

Vacuum generators OVEM, NPT

FESTO



Key features

At a glance

Rapid purging of vacuum for safe placement of the workpiece using an integrated solenoid valve to control the ejector pulse

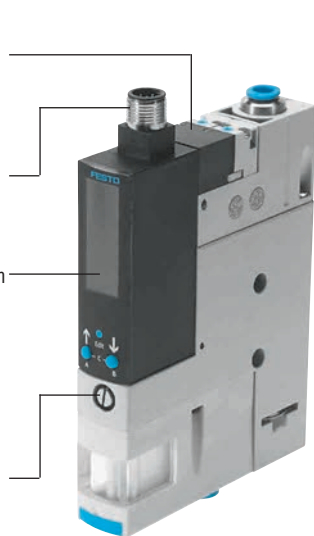
Central electrical connection via an M12 plug

OVEM-...-2P/2N/PU/PI

Monitoring and visualisation of the vacuum pressure using a vacuum sensor with LCD display (inHg)

Adjustment of the ejector pulse via a flow control screw

Contamination of the vacuum generator is prevented by an integrated filter



Quick and secure installation thanks to QS fitting

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

OVEM-...-1P/1N

Monitoring of the vacuum pressure and status displays for switching output and solenoid valves using a vacuum sensor with LED display

Prevention of pressure drop using an integrated check valve

Maintenance-free operation and reduced noise level through an integrated, open silencer



The modular vacuum generator series

The modular series of vacuum generators OVEM offers a wide range of individually selectable functions, providing numerous solutions for a wide variety of applications.

Functions	Values
Laval nozzle	0.45 mm
	0.7 mm
	0.95 mm
	1.4 mm
	2.0 mm ¹⁾
	3.0 mm ¹⁾
Vacuum generator characteristics	High vacuum
	High suction rate
Housing size	20 mm, metric version, display in bar ¹⁾
	20 mm, NPT version, display inHg
	36 mm, metric version, display in bar ¹⁾
Pneumatic connections	QS fittings, with or without open silencer ¹⁾
	QS fittings (inch), with or without open silencer
	G female thread, with or without open silencer ¹⁾
	NPT female thread, with or without open silencer
	Prepared for supply manifold
Normal position of the vacuum generator	Normally open, with or without ejector pulse
	Normally closed, with or without ejector pulse
Electrical connection	M12 plug (5-pin)
Vacuum sensor	Without vacuum sensor
	1 switching output PNP or NPN, LED indicator
	1 switching output PNP, LCD display ¹⁾
	2 switching outputs PNP or NPN, LCD indicator
	1 switching output PNP and 1 analogue output, LCD display
IO-Link, LCD display ¹⁾	
Alternative vacuum display	inHg ²⁾
	inH ₂ O ²⁾
	bar ²⁾

1) Product documentation → Internet: ovem

2) Vacuum sensor with LCD display

Key features

The innovative vacuum generator

Economical

- Short switching times thanks to integrated solenoid valves
 - Vacuum on/off
 - Ejector pulse
- Quick, precise and safe placing of the workpiece via ejector pulse
- Cost saving through preventive maintenance/service thanks to maintenance indicator
- Cost saving through integrated air-saving function
- Powerful supply of multiple vacuum generators via a common supply manifold (→ page 18)
- Low-cost variants with one switching output (OVEM-...-1P/1N)

Easy to use

- Simple installation via M12 plugs and QS fittings
- Simple mounting via screws
- All control elements are on one side
- Low-noise operation due to integrated silencer
- Vacuum sensor with LCD display (OVEM-...-2P/2N/PU/PI)
 - Vacuum is displayed numerically and as a bar chart
 - Important parameters and diagnostic information are displayed

Reliable

- Permanent monitoring of the entire vacuum system via a vacuum sensor to reduce downtimes (condition monitoring)
- Prevention of pressure drop using an integrated air-saving function in conjunction with an integrated check valve

Space-saving

- All functions are compactly integrated in one unit.
- No protruding elements such as valves or vacuum sensors
 - Space-optimised installation is possible as all the control elements can be accessed from one side

Easy to maintain

- Integrated filter with inspection window for maintenance indication
- Reduced contamination of the vacuum generator thanks to an open silencer

Choice of mounting types

- Direct mounting or via mounting bracket
- Straightforward mounting on H-rail via accessories
- Blocking of multiple vacuum generators on a common supply manifold (→ page 18)

Functional principle of OVEM

Vacuum ON/OFF

The compressed air supply is controlled by an integrated solenoid valve. The solenoid valve is available in two different switching functions, NC/NO.

- N/C - normally closed:
The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.

- NO - normally open:
The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve is in the normal position.

Vacuum sensor

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

Ejector pulse

After the vacuum is switched off, an ejector pulse is activated and generated by a second integrated solenoid valve to release the workpiece safely from the suction cup and to purge the vacuum quickly.

Connection to higher-level systems

The connection to higher-level systems as well as the configuration of the switching outputs depends on the type of vacuum sensor.

OVEM-...-1P/1N

- Switching inputs for actuating the solenoid valves for vacuum generation and ejector pulse
- One switching output for supplying a control signal
 - Configured as an N/O contact
 - Switching function configured as a threshold value comparator

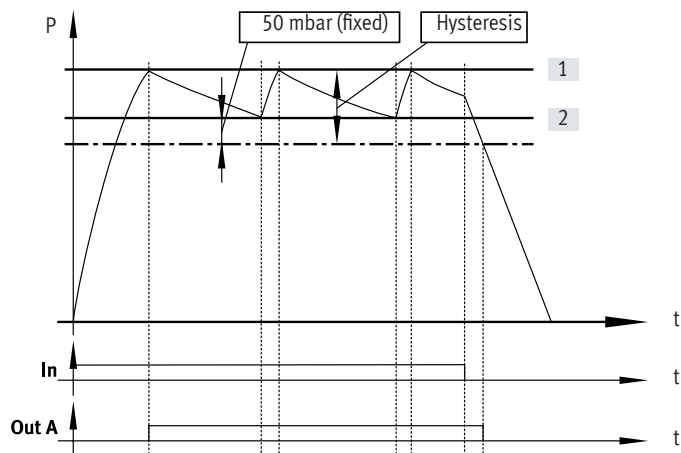
OVEM-...-2P/2N/PU/PI

- One digital switching input for actuating the solenoid valves
- Two digital switching outputs or One digital switching output and one analogue output for supplying control signals
 - Switching outputs can be configured as N/C or N/O contacts
 - Switching function of the outputs can be configured as a threshold value or window comparator

- If there are two switching outputs, these can be configured independently of each other. This enables tasks to be performed in parallel with one vacuum generator, reducing the time needed for sorting good and reject parts, for example.

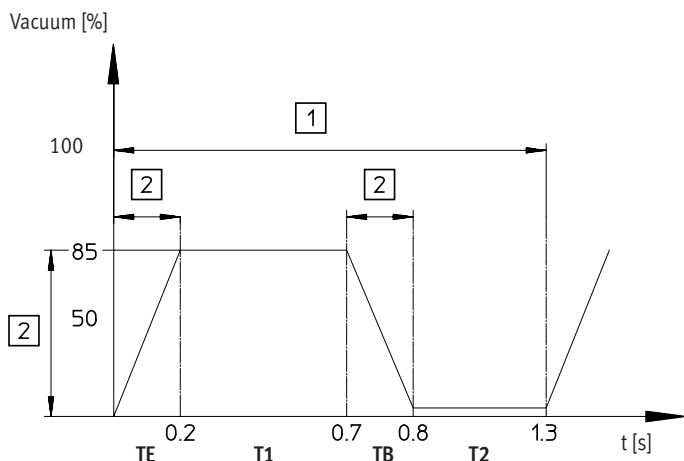
Key features

OVEM-...-2P/2N/PU/PI – air saving function LS (-CE, -OE)



If the desired threshold value [1] for the vacuum is reached, vacuum generation is automatically switched off. A check valve prevents a decrease of the vacuum. Nonetheless, leakage (e.g. due to rough workpiece surfaces) will slowly reduce the vacuum. If the vacuum drops below the threshold value [2], vacuum generation is automatically switched on. Vacuum is generated until the set threshold value [1] is reached again.

OVEM-...-2P/2N/PU/PI – condition monitoring and diagnostics



The most important operating parameters:

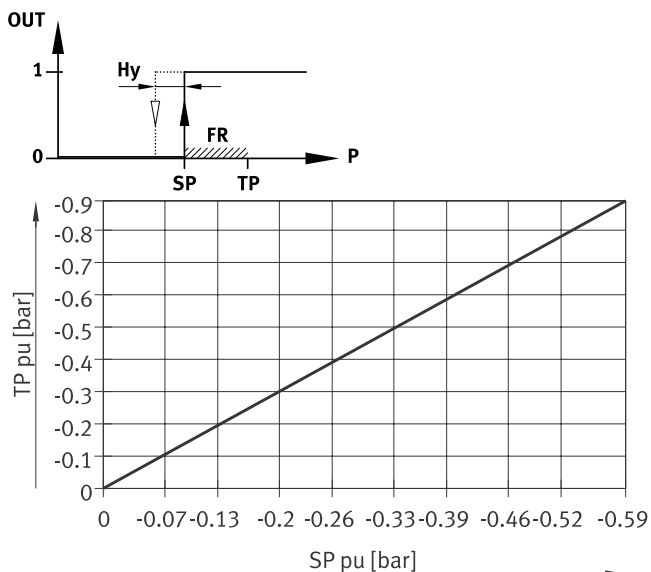
- Vacuum
 - Evacuation time
 - Air supply time
- are continuously measured in the vacuum generator and compared with the individually set reference values (condition monitoring). If deviations in the reference values occur, these will be determined by the vacuum generator and shown on the display (diagnostics). An electrical signal will also be transmitted to the higher-order controller.

This permits preventive action:

- in order to prevent machine failure or downtime, for example, through timely maintenance
- and to ensure process reliability (adherence to the cycle time).

- | | |
|--------------------|--------------------|
| [1] Cycle time | T1 Transport time |
| [2] Monitoring | TB Air supply time |
| TE Evacuation time | T2 Return time |

OVEM-...-1P/1N – From the teach-in point to the switching point



The switching point is determined from the teach pressure and the function reserve.

A function reserve (35% of the teach pressure) is deducted from the teach pressure ($SP = TP - 0.35 \cdot TP$).

For example, with a teach pressure of -0.5 bar, a switching point of -0.33 bar is set.

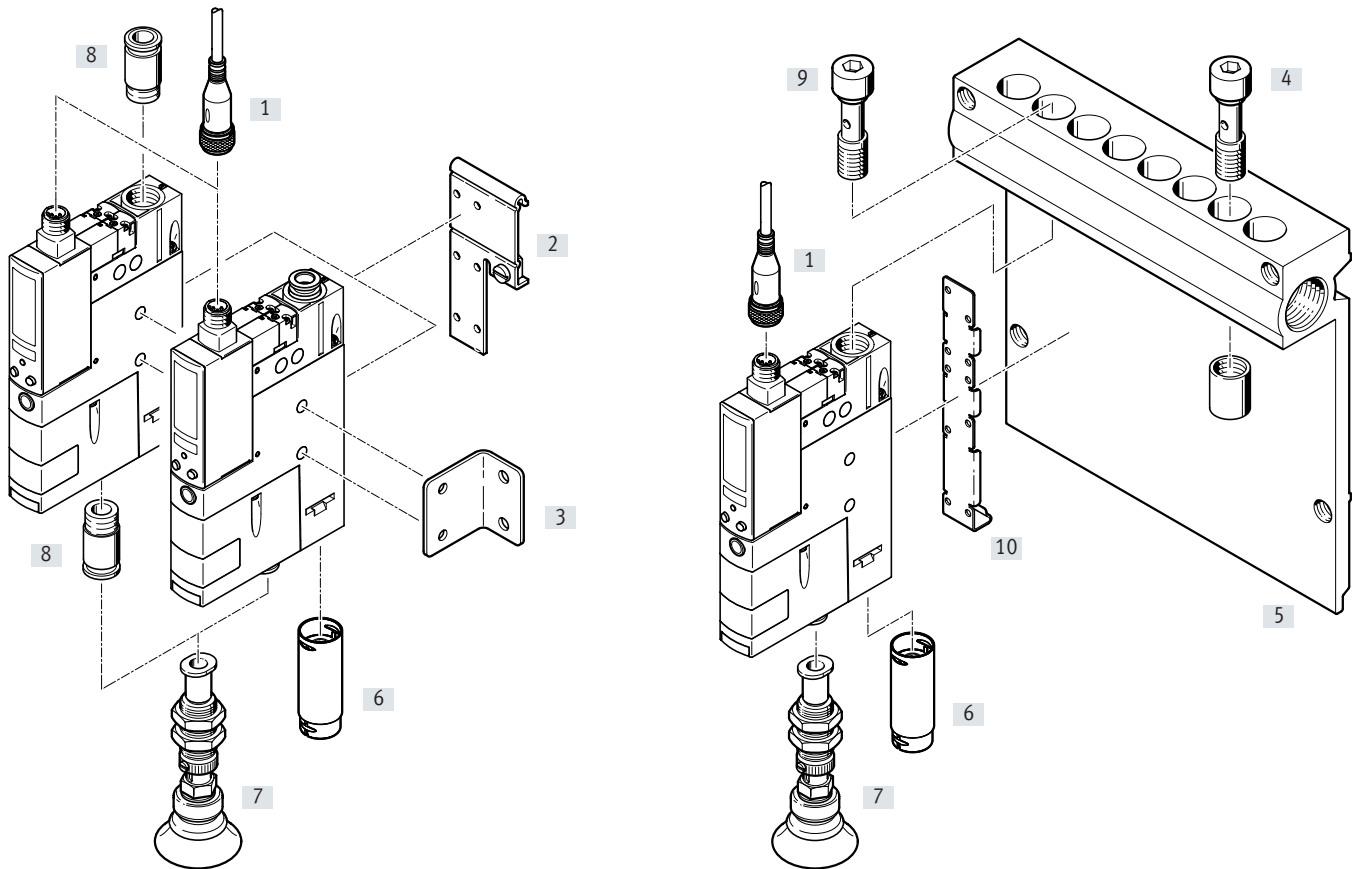
The hysteresis has a fixed value.

- | | |
|--------------------|---------------------|
| TP Teach-in point | Hy Hysteresis |
| SP Switching point | FR Function reserve |

Peripherals overview

OVEM-...-QS/QO/GN/GO

OVEM-...-PL/PO¹⁾



1) Hollow bolt [9] and mounting bracket [10] are included in the scope of delivery for the OVEM-...-PL/PO.

Mounting attachments and accessories

	OVEM-...-QS/QO/GN/GO				OVEM-...-PL/PO		→ Page/Internet
	QS	QO	GN	GO	PL	PO	
[1] Connecting cable NEBU-M12		■				■	21
[2] H-rail mounting OABM-H		■				-	20
[3] Mounting bracket HRM-1		■				-	21
[4] Blanking plug OASC-G1-P		-				■	20
[5] Common supply manifold OABM-P		-				■	18
[6] Silencer extension UOMS-1/4	-	■	-	■	-	■	21
[7] Suction gripper ESG			■			■	esg
[8] Push-in fitting QS	-			■		-	qs
- Suction cup complete holder ESH			■			■	esh
- Suction cup with connection ESS			■			■	ess

Type codes

001 Series	
OVEM	Vacuum generator
002 Nominal width of Laval nozzle	
05	0.45 mm
07	0.70 mm
10	0.95 mm
14	1.4 mm
003 Ejector characteristics	
H	High vacuum/standard
L	High suction rate/standard
004 Housing width	
BN	20 mm wide, inch version
005 Pneumatic connections	
QS	All connections with QS fittings
QO	Supply/vacuum port with QS fittings, exhaust port with open silencer
GN	All connections with G female thread
GO	Supply/vacuum port with G female thread, exhaust port with open silencer
PL	Prepared for supply manifold, vacuum port and exhaust port with QS fittings
PO	Prepared for supply manifold, vacuum port with QS fittings, exhaust port with open silencer

006 Normal position of the vacuum generator	
ON	NO, normally open (vacuum generation)
OE	NO, normally open (vacuum generation) with ejector pulse
CN	NC, normally closed (no vacuum generation)
CE	NC, normally closed (no vacuum generation) with ejector pulse
007 Electrical connection	
N	Plug M12 (5-pin)
008 Vacuum sensor	
	Without vacuum sensor (switching input PNP)
1N	Switching output 1 x NPN
1P	Switching output 1x PNP
2N	Switching output 2 x NPN
2P	Switching output 2x PNP
PI	Switching output 1 x PNP + I
PU	Switching output 1 x PNP + U
009 Alternative vacuum display	
	Without
W	Inch H2O
B	Bar


Datasheet

Function

N/C, normally closed:

- Ejector pulse
- QS fitting (inch) or NPT female thread
- With open silencer
- Prepared for common supply manifold

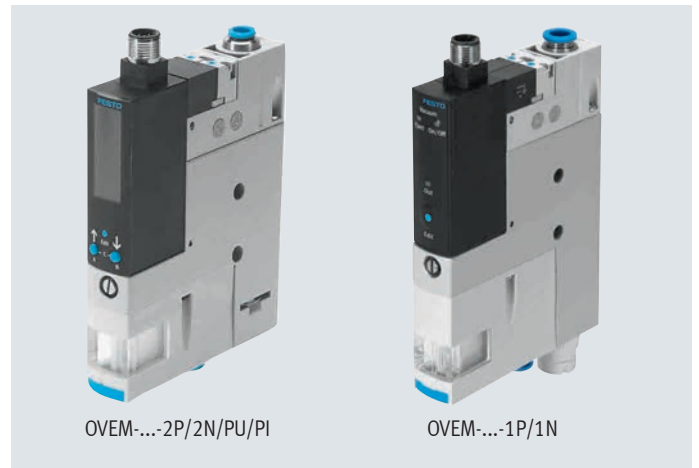
 Temperature range
0 ... +50°C

 Operating pressure
2 ... 8 bar

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NO, normally open:

- Ejector pulse
- QS fitting (inch) or NPT female thread
- With open silencer
- Prepared for common supply manifold



General technical data		OVEM-05	OVEM-07	OVEM-10	OVEM-14
Type					
Nominal width of Laval nozzle	[mm]	0.45	0.7	0.95	1.4
Grid dimension	[mm]	20			
Grade of filtration	[µm]	40			
Mounting position		Any			
Type of mounting		Via through-hole			
		With female thread			
		With accessories			
Pneumatic connection 1 (P)		→ Dimensions on page 15			
Vacuum port (V)		→ Dimensions on page 15			
Pneumatic connection 3 (R)		→ Dimensions on page 15			

Technical data – design		OVEM-05/07/10/14-...-QO/PO/GO	OVEM-05/07/10/14-...-QS/GN/PL
Type			
Design		Modular	
Ejector characteristic		High vacuum/standard H High suction rate/standard L	
Silencer design		Open	
Integrated function	ON/CN	Electric on/off valve	Electric on/off valve
		Vacuum sensor ¹⁾	Vacuum sensor ¹⁾
		Filter	Filter
		Open silencer	–
	OE/CE	Electric on/off valve	Electric on/off valve
		Ejector pulse, electrical	Ejector pulse, electrical
		Flow control valve	Flow control valve
		Vacuum sensor ¹⁾	Vacuum sensor ¹⁾
		Air saving function, electrical ²⁾	Air saving function, electrical ²⁾
		Check valve	Check valve
Valve function	ON/OE	Open	
	CN/CE	Closed	
Manual override		Non-detenting	
		Additionally via operating buttons ²⁾	

1) Only with OVEM-...-1P/1N/2P/2N/PU/PI

2) Only possible with OVEM-...-2P/2N/PU/PI

Datasheet

Operating and environmental conditions		OVEM-05/07/10/14-...-QO/PO/GO	OVEM-05/07/10/14-...-QS/GN/PL
Type			
Operating pressure [bar]		2 ... 8	2 ... 6
Nominal operating pressure [bar]		6	
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	
Relative humidity [%]		5 ... 85	
Protection class		III	
Degree of protection		IP65	
Corrosion resistance class CRC ¹⁾		2	
CE marking (see declaration of conformity)		To EU EMC Directive ²⁾	
UKCA marking (see declaration of conformity)		UK regs EMC ²⁾	
Certification		c UL us listed (OL)	
		RCM	
KC mark		KC EMC	

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070
Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.
- 2) For information about the area of use, see the EC declaration of conformity at: www.festo.com/catalogue/... → 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.

Performance data – high vacuum		OVEM-05				OVEM-07				OVEM-10				OVEM-14			
Type		ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE
Normal position of the vacuum generator																	
Max. vacuum [%]		93															
Operating pressure for max. vacuum [bar]		5.1				4.1				3.5				3.6			
Max. suction rate with respect to atmosphere [l/min]		6				16				19.5				50.5			
Suction rate at p ₁ = 6 bar [l/min]		5.9				15.1				18.6				46			
Air supply time ¹⁾ for 1 l volume, at p ₁ = 6 bar [s]		4.8	2	4.8	2	1.9	0.4	1.9	0.4	1.2	0.2	1.2	0.2	0.6	0.2	0.6	0.2
Noise level at p ₁ = 6 bar [db(A)]		51				58				73				77			

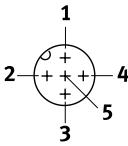
- 1) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Performance data – high suction rate		OVEM-05				OVEM-07				OVEM-10				OVEM-14			
Type		ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE
Normal position of the vacuum generator																	
Max. suction rate with respect to atmosphere [l/min]		13				31.5				45				92			
Suction rate at p ₁ = 6 bar [l/min]		12.8				31.5				45.1				88.7			
Air supply time ¹⁾ for 1 l volume, at p ₁ = 6 bar [s]		2	1.3	2	1.3	1	0.2	1	0.2	0.8	0.2	0.8	0.2	0.4	0.2	0.4	0.2
Noise level at p ₁ = 6 bar [db(A)]		45				53				64				70			

- 1) Time required to reduce the vacuum to a residual vacuum of -0.05 bar after switching off the operating pressure.

Datasheet

Technical data – Electrical data, general				
Type		Without vacuum sensor	With vacuum sensor	
			OVEM-...-1P/1N	OVEM-...-2P/2N
Electrical connection		Plug M12x1, 5-pin		
Standard switching input		IEC 61131-2		
Operating voltage range	[V DC]	20.4 ... 27.6		
Duty cycle	[%]	100		
Coil characteristics 24 V DC	[W]	Low-current phase: 0.3		
		High-current phase: 2.55		
Max. current consumption	[mA]	30	180	270
Insulation voltage	[V]	50		
Surge resistance	[kV]	0.8		
Pollution degree		3		
Reverse polarity protection		For all electrical connections		
Switching position indication		LED		LCD

Pin allocation		
Plug M12x1, 5-pin	Pin	Meaning
	OVEM without vacuum sensor	
	1	Supply voltage +24 V DC
	2	Switching input for vacuum ON/OFF
	3	0 V
	4	No function
	5	Switching input for ejector pulse ON/OFF
	OVEM-...-1P/1N	
	1	Supply voltage +24 V DC
	2	Switching input for vacuum ON/OFF
	3	0 V
	4	Switching output (switching output for vacuum sensor)
	5	Switching input for ejector pulse ON/OFF
	OVEM-...-2P/2N/PU/PI	
	1	Supply voltage +24 V DC
	2	Digital output Out B (OVEM-...-2P/2N)
		Analogue output Out B (OVEM-...-PU/PI)
	3	0 V
	4	Digital output Out A (switching output for vacuum sensor)
	5	Digital switching input (vacuum ON/OFF and ejector pulse)

Datasheet

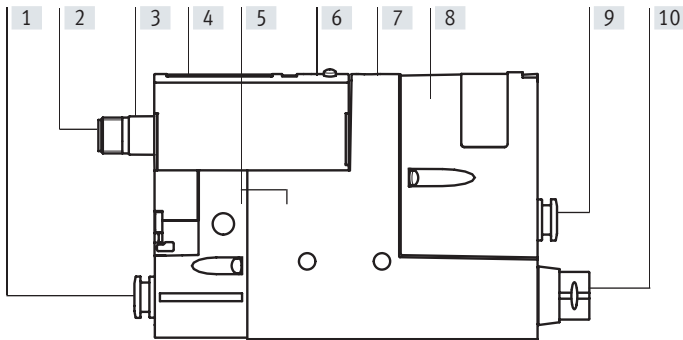
Technical data – vacuum sensor						
Electrical switching output	2P	2N	PU	PI	1P	1N
Input signal/measuring element						
Measured variable	Relative pressure					
Measuring principle	Piezoresistive					
Pressure measuring range	[bar]	-1 ... 0				
Display/operation						
Setting options	Via display and buttons				Teach-in	
Threshold value setting range	[bar]	-0.999 ... 0			-1 ... 0	
Hysteresis setting range	[bar]	-0.9 ... 0			-	
Setting range ejector pulse duration	[ms]	20 ... 9999 (OVEM-05)			-	
		40 ... 9999 (OVEM-0 7/10/14)			-	
Display type		4-character alphanumeric, backlit LCD			LED	
Displayable units	-	inHg			-	
	W	inH2O			-	
	B	bar			-	
Display range	[inHg]	-29.5 ... 0			-	
	[inH2O]	-401.9 ... 0			-	
	[bar]	-0.999 ... 0			-	
Accuracy						
Accuracy FS ¹⁾	[%]	±3			±0.5	
Reproducibility of switching value FS ¹⁾	[%]	0.6			0.6	
Inputs/outputs						
Switching logic at inputs		PNP	NPN	PNP	PNP	NPN
Switching output		2x PNP	2x NPN	1x PNP	1x PNP	1x NPN
Switching function		Window comparator			-	
		Threshold value comparator ²⁾			-	
Switching status indication		Optical				
Switching element function		N/O				
		N/C				-
Fixed hysteresis	[mbar]	-			20	
Max. output current	[mA]	100				
No-load supply current	[mA]	< 70			< 80	
Residual current	[mA]	0.1				
Voltage drop	[V]	≤ 1.5				
Analogue output	[V]	-		0 ... 10	-	-
	[mA]	-		-	4 ... 20	-
Permitted load resistance analogue output	[ohm]	-		Min. 2000	Max. 500	-
Accuracy of analogue output FS ¹⁾	[%]	-		4	-	
Short circuit current rating		Yes				
Inductive protective circuit		Adapted to MZ, MY, ME coils				
Overload protection		Available				

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

2) OVEM-...-1P/1N threshold value with fixed hysteresis

Datasheet

Materials

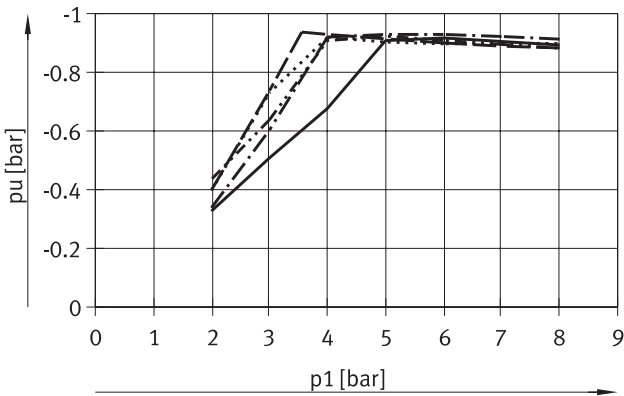


Type		OVEM-...-2P/2N/PU/PI	OVEM-...-1P/1N
[1]	Fitting	QS/QO	Nickel-plated brass
	Connecting thread	GN/GO	Anodised wrought aluminium alloy
[2]	Pin contacts		Gold-plated brass
[3]	Plug housing		Nickel-plated brass
[4]	Inspection window		PA
[5]	Housing		Die-cast aluminium, PA reinforced
[6]	Keypad		TPE-U
[7]	Adjusting screw	CE/OE	Steel
[8]	Filter housing		Reinforced PA
[9]	Fitting	QS/QO/PL/PO	Nickel-plated brass
	Connecting thread	GN/GO	Anodised wrought aluminium alloy
[10]	Silencer	QO/GO/PO	Wrought aluminium alloy, PU foam
	Fitting	QS/QO/PL/PO	Nickel-plated brass
		GN/GO	Anodised wrought aluminium alloy
-	Screws		Steel
-	Pins		Steel
-	Jet nozzle		Wrought aluminium alloy
-	Female nozzle		POM
-	Filter		Fabric, PA, sintered steel
-	Seals		NBR
-	Hollow bolt	PL/PO	Wrought aluminium alloy
-	Mounting bracket	PL/PO	Stainless steel
Note on materials			RoHS-compliant
		QO/GO/PO	Contains paint-wetting impairment substances

Datasheet

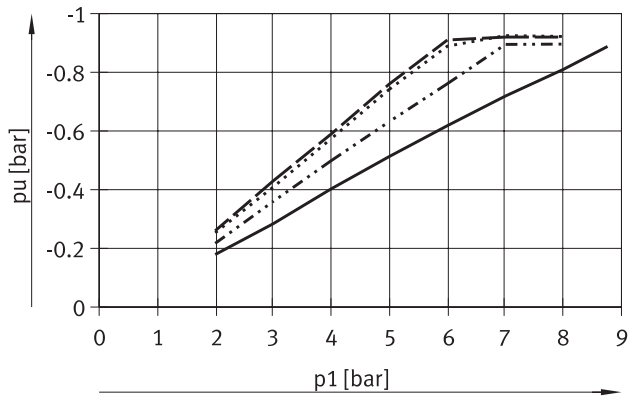
Vacuum p_u as a function of operating pressure p_1

High vacuum



- OVEM-05-H
- · - · - · OVEM-07-H
- - - - - OVEM-10-H
- · · · · OVEM-14-H

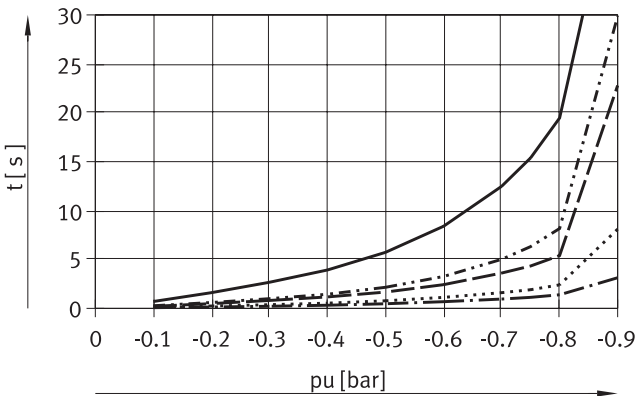
High suction rate



- OVEM-05-L
- · - · - · OVEM-07-L
- - - - - OVEM-10-L
- · · · · OVEM-14-L

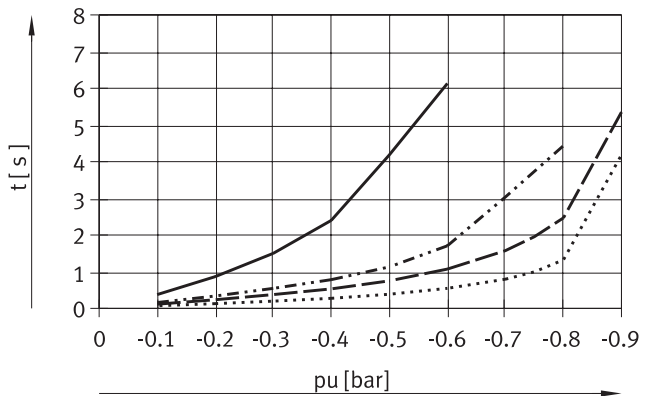
Evacuation time t as a function of vacuum p_u for 1 l volume at 6 bar operating pressure

High vacuum



- OVEM-05-H
- · - · - · OVEM-07-H
- - - - - OVEM-10-H
- · · · · OVEM-14-H

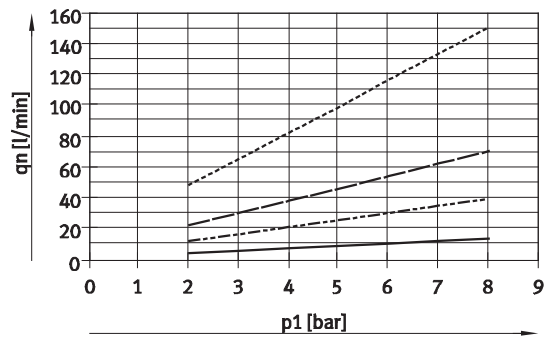
High suction rate



- OVEM-05-L
- · - · - · OVEM-07-L
- - - - - OVEM-10-L
- · · · · OVEM-14-L

Air consumption q_n as a function of operating pressure p_1

High vacuum/high suction rate



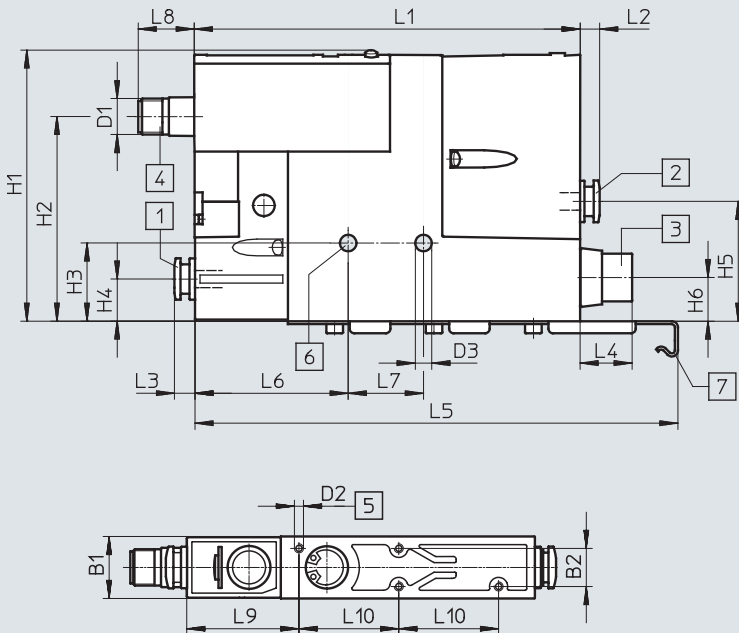
- OVEM-05
- · - · - · OVEM-07
- - - - - OVEM-10
- · · · · OVEM-14

Datasheet

Download CAD data → www.festo.com

Dimensions

OVEM-05



- [1] Supply port (P)
- [2] Vacuum port (V)
- [3] Exhaust port (R)
- [4] Electrical connection to fit NEBU-M12G5-K
- [5] Mounting thread M3
Max. tightening torque 0.8 Nm
- [6] Mounting hole
Max. tightening torque 2.5 Nm
- [7] Mounting bracket, only with OVEM-...-PL/PO

Type	Pneumatic connections			D1	D2	D3	B1	B2	H1	H2	H3	H4
	P	V	R									
OVEM-05-...-QS	QS-1/4	QS-1/4	QS-5/16	M12x1	M3	5.5	20.5	12.6	90	68	26	14.5
OVEM-05-...-QO			SD ²⁾									
OVEM-05-...-PL	(G1/4) ¹⁾	QS-1/4	QS-5/16									
OVEM-05-...-PO			SD ²⁾									
OVEM-05-...-GN	1/8 NPT	1/8 NPT	1/8 NPT									
OVEM-05-...-GO			SD ²⁾									

Type	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
OVEM-05-...-QS	40	14.5	115	6.5	6.5	13	-	51	25	18	37	33
OVEM-05-...-QO						-						
OVEM-05-...-PL						13						
OVEM-05-...-PO				-	160.5							
OVEM-05-...-GN				8.2								
OVEM-05-...-GO				-								

1) Thread for mounting on the common supply manifold (→ page 18)

2) SD = Silencer

Minimum inside diameter [mm] of the connection tubes for connections with female thread

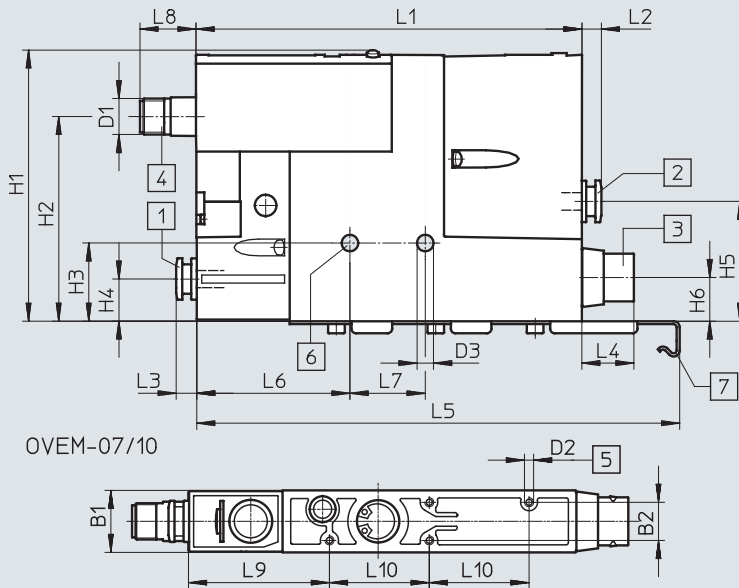
Type	OVEM-05-...-GN/GO	
Tube length	< 0.5 m	< 2 m
Pneumatic connection 1 (P)	1	2
Vacuum port (V)	2	3
Pneumatic connection 3 (R)	2	3

Datasheet

Dimensions

Download CAD data → www.festo.com

OVEM-07/10



- [1] Supply port (P)
- [2] Vacuum port (V)
- [3] Exhaust port (R)
- [4] Electrical connection to fit NEBU-M12G5-K
- [5] Mounting thread M3
Max. tightening torque 0.8 Nm
- [6] Mounting hole
Max. tightening torque 2.5 Nm
- [7] Mounting bracket, only with OVEM-...-PL/PO

Type	Pneumatic connections			D1	D2	D3	B1	B2	H1	H2	H3	H4
	P	V	R									
OVEM-07/10-...-QS	QS-5/16	QS-5/16	QS-5/16	M12x1	M3	5.5	20.5	12.6	90	68	26	14.5
OVEM-07/10-...-QO			SD ²⁾									
OVEM-07/10-...-PL	(G1/4) ¹⁾	QS-5/16	QS-5/16									
OVEM-07/10-...-PO			SD ²⁾									
OVEM-07/10-...-GN	1/4 NPT	1/4 NPT	1/4 NPT									
OVEM-07/10-...-GO			SD ²⁾									

Type	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10
OVEM-07/10-...-QS	40	14.5	128	6.5	6.5	13	-	51	25	18	46.5	33
OVEM-07/10-...-QO						17.3						
OVEM-07/10-...-PL						13	160.5					
OVEM-07/10-...-PO												
OVEM-07/10-...-GN						15	-					
OVEM-07/10-...-GO	17.3											

1) Thread for mounting on the common supply manifold (→ page 18)
 2) SD = Silencer

Minimum inside diameter [mm] of the connection tubes for connections with female thread

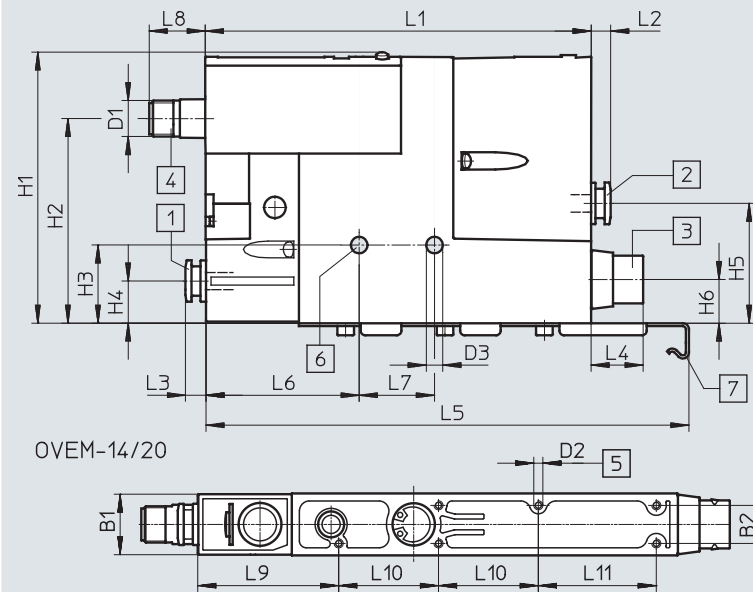
Type	OVEM-07-...-GN/GO		OVEM-10-...-GN/GO	
	< 0.5 m	< 2 m	< 0.5 m	< 2 m
Pneumatic connection 1 (P)	1.5	2	2	3
Vacuum port (V)	3	4	4	5
Pneumatic connection 3 (R)	3	4	4	5

Datasheet

Download CAD data → www.festo.com

Dimensions

OVEM-14



- [1] Supply port (P)
- [2] Vacuum port (V)
- [3] Exhaust port (R)
- [4] Electrical connection to fit NEBU-M12G5-K
- [5] Mounting thread M3
Max. tightening torque 0.8 Nm
- [6] Mounting hole
Max. tightening torque 2.5 Nm
- [7] Mounting bracket, only with OVEM-...-PL/PO

Type	Pneumatic connections			D1	D2	D3	B1	B2	H1	H2	H3	H4
	P	V	R									
OVEM-14-...-QS	QS-5/16	QS-5/16	QS-5/16	M12x1	M3	4.3	20.5	12.6	90	68	25	14.5
OVEM-14-...-QO			SD ²⁾									
OVEM-14-...-PL	(G1/4) ¹⁾	QS-5/16	QS-5/16									
OVEM-14-...-PO			SD ²⁾									
OVEM-14-...-GN	1/4 NPT	1/4 NPT	1/4 NPT									
OVEM-14-...-GO												

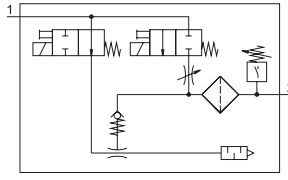
Type	H5	H6	L1	L2	L3	L4	L5	L6	L7	L8	L9	L10	L11
OVEM-14-...-QS	40	14.5	158	6.5	6.5	13	-	57	25	18	46.5	33	39
OVEM-14-...-QO						17.3							
OVEM-14-...-PL						13							
OVEM-14-...-PO				17.3	160.5								
OVEM-14-...-GN				17.2	17.2	15	-						
OVEM-14-...-GO						17.3							

1) Thread for mounting on the common supply manifold (→ page 18)
 2) SD = Silencer

Minimum inside diameter [mm] of the connection tubes for connections with female thread

Type	OVEM-14-...-GN/GO	
Tube length	< 0.5 m	< 2 m
Pneumatic connection 1 (P)	3	4
Vacuum port (V)	5.5	6
Pneumatic connection 3 (R)	5.5	6

Datasheet

Ordering data and weight							
Circuit symbol	Description	Electrical switching output	Display	Nominal width of Laval nozzle [mm]	Weight [g]	Part no.	Type
NO – normally open							
	With ejector pulse, P-V with QS fitting (inch), R with open silencer	2x PNP	LCD	1.4	380	539999	OVEM-14-H-BN-QO-OE-N-2P

Ordering data – Modular product system

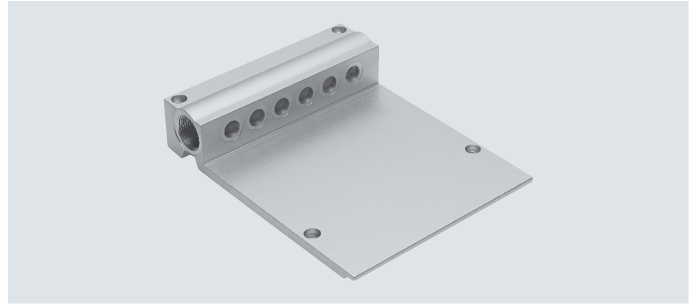
Ordering table		Conditions	Code	Enter code
Type	OVEM			
Module no.	539075			
Vacuum generator	Vacuum generator with solenoid valve for vacuum on/off and manual override		OVEM	OVEM
Nominal width of Laval nozzle [mm]	0.45		-05	
	0.7		-07	
	0.95		-10	
	1.4		-14	
Ejector characteristic	High vacuum		-H	
	High suction rate		-L	
Housing size/width [mm]	20 (inch version)		-BN	-BN
Pneumatic connections	All connections with inch fittings		-QS	
	Supply/vacuum port with inch fittings, exhaust port with open silencer		-QO	
	All connections with NPT female thread		-GN	
	Supply/vacuum port with NPT female thread, exhaust port with open silencer		-GO	
	Prepared for supply manifold, vacuum port and exhaust port with fittings in inches		-PL	
	Prepared for supply strip, vacuum connection with fittings in inches, exhaust port with open silencer		-PO	
Normal position of the vacuum generator	NO, normally open (vacuum generation)		-ON	
	NO, normally open (vacuum generation) with ejector pulse		-OE	
	NC, normally closed (no vacuum generation)		-CN	
	NC, normally closed (no vacuum generation) with ejector pulse		-CE	
Electrical connection	M12 plug (5-pin)		-N	-N
Vacuum sensor, (standard scale in inHg)	Without vacuum sensor			
	1 switching output PNP		-1P	
	1 switching output NPN		-1N	
	2 switching outputs PNP		-2P	
	1 switching output PNP, 1 analogue output 0 ... 10 V		-PU	
	1 switching output PNP, 1 analogue output 4 ... 20 mA		-PI	
Alternative vacuum display	None			
	inH2O	[1]	-W	
	bar	[1]	-B	

1) W, B Only with vacuum sensor 2P, PU, PI, 2N.

Accessories

Common supply manifold OABM-P

For vacuum generator
OVM-...-PL/PO



General technical data

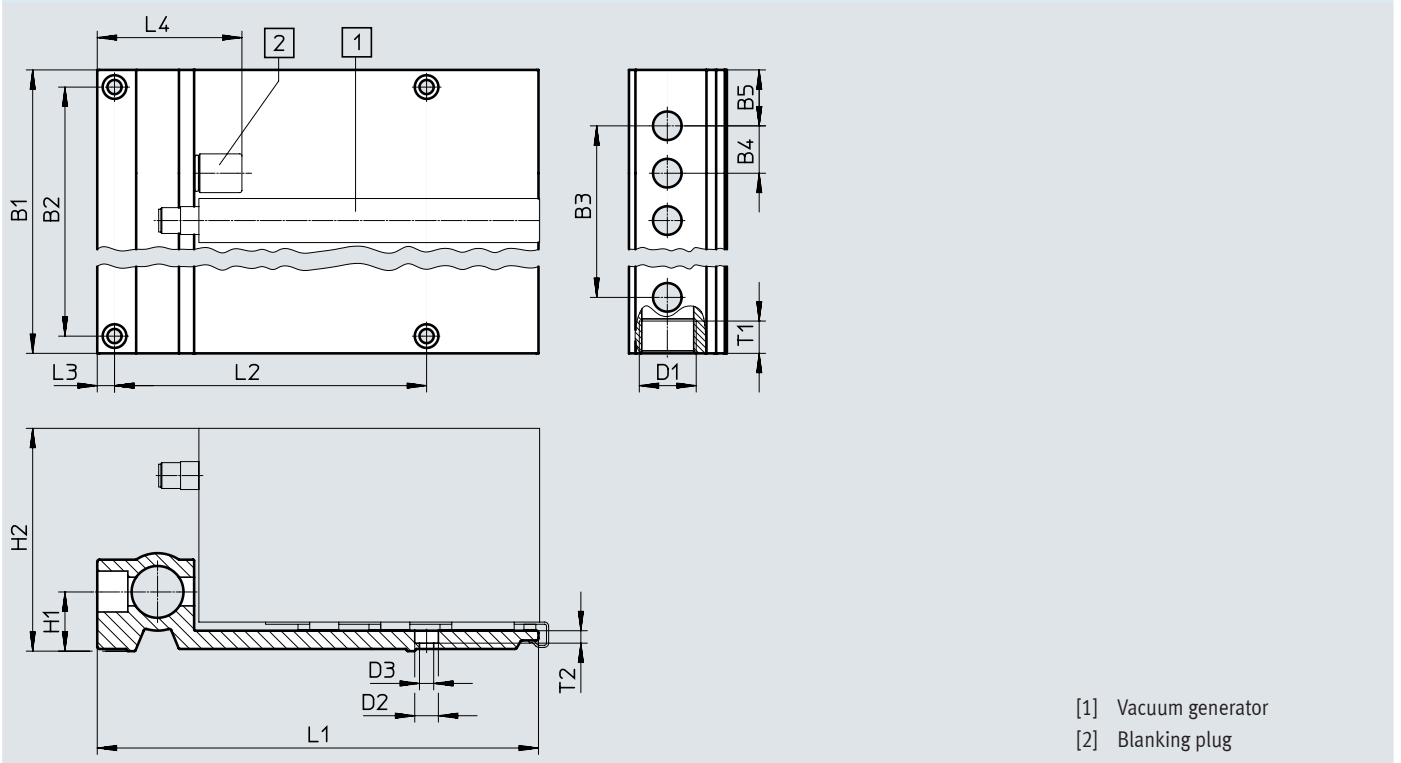
Pneumatic connection 1	G3/4
Type of mounting	Via through-hole

Materials

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

Dimensions

Download CAD data → www.festo.com




Type	Number of device positions	B1	B2	B3	B4	B5	D1	D2 ∅	D3 ∅	H1	H2	L1	L2	L3	L4	T1	T2
OABM-P-4	4	118	102	66	22	26	G3/4	11	6.6	28	103.5	205	145	8	67	15	5.8
OABM-P-6	6	162	146	110													
OABM-P-8	8	206	190	154													

Accessories

Tubing inside diameter d_i as a function of total air consumption q_{mN}																	
Total air consumption [l/min]																	
50	75	154	175	225	310	400	480	500	750	890	1000	1190	1340	1850	2240	2300	2900
Tubing inside diameter ¹⁾ [mm]																	
≥ 2.5	≥ 2.9	≥ 3.8	≥ 4	≥ 4.4	≥ 5	≥ 5.5	≥ 5.9	≥ 6	≥ 7	≥ 7.5	≥ 8	≥ 8.4	≥ 8.8	≥ 10	≥ 10.8	≥ 11	≥ 12
Recommended tubing																	
PUN-4	PUN-6	PUN-8	PUN-10	PUN-12	PUN-16	Datasheets → Internet: pun, pan											

1) With a tubing length of 3 m

 **Note**

The total air consumption of the fully equipped common supply manifold can be determined by adding the individual consumption of each generator used. Note that in the case of vacuum generators with ejector pulse (OE, CE), the individually set values for the ejector pulse (duration and intensity) can result in much higher air consumption.

Ordering data and weight					
	Number of device positions	CRC ¹⁾	Weight [g]	Part no.	Type
For OVEM-...-PL/PO	4	2	767	549456	OABM-P-4
	6	2	1045	549457	OABM-P-6
	8	2	1330	549458	OABM-P-8

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

Accessories

Blanking plug OASC-G1-P

For common supply manifold OABM-P

Type of mounting: threaded
Max. tightening torque: 10 Nm

Material:
Hollow bolt: Wrought aluminium alloy
Blanking cap: Steel
Seals: Steel, nitrile rubber
Note on materials:
RoHS-compliant



Ordering data	CRC ¹⁾	Weight [g]	Part no.	Type
Blanking plug	2	53	549460	OASC-G1-P

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

Moderate corrosion stress. Indoor applications in which condensation can occur. External visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment.

H-rail mounting

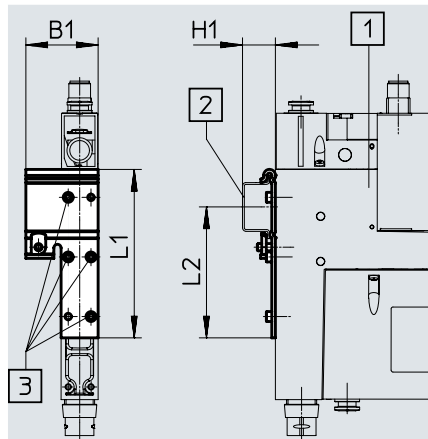
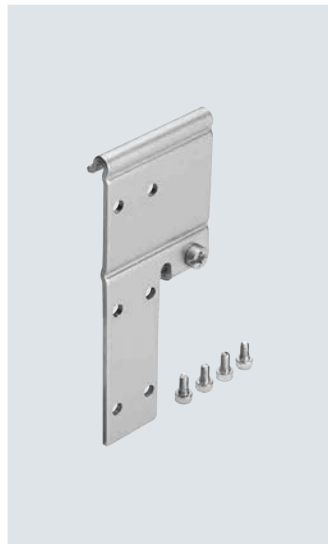
OABM-H

For vacuum generator OVEM

Max. tightening torque for H-rail mounting: 0.8 Nm

Material: Galvanised steel

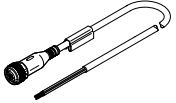
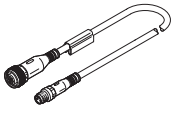
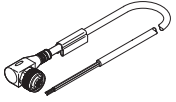
Note on materials:
RoHS-compliant




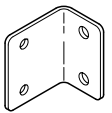
- [1] Vacuum generator
- [2] H-rail TH-35-15
- [3] Screws M3x6 (enclosed)

Ordering data	Weight [g]	Part no.	Type
H-rail mounting	52	549461	OABM-H

Accessories

Ordering data – Connecting cable NEBU-M12				Datasheets → Internet: nebu	
	Electrical connection		Cable length [m]	Part no.	Type
	Straight socket, M12x1, 5-pin	Open end, 5-wire	2.5	541330	NEBU-M12G5-K-2.5-LE5
			5	541331	NEBU-M12G5-K-5-LE5
			10	554038	NEBU-M12G5-K-10-LE5
	Straight socket, M12x1, 5-pin	Straight plug, M8x1, 4-pin, rotatable thread	2.5	554036	NEBU-M12G5-K-2.5-M8G4
	Angled socket, M12x1, 5-pin	Open end, 5-wire	2.5	567843	NEBU-M12W5-K-2.5-LE5
			5	567844	NEBU-M12W5-K-5-LE5

Ordering data – Silencer extension UOMS				Datasheets → Internet: uoms	
Description	Design	Type of mounting	Part no.	Type	
	Open silencer	Latching	538436	UOMS-1/4	

Ordering data – Mounting bracket HRM				Datasheets → Internet: hrm	
Description	Material		Part no.	Type	
	Galvanised steel		9769	HRM-1	

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