

# Vacuum generators OVEM, NPT



## Vacuum generators OVEM, NPT

Key features

### At a glance

Accelerated vacuum reduction for safe placement of the workpiece by means of integrated solenoid valve for controlling the ejector pulse

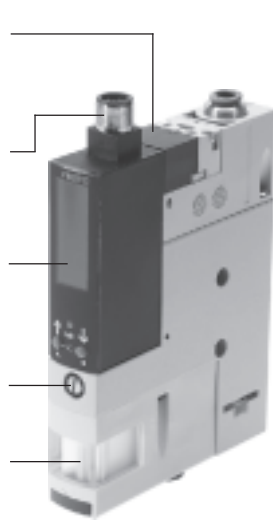
Central electrical connection via M12 plug

#### OVEM-...-2P/2N/PU/NU/PI/NI

Monitoring and visualisation of the vacuum by means of vacuum sensor with LCD display (inchHg)

Adjustment of the ejector pulse via flow control screw

Prevention of contamination of the vacuum generator by means of integrated filter



Quick and secure installation thanks to QS fitting

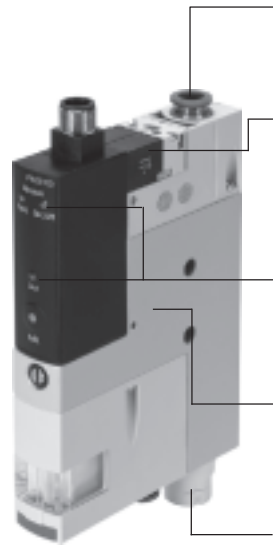
Fast vacuum build-up by means of integrated solenoid valve for controlling the compressed air supply

#### OVEM-...-1P/1N

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

Prevention of pressure drops by means of integrated non-return valve

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



### The modular vacuum generator series

The modular vacuum generator series OVEM offers a wide range of individually selectable functions, making it possible to find a solution for the most varied of applications.

Functions	Values
Laval nozzle	0.45 mm
	0.7 mm
	0.95 mm
	1.4 mm
Vacuum generator characteristic	High vacuum
	High suction rate
Housing size	20 mm, metric version, display in bar <sup>1)</sup>
	20 mm, NPT version, display in inchHg
Pneumatic connections	QS fittings, with or without open silencer <sup>1)</sup>
	QS fittings (inch), with or without open silencer
	G female thread, with or without open silencer <sup>1)</sup>
	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
	Switching output 1x PNP or 1x NPN <sup>2)</sup>
	Switching output 2x PNP or 2x NPN <sup>3)</sup>
	Switching output 1x PNP or 1x NPN and analogue output <sup>3)</sup>
Alternative vacuum display	inchHg <sup>1) 3)</sup>
	inchH <sub>2</sub> O <sup>3)</sup>
	bar <sup>3)</sup>

1) Product documentation → Internet: ovem

2) Vacuum sensor with LED display

3) Vacuum sensor with LCD display

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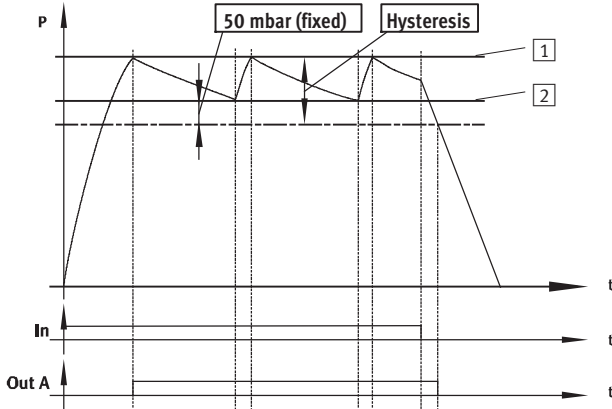
Key features

The innovative vacuum generator			
Economical		Easy to use	
<ul style="list-style-type: none"> <li>Short switching times thanks to integrated solenoid valves                             <ul style="list-style-type: none"> <li>Vacuum on/off</li> <li>Ejector pulse</li> </ul> </li> <li>Quick, precise and safe placement of the workpiece by means of the ejector pulse</li> <li>Cost saving through preventive maintenance/service thanks to maintenance indicator</li> </ul>	<ul style="list-style-type: none"> <li>Cost saving through integrated air-saving function</li> <li>Powerful supply of multiple vacuum generators via a common supply manifold (→ page 17)</li> <li>Low-cost variants with one switching output (OVEM-...-1P/1N)</li> </ul>	<ul style="list-style-type: none"> <li>Simple installation via M12 plugs and QS fittings</li> <li>Simple mounting via screws</li> <li>All control elements on one side</li> <li>Quiet operation thanks to integrated silencers</li> </ul>	<ul style="list-style-type: none"> <li>Vacuum sensor with LCD display (OVEM-...-2P/2N/PU/NU/PI/N)                             <ul style="list-style-type: none"> <li>Vacuum is displayed numerically and as a bar chart</li> <li>Important parameters and diagnostic information are displayed</li> </ul> </li> </ul>
Reliable	Space-saving	Easy to maintain	Choice of mounting types
<ul style="list-style-type: none"> <li>Permanent monitoring of the entire vacuum system via a vacuum sensor to reduce downtimes (condition monitoring)</li> <li>Prevention of pressure loss by means of an integrated air-saving function in conjunction with an integrated non-return valve</li> </ul>	<p>All functions are compactly integrated in one unit</p> <ul style="list-style-type: none"> <li>No protruding elements such as valves or vacuum sensor</li> <li>Space-optimised installation is possible as all the control elements can be accessed from one side</li> </ul>	<ul style="list-style-type: none"> <li>Integrated filter with inspection window for maintenance display</li> <li>Reduced contamination of the vacuum generator thanks to an open silencer</li> </ul>	<ul style="list-style-type: none"> <li>Direct mounting or via mounting bracket</li> <li>Straightforward mounting on H-rail via accessories</li> <li>Blocking of multiple vacuum generators on a common supply manifold (→ page 17)</li> </ul>
Operating principle of OVEM			
Vacuum ON/OFF		Vacuum sensor	Ejector pulse
<p>The compressed air supply is controlled by an integrated solenoid valve. The solenoid valve can be supplied with two different switching functions, NC and NO.</p> <ul style="list-style-type: none"> <li>NC - normally closed: The vacuum is generated when the vacuum generator is pressurised with compressed air and the solenoid valve has been switched.</li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>	<p>The set or taught-in reference value for the generated vacuum is monitored via an integrated vacuum sensor. If the reference value is reached or if it is not reached due to malfunctions (e.g. leakages, dropped workpiece), the vacuum sensor emits an electrical signal.</p>	<p>With a second integrated solenoid valve, an ejector pulse is activated and generated after the vacuum is switched off to release the workpiece safely from the suction cup and to reduce the vacuum quickly.</p>
Connection to higher-level systems			
<p>The connection to higher-level systems as well as the configuration of the switching outputs depends on the type of vacuum sensor.</p>	<p><b>OVEM-...-1P/1N</b></p> <ul style="list-style-type: none"> <li>Switching inputs for actuating the solenoid valves for vacuum generation and ejector pulse</li> <li>One switching output for supplying a control signal                             <ul style="list-style-type: none"> <li>Configured as an N/O contact</li> <li>Switching function configured as a threshold value comparator</li> </ul> </li> </ul>	<p><b>OVEM-...-2P/2N/PU/NU/PI/NI</b></p> <ul style="list-style-type: none"> <li>One digital switching input for actuating the solenoid valves</li> <li>Two digital switching outputs or one digital switching output and one analogue output for supplying control signals                             <ul style="list-style-type: none"> <li>Switching outputs can be configured as N/C or N/O contacts</li> <li>Switching function of the outputs can be configured as a threshold value or window comparator</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>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.</li> </ul>

## Vacuum generators OVM, NPT

Key features

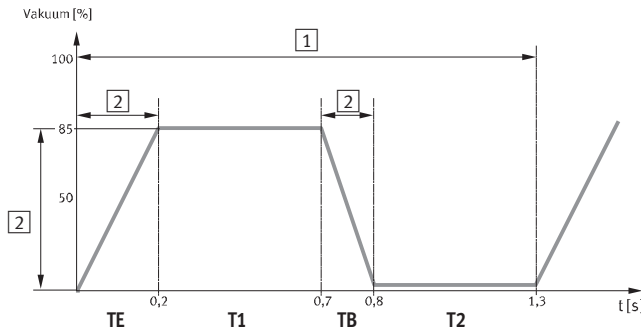
### OVM...-2P/2N/PU/NU/PI/NI – Air-saving function LS (-CE, -OE)



If the desired threshold value **1** for the vacuum is reached, vacuum generation is automatically switched off. A non-return valve prevents the reduction of the vacuum. Nonetheless, leakage (e.g. due to rough workpiece surfaces) will

slowly reduce the vacuum. If the pressure drops below the threshold value **2**, vacuum generation is automatically switched on. Vacuum is generated until the set threshold value **1** is reached again.

### OVM...-2P/2N/PU/NU/PI/NI – Condition monitoring and diagnostics



- 1** Cycle time
- 2** Monitoring
- TE Evacuation time
- T1 Transport time
- TB Air supply time
- T2 Return time

The main operating parameters

- vacuum
- evacuation time and
- air supply time

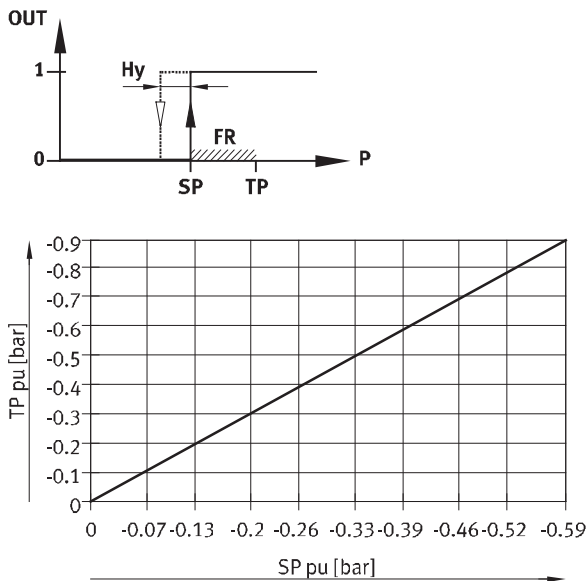
are continuously measured in the vacuum generator and compared with the individually set reference values (condition monitoring). If deviations in the reference values occur, these will be determined by the vacuum

generator and shown on the display (diagnostics). An electrical signal will also be transmitted to the higher-order controller.

This permits preventative action

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

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



- TP Teach-in point
- SP Switching point
- Hy Hysteresis
- FR Functional reserve

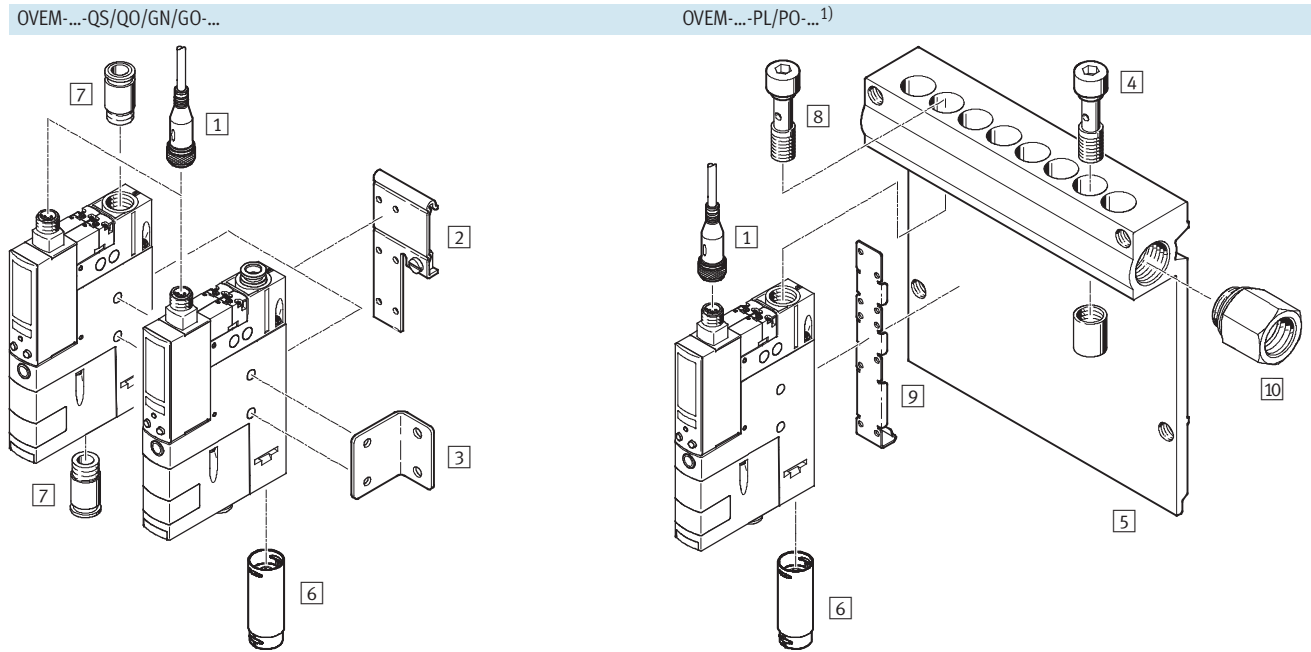
The switching point is determined from the teach-in point and the functional reserve. A functional reserve (35% of the teach-in pressure) is subtracted from the teach-in pressure ( $SP = TP - 0.35 \cdot TP$ ).

For example, a switching point of  $-0.33$  bar is set at a teach-in pressure of  $-0.5$  bar. The hysteresis is fixed.

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Peripherals overview

FESTO



1) Hollow bolt **8** and mounting bracket **9** are included in the scope of delivery of the OVEM-...-PL/PO-...  
Adapter **10** is included in the scope of delivery of the common supply manifold OABM-P-...

Mounting attachments and accessories							
	OVEM-...-QS/QO/GN/GO-...				OVEM-...-PL/PO-...		→ Page/Internet
	QS	QO	GN	GO	PL	PO	
<b>1</b> Connecting cable NEBU-M12G5			■			■	nebu
<b>2</b> H-rail mounting kit OABM-H			■			-	18
<b>3</b> Mounting bracket HRM-1			■			-	hrm-1
<b>4</b> Blanking plug OASC-G1-P			-			■	18
<b>5</b> Common supply manifold OABM-P-...			-			■	17
<b>6</b> Silencer extension UOMS-1/4	-	■	-	■	-	■	uoms
<b>7</b> Push-in fitting QS	-			■		-	quick star
- Suction gripper ESG			■			■	esg
- Suction cup holder ESH			■			■	esh
- Suction cup ESS			■			■	ess

## Vacuum generators OVEM, NPT

Type codes

OVEM – 10 – H – BN – QO – CE – N – 2P –

### Type

OVEM	Vacuum generator
------	------------------

### Nominal size of laval nozzle [mm]

05	0.45
07	0.7
10	0.95
14	1.4

### Ejector characteristic

H	High vacuum
L	High suction rate

### Housing width

BN	Grid dimension 20 mm (inch version)
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### Pneumatic connections

QS	P-V-R with QS fitting (inch)
QO	P-V with QS fitting (inch), R with open silencer
GN	P-V-R with NPT female thread
GO	P-V with NPT female thread, R with open silencer
PL	Prepared for common supply manifold, V-R with QS fitting (inch)
PO	Prepared for common supply manifold, V with QS fitting (inch), R with open silencer

### Normal position of the vacuum generator

ON	NO, normally open (vacuum generation)
OE	NO, normally open with ejector pulse
CN	NC, normally closed (vacuum generation)
CE	NC, normally closed with ejector pulse

### Electrical connection

N	Plug M12 (5-pin)
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### Vacuum sensor, electrical switching output

–	Without vacuum sensor
1P	1 switching output PNP
1N	1 switching output NPN
2P	2 switching outputs PNP
2N	2 switching outputs NPN
PU	1 switching output PNP, 1 analogue output 0 ... 10 V
PI	1 switching output PNP, 1 analogue output 4 ... 20 mA
NU	1 switching output NPN, 1 analogue output 0 ... 10 V
NI	1 switching output NPN, 1 analogue output 4 ... 20 mA

### Vacuum display

–	inchHg
W	inchH2O
B	bar

## Vacuum generators OVEM, NPT

Technical data

### Function


NC, normally closed:

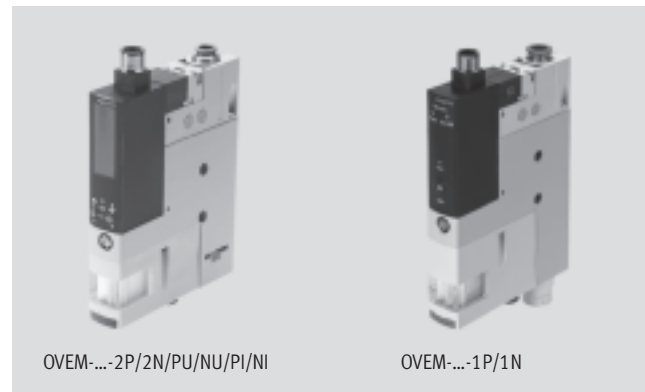
- Ejector pulse
- QS fitting (inch) or NPT female thread
- With open silencer
- Prepared for common supply manifold

NO, normally open:

- 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



General technical data					
Type		OVEM-05	OVEM-07	OVEM-10	OVEM-14
Nominal size 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 Via female thread Via accessories			
Pneumatic connection 1 (P)		➔ Dimensions on page 12			
Vacuum port (V)		➔ Dimensions on page 12			
Pneumatic connection 3 (R)		➔ Dimensions on page 12			

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

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

## Vacuum generators OVEM, NPT

Technical data

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		Filtered, unlubricated compressed air, grade of filtration 40 µm	
Ambient temperature [°C]		0 ... +50	
Temperature of medium [°C]		0 ... +50	
Corrosion resistance class CRC <sup>1)</sup>		2	
CE mark (see declaration of conformity) <sup>2)</sup>		To EU EMC Directive	
Certification		cULus recognized (OL) C-Tick	

- 1) Corrosion resistance class 2 according to Festo standard 940 070  
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: [www.festo.com](http://www.festo.com) → Support → User documentation.  
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Performance data – High vacuum																
Type	OVEM-05				OVEM-07				OVEM-10				OVEM-14			
Normal position of the vacuum generator	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE	ON	OE	CN	CE
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 <sub>1</sub> = 6 bar [l/min]	5.9				15.1				18.6				46			
Air supply time <sup>1)</sup> for 1 l volume, at p <sub>1</sub> = 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 <sub>1</sub> = 6 bar db(A)	51				58				73				77			

- 1) Time required to reduce vacuum to -0.05 bar.

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

- 1) Time required to reduce vacuum to -0.05 bar.



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Technical data

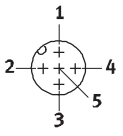
Technical data – Vacuum sensor								
Electrical switching output	2P	2N	PU	NU	PI	NI	1P	1N
<b>Mechanical</b>								
Measured variable	Relative pressure							
Measuring principle	Piezoresistive							
Pressure measuring range	[bar]	-1 ... 0						
Accuracy FS <sup>1)</sup>	[%]	3						-
Repetition accuracy of switching value FS <sup>1)</sup>	[%]	0.6						0.6
Setting options	Via display and keys							Teach-in
Threshold value setting range	[bar]	-0.999 ... 0						-1 ... 0
Hysteresis setting range	[bar]	-0.9 ... 0						
Display type	4-character alphanumeric, backlit LCD							LED
Displayable units	-	inchHg						-
	W	inchH2O						-
	B	bar						-
Display range	[inchHg]	-29.5 ... 0						-
	[inchH2O]	-401.9 ... 0						-
	[bar]	-0.999 ... 0						-
Switching status display	Visual							Visual
Switching position display	LCD							LED
Electrical connection	Plug M12x1, 5-pin							
<b>Electrical</b>								
Switching output	2x PNP	2x NPN	1x PNP	1x NPN	1x PNP	1x NPN	1x PNP	1x NPN
Switching input to standard	IEC 61131-2							
Switching element function	N/O contact							
	N/C contact							-
Switching function	Window comparator							-
	Threshold value comparator <sup>2)</sup>							
Fixed hysteresis	[mbar]	-						20
Operating voltage range	[V DC]	20.4 ... 27.6						
Duty cycle	[%]	100						
Idle current	[mA]	< 70						< 80
Coil characteristics 24 V DC	[W]	Low-current phase: 0.3						
		High-current phase: 2.55						
Residual current	[mA]	0.1						
Max. output current	[mA]	100						
Voltage drop	[V]	≤ 1.5						
Inductive protective circuit	Adapted to MZ, MY, ME coils							
Analogue output	[V]	-			0 ... 10		-	-
	[mA]	-			-		4 ... 20	-
Permitted load resistance for analogue output	[ohms]	-			Min. 2,000		Max. 500	-
Accuracy of analogue output FS <sup>1)</sup>	[%]	-			4		-	-
Protection against short circuit	Yes							
Protection against overloading	Yes							
Reverse polarity protection	For all electrical connections							
Protection class	IP65							
Electrical protection class	III							

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

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

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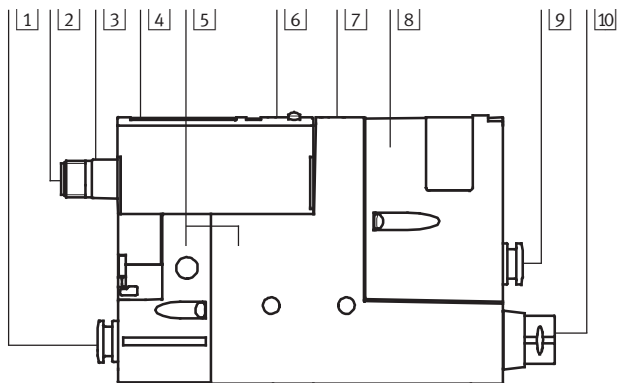
Technical data

Pin allocation			
Plug M12x1, 5-pin	Pin	Meaning	
		OVEM-...-2P/2N/PU/NU/PI/NI	OVEM-...-1P/1N
	1	Supply voltage +24 V DC	Supply voltage +24 V DC
	2	Output B (function depending on variant)	Switching input for vacuum ON/OFF
	3	0 V	0 V
	4	Output A (switching output for vacuum sensor)	Switching output <sup>1)</sup>
	5	Switching input In (vacuum ON/OFF and ejector pulse)	Switching input for ejector pulse ON/OFF

1) Pin 4 not used in types without vacuum sensor

### Materials

Sectional view



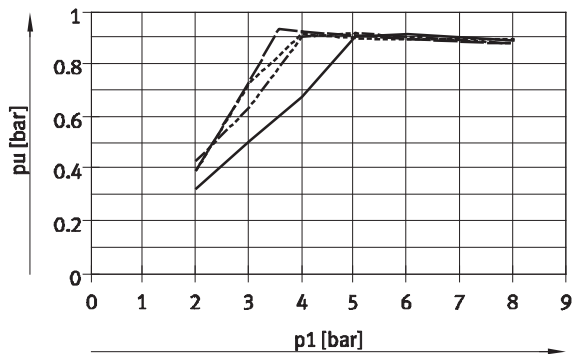
Type OVEM	2P/2N/PU/NU/PI/NI	1P/1N
1 Fitting	QS	Nickel-plated brass
	QO	
	GO	
Connecting thread	GN	Anodised wrought aluminium alloy
	GO	
	GO	
2 Pin contacts		Gold-plated brass
3 Plug housing		Nickel-plated brass
4 Inspection window	PA	-
5 Housing		Die-cast aluminium, PA-reinforced
6 Key pad	TPE-U	PA-reinforced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

# Vacuum generators OVEM, NPT

Technical data

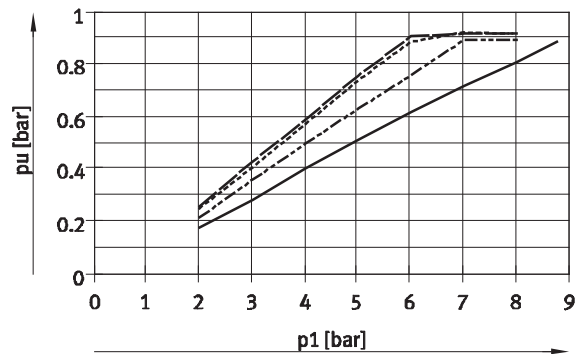
## Vacuum $p_u$ as a function of operating pressure $p_1$

High vacuum



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

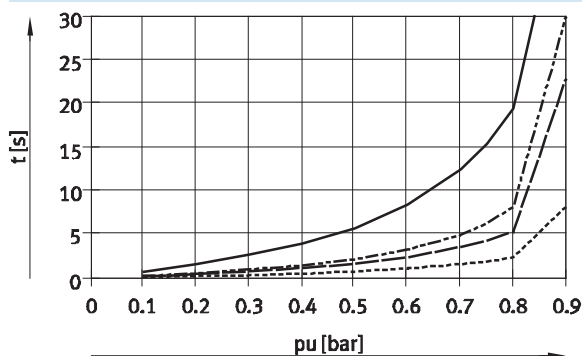
High suction rate



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

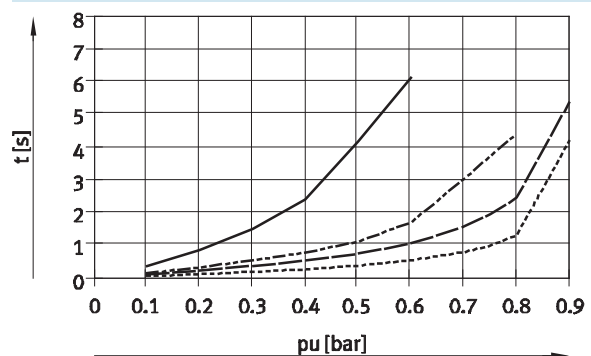
## Evacuation time $t$ as a function of vacuum $p_u$ for 1 l volume at 6 bar operating pressure

High vacuum



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

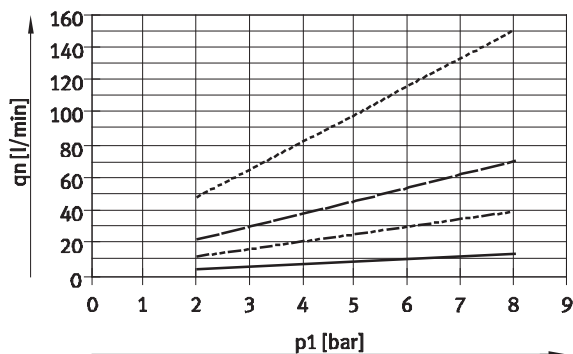
High suction rate



- 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

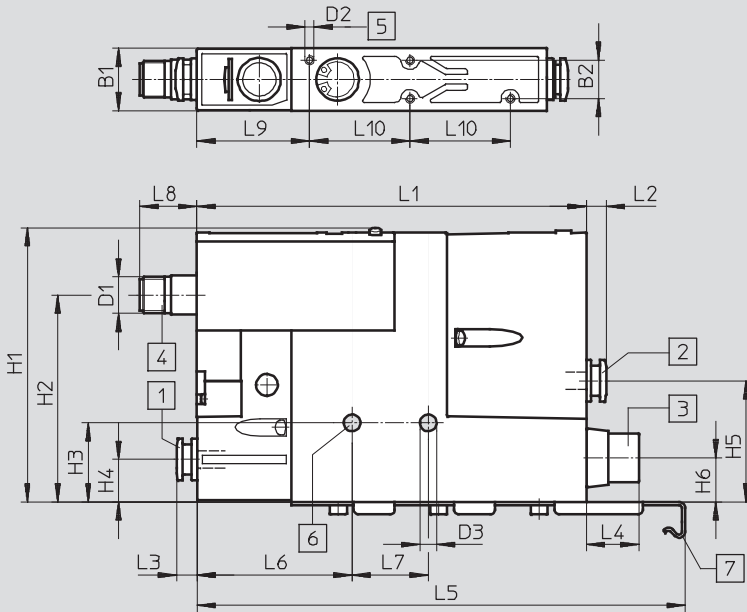
# Vacuum generators OVEM, NPT

Technical data

**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

OVEM-05



- 1 Supply port
- 2 Vacuum port
- 3 Silencer (SD)/exhaust port
- 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 D1	V D2	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									
OVEM-05-...-PL-...	(G1/4) <sup>1)</sup>		QS-5/16									
OVEM-05-...-PO-...			SD									
OVEM-05-...-GN-...	NPT1/8	NPT1/8	NPT1/8									
OVEM-05-...-GO-...			SD									

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	-	160.5	51	25	19	37
OVEM-05-...-QO-...						-						
OVEM-05-...-PL-...					-							
OVEM-05-...-PO-...				-	8.2	-						
OVEM-05-...-GN-...				8.2								
OVEM-05-...-GO-...				-								

1) Thread for mounting on the common supply manifold (→ 17)

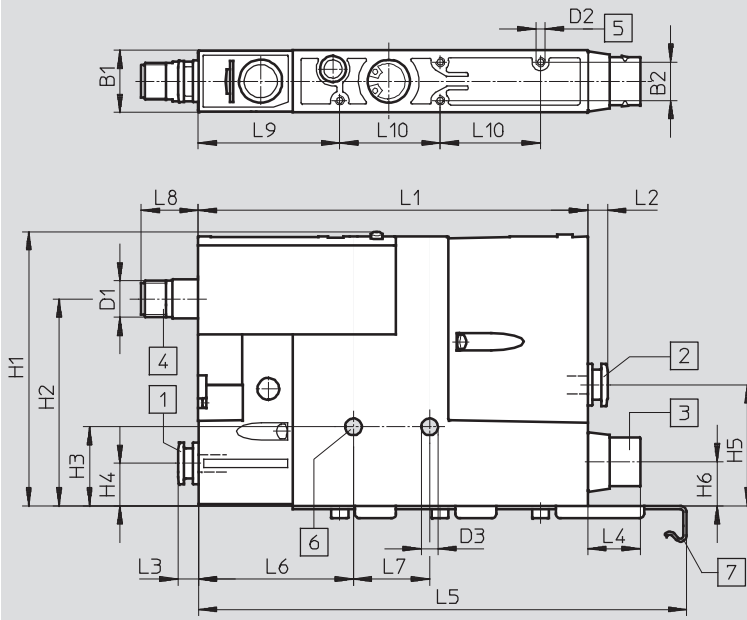
# Vacuum generators OVEM, NPT

Technical data

**Dimensions**

Download CAD data → [www.festo.com](http://www.festo.com)

OVEM-07/10



- 1 Supply port
- 2 Vacuum port
- 3 Silencer (SD)/exhaust port
- 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 D1	V D2	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									
OVEM-07/10-...-PL-...	(G1/4) <sup>1)</sup>	QS-5/16	QS-5/16									
OVEM-07/10-...-PO-...			SD									
OVEM-07/10-...-GN-...	NPT1/4	NPT1/4	NPT1/4									
OVEM-07/10-...-GO-...			SD									

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	19	46.5	33
OVEM-07/10-...-QO-...						17.3						
OVEM-07/10-...-PL-...						13						
OVEM-07/10-...-PO-...				17.3	160.5							
OVEM-07/10-...-GN-...				15								
OVEM-07/10-...-GO-...				17.3								

1) Thread for mounting on the common supply manifold (→ 17)

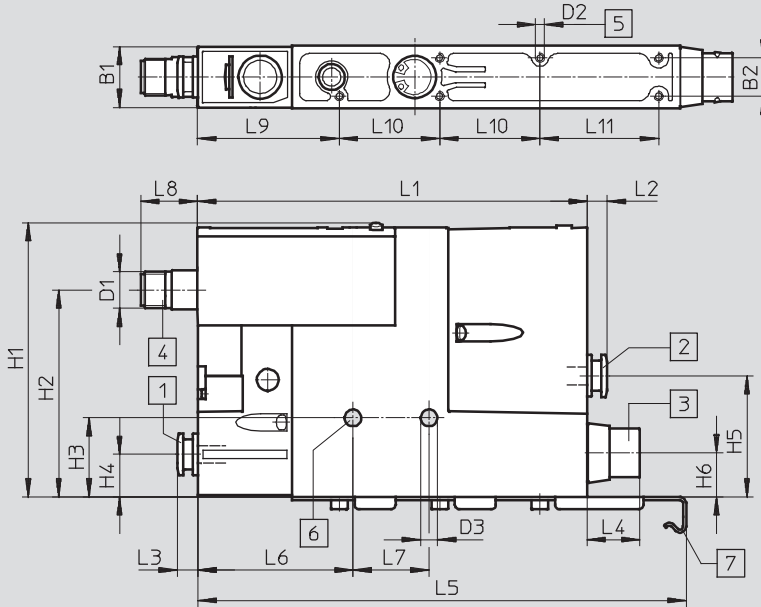
## Vacuum generators OVEM, NPT

Technical data

### Dimensions

Download CAD data → [www.festo.com](http://www.festo.com)

OVEM-14



- 1 Supply port
- 2 Vacuum port
- 3 Silencer (SD)/exhaust port
- 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)

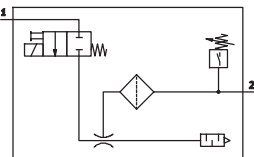

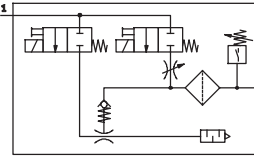

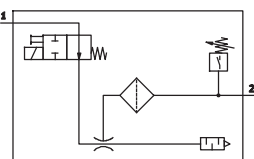

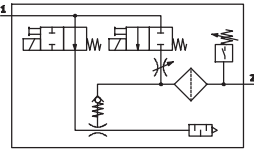

Type	Pneumatic connections			D1	D2	D3	B1	B2	H1	H2	H3	H4
	P D1	V D2	R									
OVEM-14-...-QS-...	QS-5/16	QS-5/16	QS-5/16	M12x1	M3	4.3	20.5	12.6	90	68	26	14.5
OVEM-14-...-QO-...			SD									
OVEM-14-...-PL-...	(G1/4) <sup>1)</sup>		QS-5/16									
OVEM-14-...-PO-...			SD									
OVEM-14-...-GN-...	NPT1/4	NPT1/4	NPT1/4									
OVEM-14-...-GO-...			SD									

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	19	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 (→ 17)

# Vacuum generators OVEM, NPT

Technical data

Ordering data and weight						
Circuit symbol	Description	Electrical switching output	Nominal size [mm]	Weight [g]	Part No.	Type
<b>Normally closed</b>						
	With open silencer	PNP	0.45	317	539992	OVEM-05-H-BN-QO-CN-N-2P
			0.7	322	539993	OVEM-07-H-BN-QO-CN-N-2P
			0.95		539994	OVEM-10-H-BN-QO-CN-N-2P
			1.4	370	540002	OVEM-14-H-BN-QO-CN-N-2P 
	With ejector pulse and open silencer	PNP	0.45	325	539989	OVEM-05-H-BN-QO-CE-N-2P
			0.7	331	539990	OVEM-07-H-BN-QO-CE-N-2P
			0.95		539991	OVEM-10-H-BN-QO-CE-N-2P
			1.4	380	540001	OVEM-14-H-BN-QO-CE-N-2P 
<b>Normally open</b>						
	With open silencer	PNP	0.45	317	539986	OVEM-05-H-BN-QO-ON-N-2P
			0.7	322	539987	OVEM-07-H-BN-QO-ON-N-2P
			0.95		539988	OVEM-10-H-BN-QO-ON-N-2P
			1.4	370	540000	OVEM-14-H-BN-QO-ON-N-2P 
	With ejector pulse and open silencer	PNP	0.45	325	539983	OVEM-05-H-BN-QO-OE-N-2P
			0.7	331	539984	OVEM-07-H-BN-QO-OE-N-2P
			0.95		539985	OVEM-10-H-BN-QO-OE-N-2P
			1.4	380	539999	OVEM-14-H-BN-QO-OE-N-2P 

## Vacuum generators OVEM, NPT

Ordering data – Modular products

Ordering table				
Size	20	Conditions	Code	Enter code
<b>M</b> Module No.	<b>539075</b>			
Vacuum generator	Vacuum generator with solenoid valve for vacuum valve on/off and manual override		<b>OVEM</b>	OVEM
Nominal size of laval nozzle [mm]	0.45		<b>-05</b>	
	0.7		<b>-07</b>	
	0.95		<b>-10</b>	
	1.4		<b>-14</b>	
Ejector characteristic	High vacuum		<b>-H</b>	
	High suction rate		<b>-L</b>	
Housing size/width [mm]	20 (inch version)		<b>-BN</b>	-BN
Pneumatic connections	All connections with inch fittings		<b>-QS</b>	
	Supply/vacuum port with inch fittings, exhaust port with open silencer		<b>-QO</b>	
	All connections with NPT female thread		<b>-GN</b>	
	Supply/vacuum port with NPT female thread, exhaust port with open silencer		<b>-GO</b>	
	Prepared for supply manifold, vacuum port and exhaust port with inch fittings		<b>-PL</b>	
	Prepared for supply manifold, vacuum port with inch fittings, exhaust port with open silencer		<b>-PO</b>	
Normal position of the vacuum generator	NO, normally open (vacuum generation)		<b>-ON</b>	
	NO, normally open (vacuum generation) with ejector pulse		<b>-OE</b>	
	NC, normally closed (no vacuum generation)		<b>-CN</b>	
	NC, normally closed (no vacuum generation) with ejector pulse		<b>-CE</b>	
Electrical connection	Plug M12 (5-pin)		<b>-N</b>	-N
<b>O</b> Vacuum sensor (standard scale in inchHg)	Without vacuum sensor (switching input PNP)			
	Switching output 1x PNP		<b>-1P</b>	
	Switching output 1x NPN		<b>-1N</b>	
	Switching output 2x PNP		<b>-2P</b>	
	Switching output 1x PNP + U		<b>-PU</b>	
	Switching output 1x PNP + I		<b>-PI</b>	
	Switching output 2x NPN		<b>-2N</b>	
	Switching output 1x NPN + U		<b>-NU</b>	
	Switching output 1x NPN + I		<b>-NI</b>	
Alternative vacuum display	inch H2O		<b>-W</b>	
	bar		<b>-B</b>	

**Transfer order code**

539075 OVEM - [ ] - [ ] - BN - [ ] - [ ] - N - [ ] - [ ]



# Vacuum generators OVEM, NPT

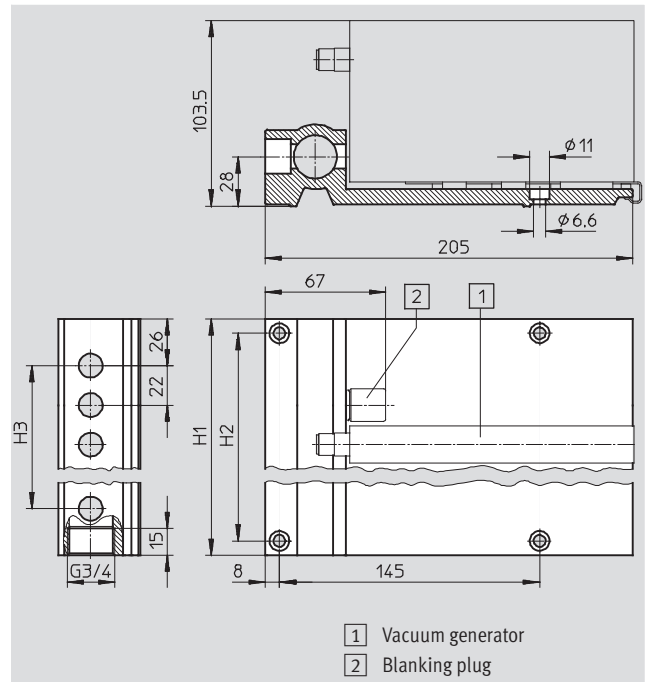
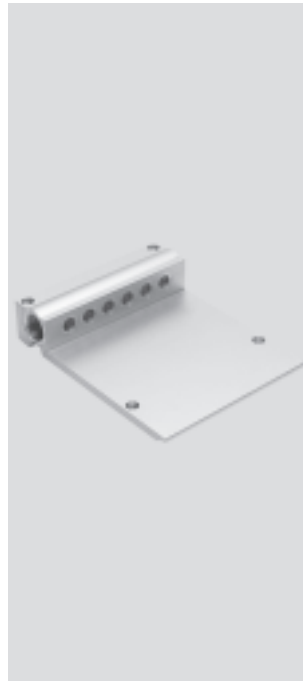
Accessories

**Common supply manifold OABM-P**  
for vacuum generator  
OVEM-...-PL/PO

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

Material: Wrought aluminium alloy

Note on materials:  
RoHS-compliant



Dimensions			
Number of device locations	H1	H2	H3
4	118	102	66
6	162	146	110
8	206	190	154

Tubing I.D. $d_i$ as a function of total air consumption $q_{nN}$																	
Total air consumption [l/min]																	
50	75	154	175	225	310	400	480	500	750	890	1,000	1,190	1,340	1,850	2,240	2,300	2,900
Tubing I.D. <sup>1)</sup> [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														Technical data → Internet: pun, pan			
PUN-4	PUN-6	PUN-8		PUN-10		PUN-12		PUN-16		PAN-16							

1) With a tubing length of 3 m

**Note**

The total air consumption of the fully equipped common supply manifold 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. Note that in the case of each generator used.

Ordering data and weight					
	Number of device locations	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
Common supply manifold	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 2 according to Festo standard 940 070  
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

# Vacuum generators OVEM, NPT

Accessories

FESTO

**Blanking plug OASC-G1-P**  
for common supply manifold  
OABM-P-...

Type of mounting: Screw-in  
Max. tightening torque: 10 Nm

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



Ordering data				
	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
Blanking plug	2	53	549460	OASC-G1-P

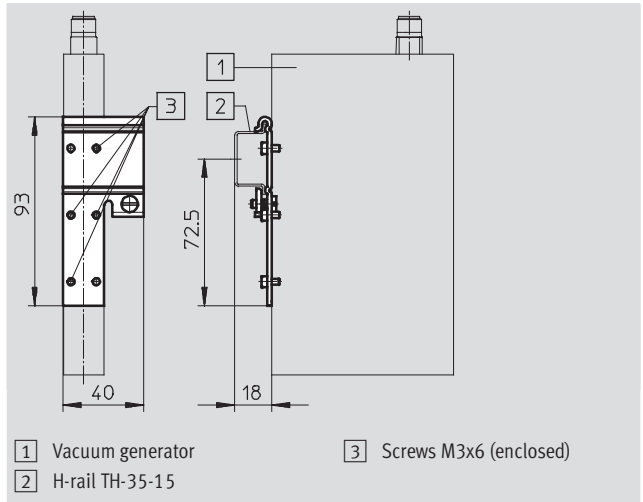
1) Corrosion resistance class 2 according to Festo standard 940 070  
Components subject to moderate corrosion stress. Externally visible parts with primarily decorative surface requirements which are in direct contact with a normal industrial environment or media such as coolants or lubricating agents.

**H-rail mounting kit OABM-H**  
for vacuum generator OVEM

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

Material: Galvanised steel

Note on materials:  
RoHS-compliant



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