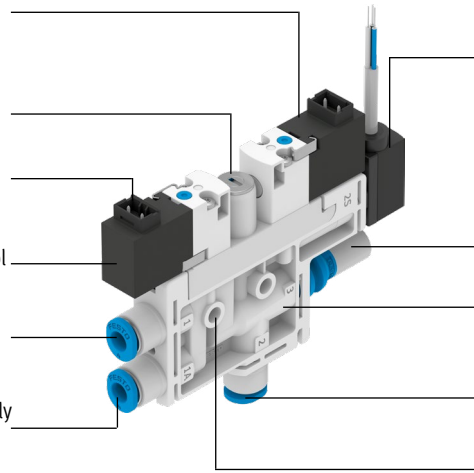
Flow control screw to adjust the ejector pulse

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

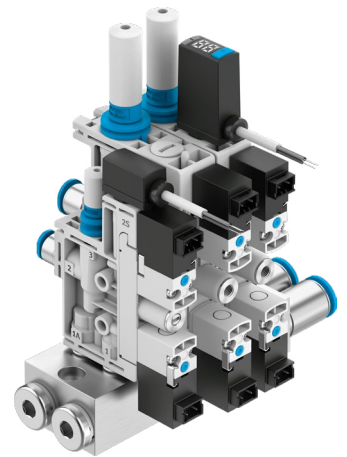
- Low-cost, compact vacuum generator
- Low weight
- Various performance levels and vacuum types
- Short switching times thanks to integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Easy to install using H3 plugs and push-in fittings
- Straightforward mounting with retaining screws

- 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 func-

tion, 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.

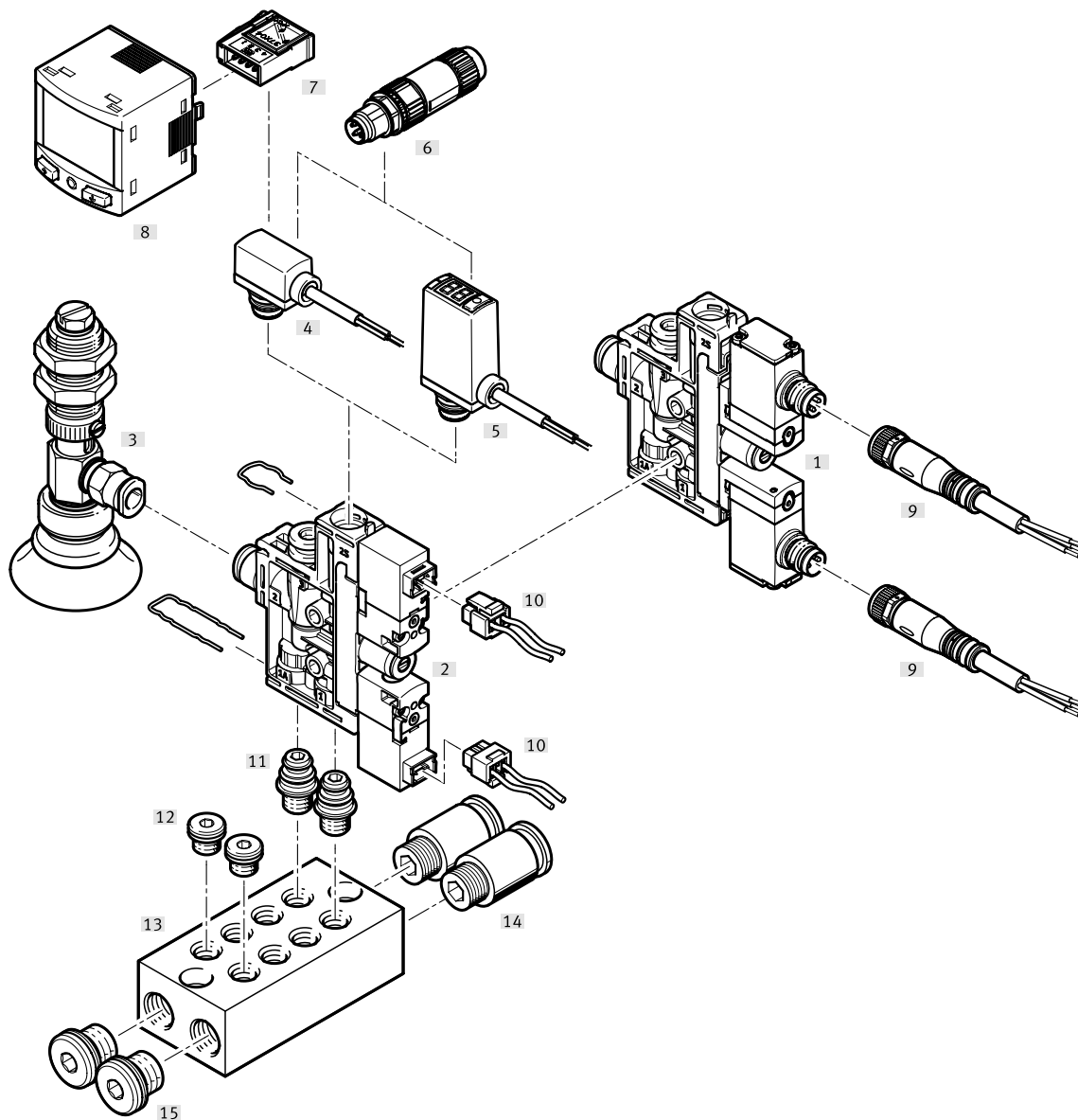
OVEL...-V1B/V1V/B2B/B2V:

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	

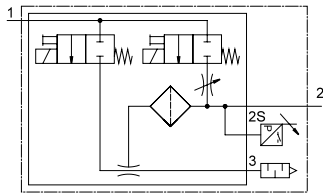
008	Ejector pulse connection	
	Via supply air connection	
Z	Additional connection	
009	Vacuum valve	
C	Normally closed	
010	Additional function	
	Without ejector pulse	
A	Electric ejector pulse	
011	Pressure measuring range vacuum sensor	
	Without vacuum sensor	
V1	0 ... -1 bar	
B2	-1 ... 1 bar	
012	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.

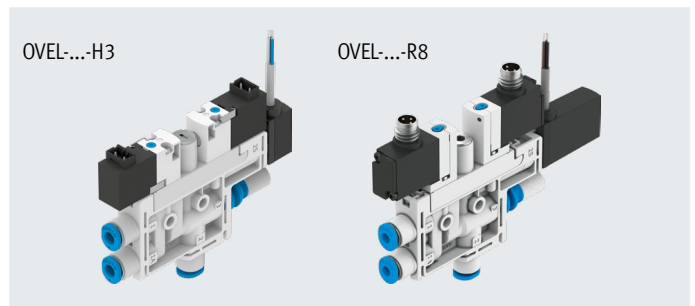
Datasheet



Function

N/C, normally closed:

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



General technical data		OVEL-5-H	OVEL-5-L	OVEL-7-H	OVEL-7-L	OVEL-10-H/L
Type						
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
Port for ejector pulse ¹⁾	OVEL-...-ZA	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		OVEL-...-UA	OVEL-...-RQ
Type			
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/B2PNLK	Pressure sensor	
Valve function		Closed	
Manual override		Non-detenting	

Datasheet

Operating and environmental conditions		
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⁾	cUL 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

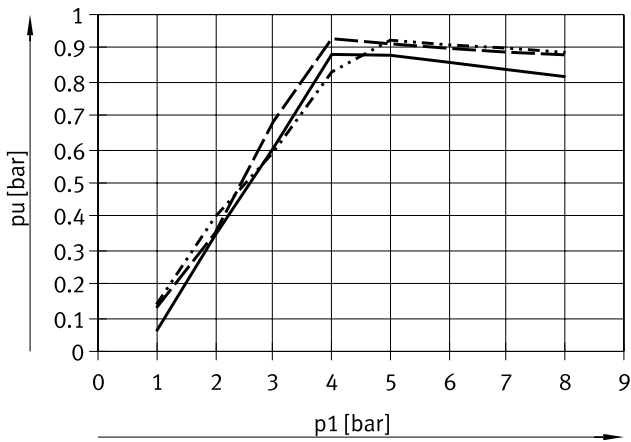
Datasheet

Technical data – Electrical connection		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	[mm ²]	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

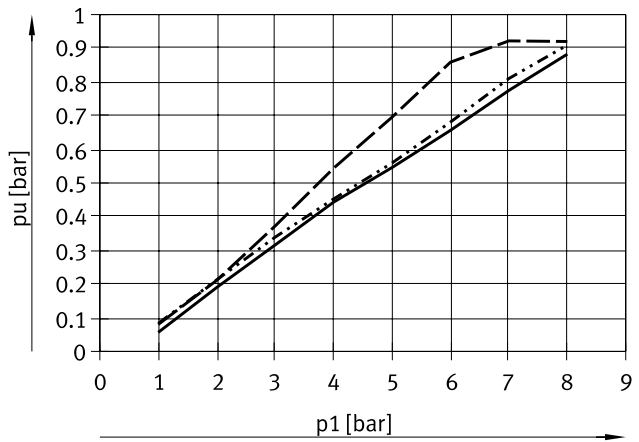
Vacuum p_u as a function of operating pressure p_1

High vacuum



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

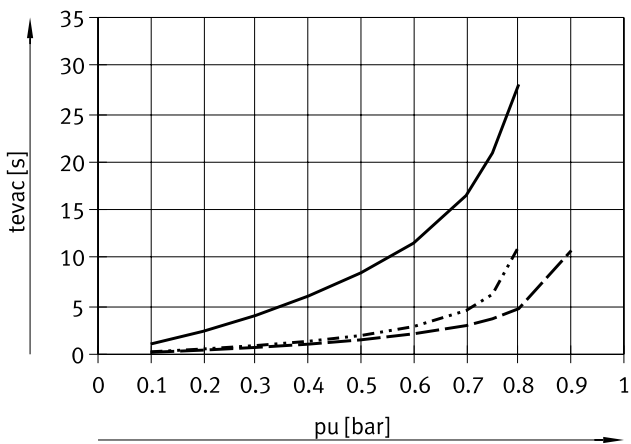
High suction rate



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

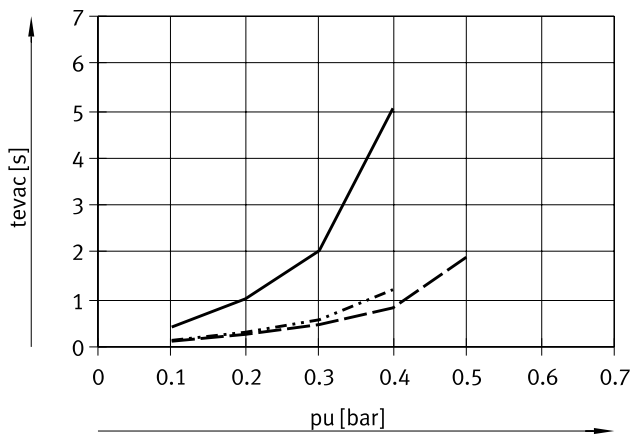
Evacuation time t_{evac} as a function of vacuum p_u for 1 l volume at 4 bar operating pressure

High vacuum



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

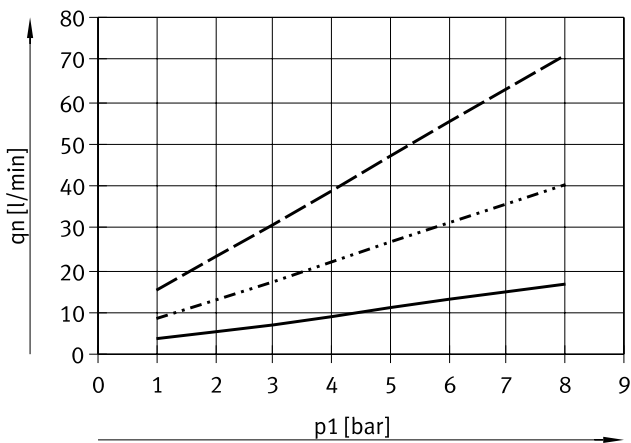
High suction rate



- 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

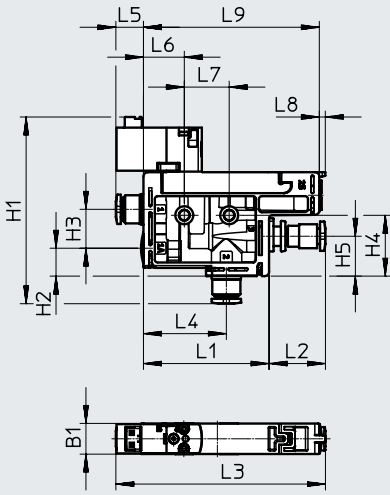
Datasheet

Dimensions

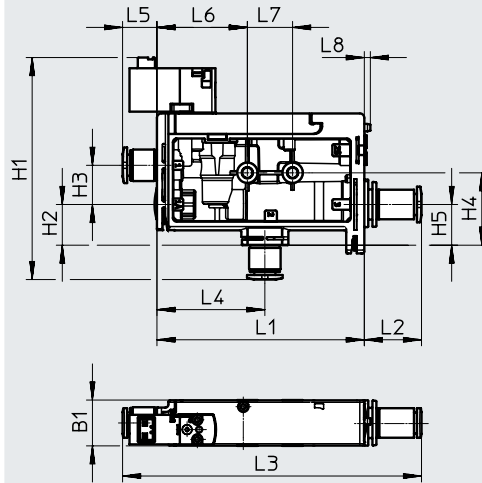
Download CAD data → www.festo.com

- [] 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

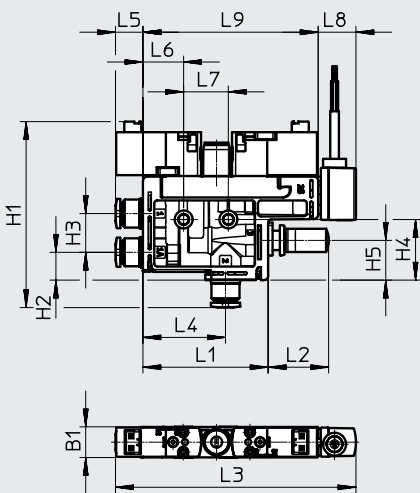


OVEL-7/10

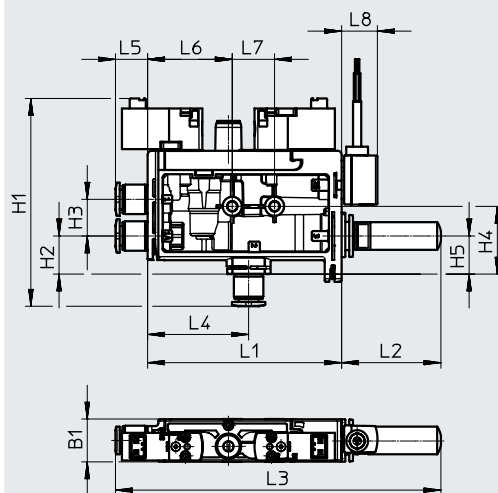


- [A] With ejector pulse
- [UA] Open silencer on pneumatic port 3
- [V1B]/[V1V]/[B2B]/[B2V]/[V1PNLK]/[B2PNLK] Vacuum sensor
- [H3] Electrical connection via vertical plug, plug pattern H

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		L3		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									
OVEL-5-...-V1B/V1V/B2B/B2V-H3	10.3	62	9.4	13	20.4	13	42	19	20.2	81	81	27.7	9.4	13.7	15	13	59
OVEL-5-...-V1PNLK/B2PNLK-H3										99	99						31
OVEL-7-H-...-H3										97	114						2
OVEL-7-H-...-V1B/V1V/B2B/B2V-H3	15.2	72	13.5	13	24	13.5	68.8	19	35.5	97	114	35.8	9.4	30	15	13	-
OVEL-7-H-...-V1PNLK/B2PNLK-H3										109	114						31
OVEL-7-L-...-H3										99	116						2
OVEL-7-L-...-V1B/V1V/B2B/B2V-H3	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15	13	-
OVEL-7-L-...-V1PNLK/B2PNLK-H3										111	116						31
OVEL-10-...-H3										99	116						2
OVEL-10-...-V1B/V1V/B2B/B2V-H3	15.2	74	13.5	13	24	13.5	68.8	19	35.5	99	116	35.8	11.4	30	15	13	-
OVEL-10-...-V1PNLK/B2PNLK-H3										111	116						31

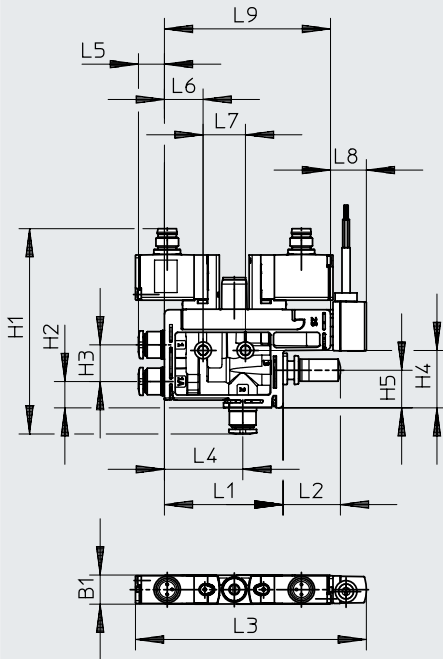
Datasheet

Dimensions

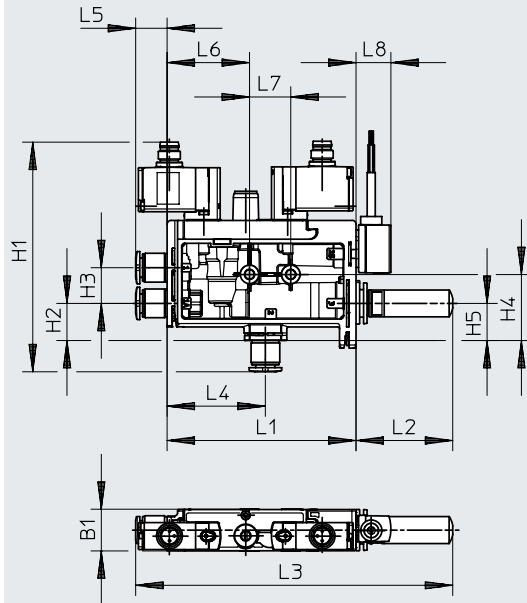
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- [A] With ejector pulse
- [R8] Electrical connection via individual plug M8, 3-pin

OVEL-5



OVEL-7/10



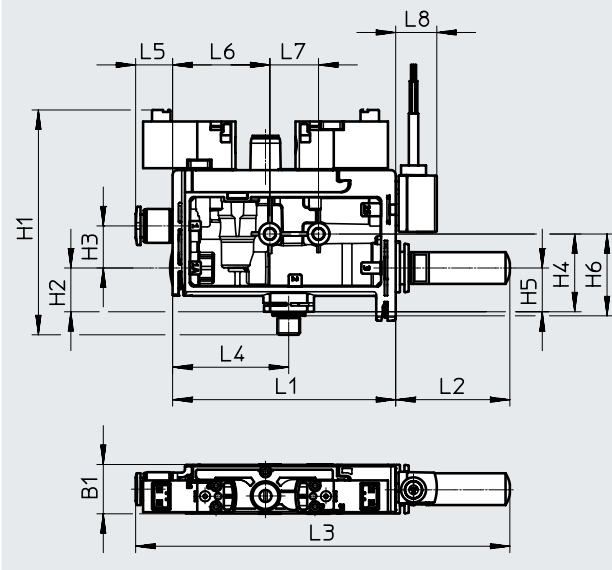
	B1	H1	H2	H3	H4	H5	L1	L2	L3	L4	L5	L6	L7	L8	L9	
	±0.3	±0.8	±0.5	±0.5	±0.2	±0.5	±0.8	±0.8	±2	±0.5	±0.5	±0.2	±0.2	±0.8	±0.8	
OVEL-5-H/L-10-P...-VQ...-UA...-B/V...-R8	10.3	73	9.4	13	20.4	13	42	20.2	82	27.7	10.3	13.7	15	13	59	
OVEL-5-H/L-10-P...-VQ...-UA...-PNLK-R8									99							31
OVEL-5-H/L-10-P...-VQ...-UA...-R8									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	2	-	
OVEL-7-L...-VQ6-UA...-B/V...-R8		86							13							
OVEL-10-H/L...-VQ6-UA...-B/V...-R8		86														
OVEL-7-H...-VQ4-UA...-PNLK...-R8		84														
OVEL-7-L...-VQ6-UA...-PNLK...-R8		86							31							
OVEL-10-H/L...-VQ6-UA...-PNLK...-R8		86														
OVEL-7-H...-VQ4-UA...-R8		84														
OVEL-7-L...-VQ6-UA...-R8		86														
OVEL-10-H/L...-VQ6-UA...-R8		86														
OVEL-7-H...-VQ4-UC...-B/V...-R8		84														
OVEL-10-H...-VQ6-UC...-B/V...-R8		86														
OVEL-7-H...-VQ4-UC...-PNLK...-R8		84														
OVEL-10-H...-VQ6-UC...-PNLK...-R8		86							31							
OVEL-7-H...-VQ4-UC...-R8	84															
OVEL-10-H...-VQ6-UC...-R8	86	2														

Datasheet

Dimensions

Download CAD data → www.festo.com

Vacuum generators for UR-Plus gripper

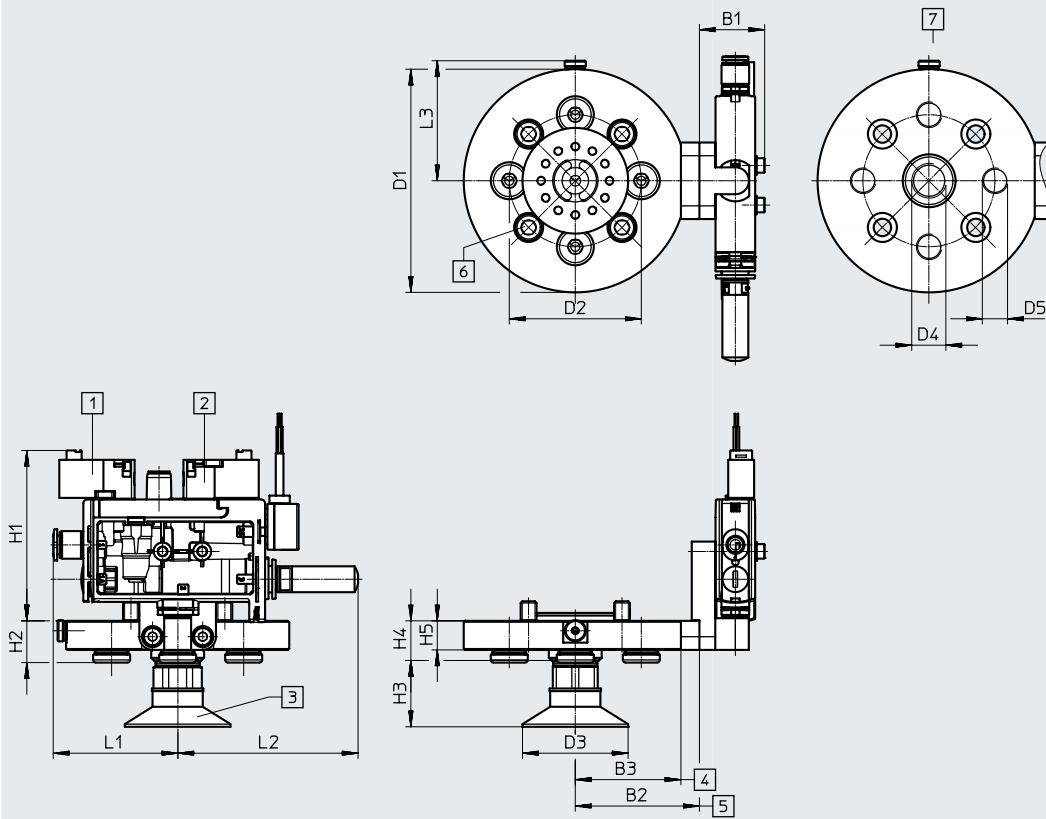


Type	B1	H1	H2	H3	H4	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8
	±0.3	±0.8	±0.5	±0.5	±0.2	±0.5	±0.2	±0.8	±0.8	±2	±0.5	±0.5	±0.2	±0.2	±0.8
OVEL-10-...-VM7-UA-CA-V1V-H3	15.2	62	13.5	13	24	13.5	25.3	68.8	35.5	116	35.8	11.4	30	15	13

Dimensions

Download CAD data → www.festo.com

Suction gripper kit for robots



- [1] Vacuum valve
- [2] Ejector valve
- [3] Suction cup with connection VAS-40-1/4-NBR
- [4] Without distance piece
- [5] With distance piece
- [6] Socket head screw M6x10
- [7] Without suction cup C and blanking plug

Type	B1	B2	B3	D1 ∅	D2 ∅	D3 ∅	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 [bar]	Vacuum sensor output signal	Exhaust port	Nominal width of Laval nozzle [mm]	Weight [g]	Part no.	Type
Vacuum generators, for pneumatic links						
-1 ... 0	PNP or NPN or IO-Link®	UC	0.45	75	8141086	OVEL-5-H-10-P-VQ4-UC-C-A-V1PNLK-H3
			0.7	92	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	40	8141094	OVEL-5-H-10-P-VQ4-UC-C-A-H3
			0.7	57	8141095	OVEL-7-H-15-P-VQ4-UC-C-A-H3
			0.95	58	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	71	8049046	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1B-H3
			0.7	88	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	71	8049049	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-H3
			0.7	88	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	74	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
		UC	0.7	91	8141092	OVEL-7-H-15-PQ-VQ4-UC-C-A-V1PNLK-H3
			0.95	92	8049054	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1PNLK-H3
			0.95	92	8141093	OVEL-10-H-15-PQ-VQ6-UC-C-A-V1PNLK-H3
			0.95	92	8141093	OVEL-10-H-15-PQ-VQ6-UC-C-A-V1PNLK-H3
-1 ... 1	0 ... 10 V	UA	0.45	71	8069567	OVEL-5-H-10-PQ-VQ4-UA-C-A-B2V-H3
			0.7	88	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	74	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	91	8069572	OVEL-10-H-15-PQ-VQ6-UA-C-A-B2PNLK-H3
-	-	UC	0.45	39	8141099	OVEL-5-H-10-PQ-VQ4-UC-C-A-H3
			0.7	56	8141100	OVEL-7-H-15-PQ-VQ4-UC-C-A-H3
			0.95	57	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	79	8152243	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1V-R8
			0.7	97	8152244	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1V-R8
			0.95	98	8152245	OVEL-10-H-15-PQ-VQ6-UA-C-A-V1V-R8
	PNP or NPN or IO-Link®	UA	0.45	83	8152240	OVEL-5-H-10-PQ-VQ4-UA-C-A-V1PNLK-R8
			0.7	99	8152241	OVEL-7-H-15-PQ-VQ4-UA-C-A-V1PNLK-R8
			0.95	100	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

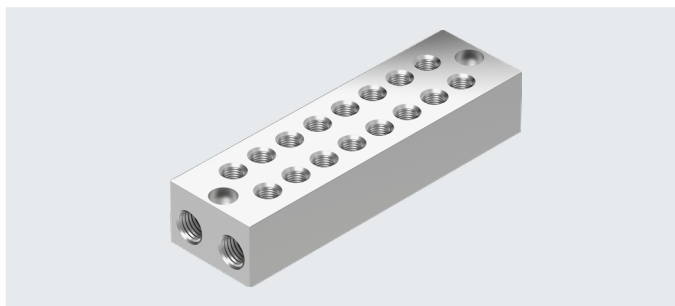
Accessories

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).



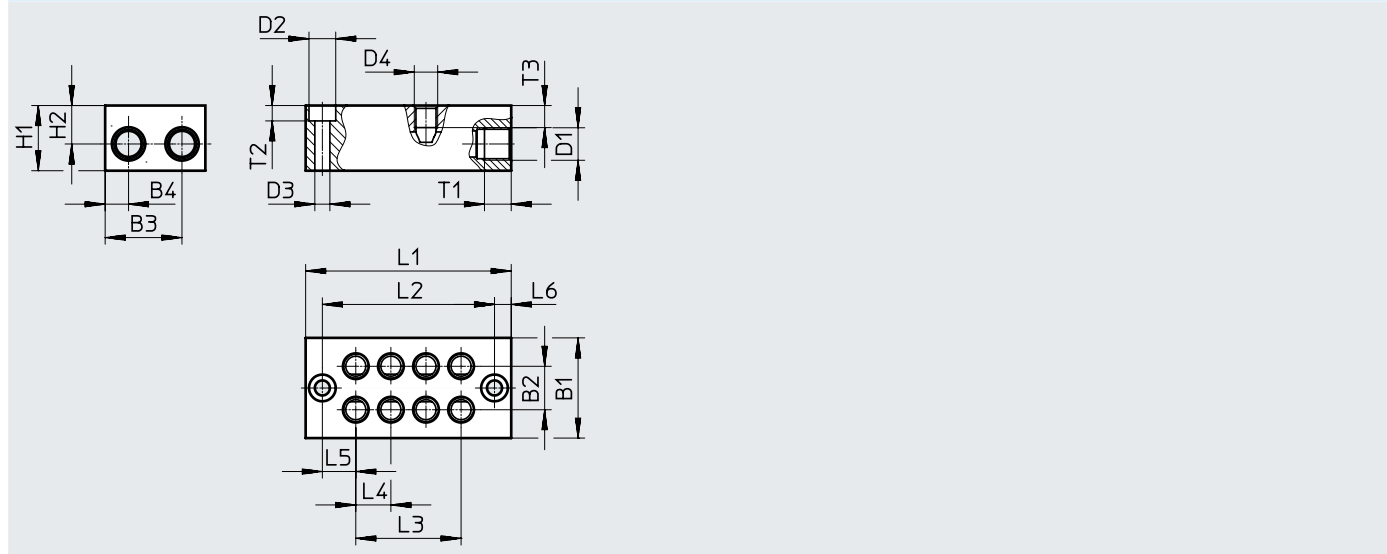
General technical data	
Pneumatic connection 1	G1/8
Type of mounting	With through-hole
Min. tightening torque [Nm]	0.3
Max. tightening torque [Nm]	3.3

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

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

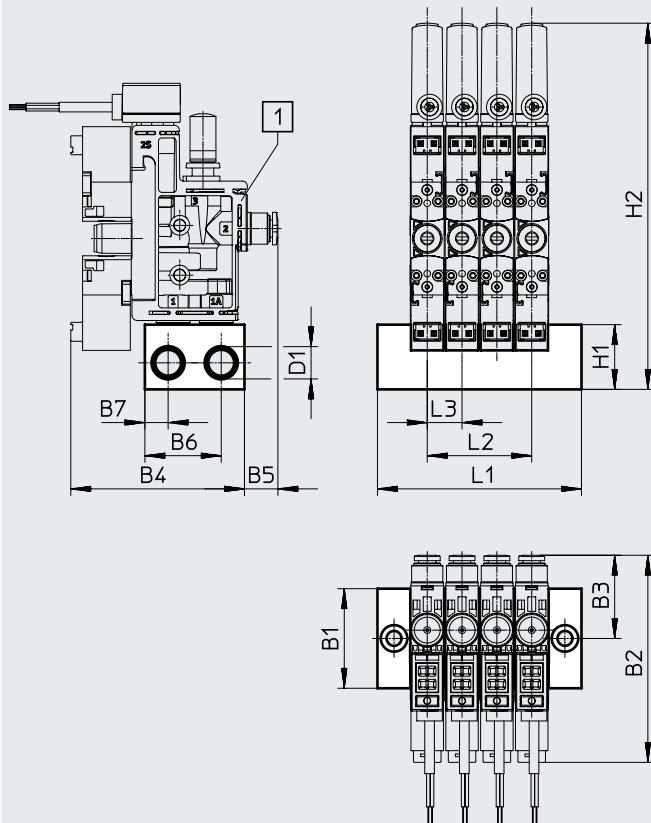


Type	B1	B2	B3	B4	D1	D2 ∅	D3 ∅	D4	H1	H2	L1	L2	L3	L4	L5	L6	T1	T2	T3
OABM-P-G3-10-2	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5	40.5	30.5	10.5	10.5	10	5	8	4.6	6.6
OABM-P-G3-10-4											61.5	51.5	31.5						
OABM-P-G3-10-8											103.5	93.5	73.5						
OABM-P-G3-15-2	30	13	23	7	G1/8	8	4.5	M7	19.5	11.5	51.5	41.5	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

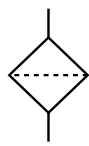
Hollow bolt	Wrought aluminium alloy
Seals	NBR
Note on materials	RoHS-compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L


Ordering data

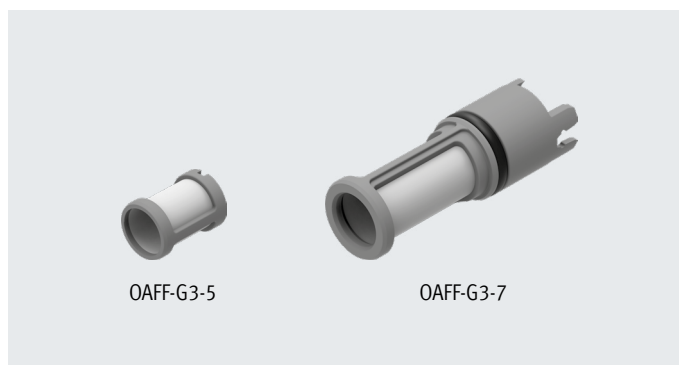
	Weight [g]	Part no.	Type
For common supply manifold OABM-P	7	8065850	OABM-MK-G3

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

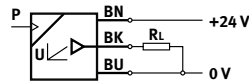
1) Packaging unit

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	SPTV-V1R	SPTV-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

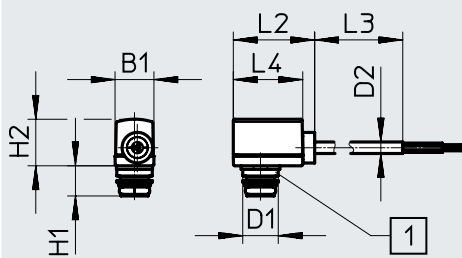
Type	SPTV-...-V-2.5K	SPTV-...-B-2.5K
Analogue output [V]	0 ... 10	1 ... 5
Rise time [ms]	1	
Min. load resistance of voltage output [kΩ]	15	

Accessories

Output, additional data		
Short circuit current rating	For all electrical connections	
Electronics		
Type	SPT E...-V-2.5K	SPT E...-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 ∅	D2 ∅	H1	H2	L2	L3	L4
SPT E...-PC10	9.8	8.9	2.9	7.6	11.7	20.5	2500	17.5

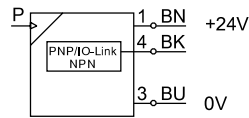
Ordering data

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	SPT E-V1R-PC10-V-2.5K
			1 ... 5	V1B	-	8025975	SPT E-V1R-PC10-B-2.5K
		-1 ... 1	0 ... 10	B2V	-	8025976	SPT E-B2R-PC10-V-2.5K
			1 ... 5	B2B	-	8025977	SPT E-B2R-PC10-B-2.5K

Accessories

Pressure sensor SPAE

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

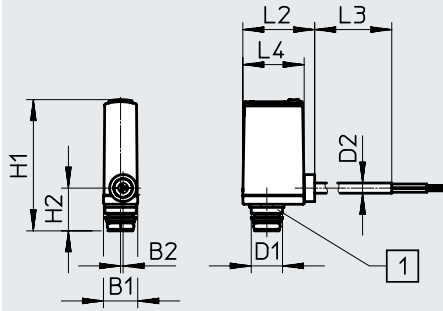
Accessories

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



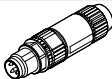
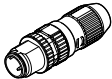
[1] Pressure supply port: pin-type cartridge 10 mm

Type	B1	B2	D1 ∅	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

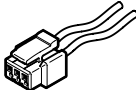
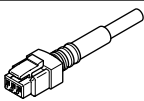
Pneumatic connection	Electrical connection	Pressure measuring range [bar]	Order code in the modular product system		Part no.	Type
			OVEL	OVTL		
Cartridge 10 mm	Cable, 3-core, open end	-1 ... 0	V1PNLK	PNLK	8025978	SPAE-V1R-PC10-PNLK-2.5K
		-1 ... 1	B2PNLK	-	8025979	SPAE-B2R-PC10-PNLK-2.5K

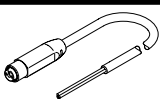

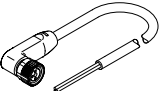
Accessories


Ordering data – Plug NECU-S-M8G3/M12G3		Part no.		Type	Datasheets → Internet: necu
Electrical connection					
	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		Part no.		Type	Datasheets → Internet: necu
Electrical connection					
	Plug, square design, 4-pin, straight, insulation displacement connector	570922		NECU-S-ECG4-HX-Q3	



Ordering data – Signal converter SCDN		Part no.		Type	Datasheets → Internet: scdn
Measured variable					
	Voltage	8035555		SCDN-2V-EC4-PNLK-L1	

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

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

1) Packaging unit.

Ordering data – Push-in fitting QS			Part no.		Type	PJ ¹⁾
Pneumatic connection						
	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.