

## Vacuum generators OVEM, NPT

**FESTO**



# Vacuum generators OVEM, NPT

Key features

FESTO

## At a glance

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

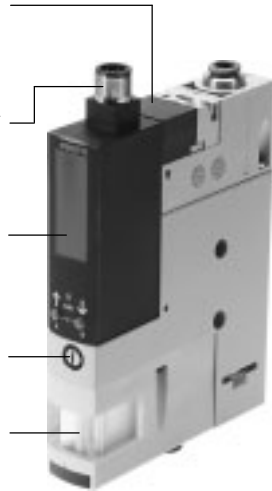
Central electrical connection via M12 plug

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

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

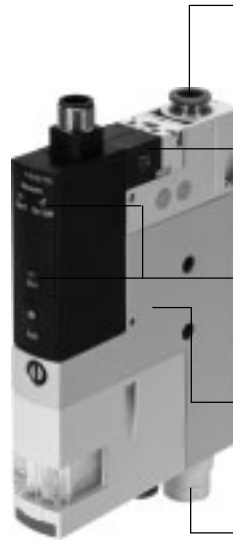
Fast vacuum build-up by means of integrated solenoid valve for controlling the compressed air supply

### 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
	2.0 mm <sup>1)</sup>
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	Plug M12 (5-pin)
Vacuum sensor	Without vacuum sensor
	1 switching output PNP or NPN, LED display
	1 switching output PNP, LCD display <sup>1)</sup>
	2 switching outputs PNP or NPN, LCD display
	1 switching output PNP and 1 analogue output, LCD display
	IO-Link, LCD display <sup>1)</sup>
Alternative vacuum display	inchHg <sup>1) 2)</sup>
	inchH <sub>2</sub> O <sup>2)</sup>
	bar <sup>2)</sup>

1) Product documentation → Internet: ovem

2) Vacuum sensor with LCD display

# Vacuum generators OVEM, NPT

## Key features

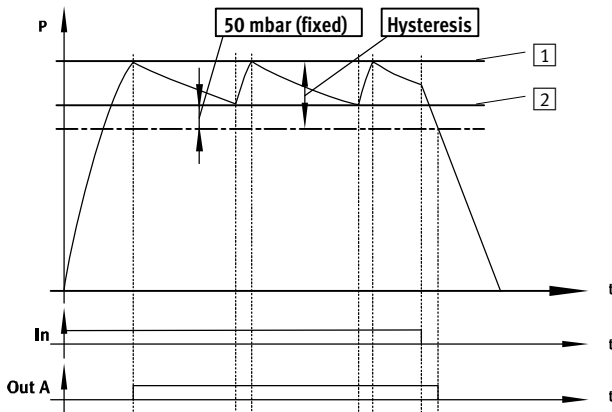
The innovative vacuum generator			
Economical		Easy to use	
<ul style="list-style-type: none"><li>• Short switching times thanks to integrated solenoid valves<ul style="list-style-type: none"><li>– Vacuum on/off</li><li>– Ejector pulse</li></ul></li><li>• Quick, precise and safe placement of the workpiece 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 18)</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/PI)<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 18)</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/PI</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 OVEM, NPT

Key features

FESTO

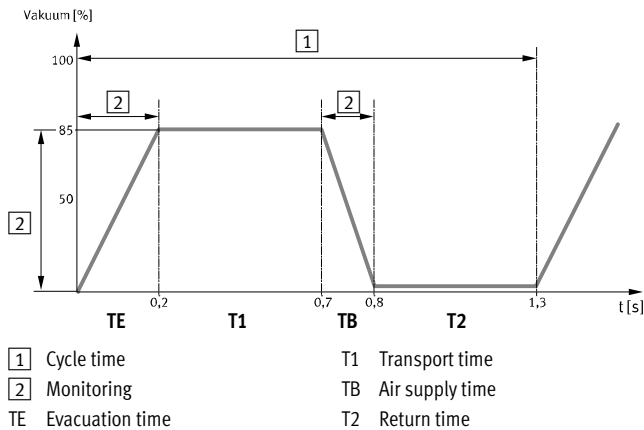
## OVEM-...-2P/2N/PU/PI – Air-saving function LS (-CE, -OE)



If the desired threshold value [1] for the vacuum is reached, vacuum generation is automatically switched off. A 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.

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



The main operating parameters

- vacuum
- evacuation time and
- air supply time

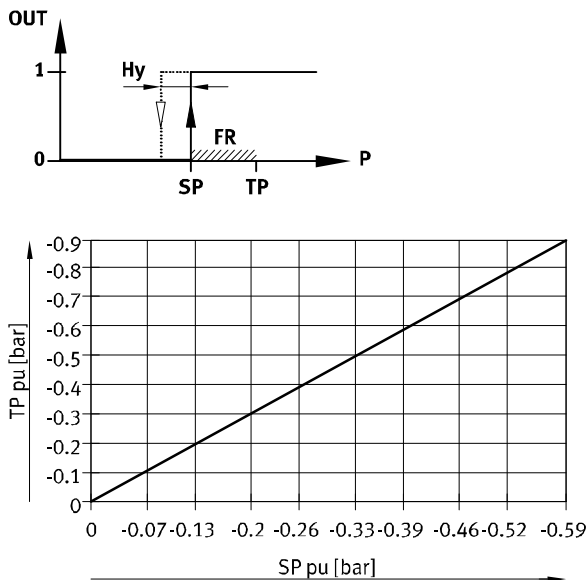
are continuously measured in the vacuum generator and compared with the individually set reference values (condition monitoring). If deviations in the reference values occur, these will be determined by the vacuum

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).

[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-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.

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

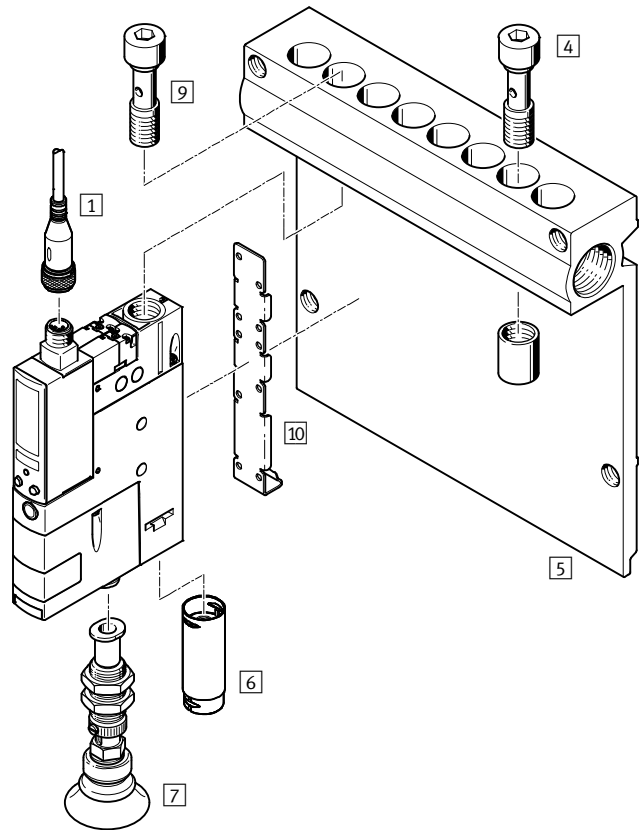
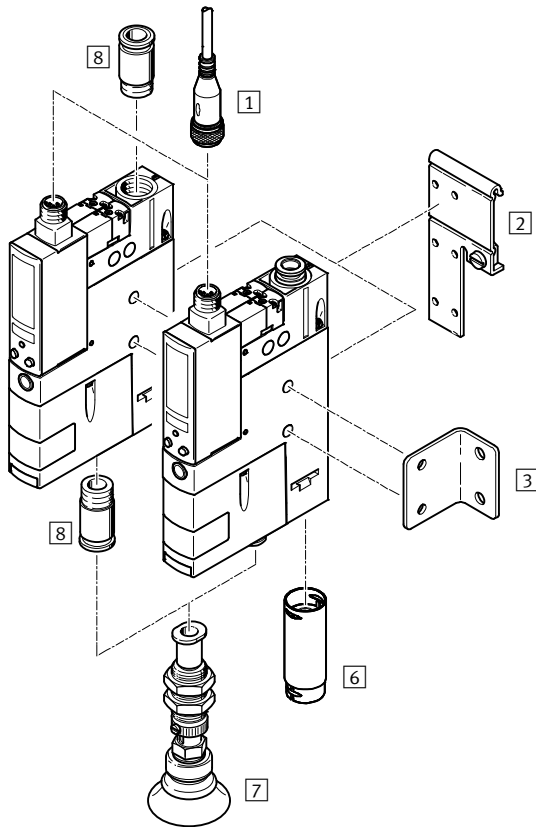
# Vacuum generators OVEM, NPT

Peripherals overview

**FESTO**

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

OVEM-...-PL/PO-...<sup>1)</sup>



1) Hollow bolt <sup>9</sup> and mounting bracket <sup>10</sup> are included in the scope of delivery of the OVEM-...-PL/PO-...

Mounting attachments and accessories							
OVEM-...-QS/QO/GN/GO-...					OVEM-...-PL/PO-...		→ Page/Internet
	QS	QO	GN	GO	PL	PO	
<sup>1</sup> Connecting cable NEBU-M12		■				■	20
<sup>2</sup> H-rail mounting kit OABM-H		■				-	19
<sup>3</sup> Mounting bracket HRM-1		■				-	20
<sup>4</sup> Blanking plug OASC-G1-P			-			■	19
<sup>5</sup> Common supply manifold OABM-P...			-			■	18
<sup>6</sup> Silencer extension UOMS-1/4	-	■	-	■	-	■	20
<sup>7</sup> Suction gripper ESG			■			■	esh
<sup>8</sup> Push-in fitting QS	-		■			-	qs
- Suction cup holder ESH			■			■	esh
- Suction cup ESS			■			■	ess

# Vacuum generators OVEM, NPT

FESTO

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)
----	-------------------------------------

## 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 (vacuum generation) with ejector pulse
CN	NC, normally closed (no vacuum generation)
CE	NC, normally closed (no vacuum generation) with ejector pulse

## Electrical connection

N	Plug M12 (5-pin)
---	------------------

## 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

## Vacuum display

–	inchHg
W	inchH2O
B	bar

# Vacuum generators OVEM, NPT

FESTO

## Technical data

### Function

NC, normally closed:

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

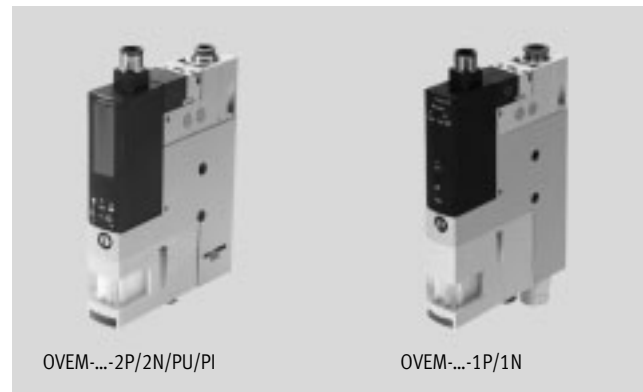
Temperature range  
0 ... +50 °C

Operating pressure  
2 ... 8 bar

www.festo.com

NO, normally open:

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



### 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 13			
Vacuum port (V)	➔ Dimensions on page 13			
Pneumatic connection 3 (R)	➔ Dimensions on page 13			

### 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
		Vacuum sensor <sup>1)</sup>
		Filter
		Silencer, open
	OE/CE	On-off valve, electrical
		Ejector pulse, electrical
		Flow control valve
		Vacuum sensor <sup>1)</sup>
		Air-saving function, electrical <sup>2)</sup>
		Non-return valve
		Filter
		Silencer, open
Valve function	ON/OE	Open
	CN/CE	Closed
Manual override		Non-detenting
		Additionally via control buttons <sup>2)</sup>

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

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

# Vacuum generators OVEM, NPT



Technical data

Operating and environmental conditions			
Type	OVEM-05/07/10/14-...-QO/PO/GO	OVEM-05/07/10/14-...-QS/GN/PL	
Operating pressure	[bar]	2 ... 8	2 ... 6
Nominal operating pressure	[bar]	6	
Operating medium		Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on operating/pilot medium		Operation with lubricated medium not possible	
Ambient temperature	[°C]	0 ... +50	
Temperature of medium	[°C]	0 ... +50	
Relative air humidity	[%]	5 ... 85	
Protection class		III	
Degree of protection		IP65	
Corrosion resistance class CRC <sup>1)</sup>		2	
CE mark (see declaration of conformity)		To EU EMC Directive <sup>2)</sup>	
Certification		cULus - Listed (OL)	
		RCM Mark	
KC marking		KC EMC	

- 1) Corrosion resistance class CRC 2 to Festo standard FN 940070  
Moderate corrosion stress. Indoor applications in which condensation may occur. External visible parts with primarily decorative requirements for the surface and which are in direct contact with the ambient atmosphere typical for industrial applications.
- 2) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: [www.festo.com/sp](http://www.festo.com/sp) → Certificates.  
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	5.1				4.1				3.5				3.6			
Max. suction rate with respect to atmosphere	6				16				19.5				50.5			
Suction rate at p <sub>1</sub> = 6 bar	5.9				15.1				18.6				46			
Air supply time <sup>1)</sup> for 1 l volume, at p <sub>1</sub> = 6 bar	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	51				58				73				77			

- 1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.

Performance data – High suction rate																
Type	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	13				31.5				45				92			
Suction rate at p <sub>1</sub> = 6 bar	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	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	45				53				64				70			

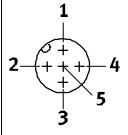
- 1) Duration for vacuum purging down to a residual vacuum of –0.05 bar after switching off the operating pressure.



# Vacuum generators OVEM, NPT

Technical data

Technical data – Electrical data, general				
Type		Without vacuum sensor	With vacuum sensor	
			OVEM-...-1P/1N	OVEM-...-2P/2N OVEM-...-PU/PI
Electrical connection		Plug M12x1, 5-pin		
Switching input to standard		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 capacity	[kV]	0.8		
Degree of contamination		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)

# Vacuum generators OVEM, NPT

FESTO

Technical data

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 keys				Teach-in	
Threshold value setting range	[bar]	–0.999 ... 0				–1 ... 0	
Hysteresis setting range	[bar]	–0.9 ... 0				–	
Setting range for ejector pulse time	[ms]	20 ... 9,999 (OVEM-05)				–	
		40 ... 9,999 (OVEM-07/10/14)				–	
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				–	
Accuracy							
Accuracy FS <sup>1)</sup>	[%]	±3				±0.5	
Repetition accuracy of switching value FS <sup>1)</sup>	[%]	0.6				0.6	
Inputs/outputs							
Switching logic at inputs		PNP	NPN	PNP	PNP	PNP	NPN
Switching output		2x PNP	2x NPN	1x PNP	1x PNP	1x PNP	1x NPN
Switching function		Window comparator				–	
		Threshold value comparator <sup>2)</sup>					
Switching status display		Visual					
Switching element function		N/O contact					
		N/C contact				–	
Fixed hysteresis	[mbar]	–				20	
Max. output current	[mA]	100					
Idle 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 for analogue output	[ohms]	–		Min. 2,000	Max. 500	–	
Accuracy of analogue output FS <sup>1)</sup>	[%]	–		4		–	
Protection against short circuit		Yes					
Inductive protective circuit		Adapted to MZ, MY, ME coils					
Protection against overloading		Yes					

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

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

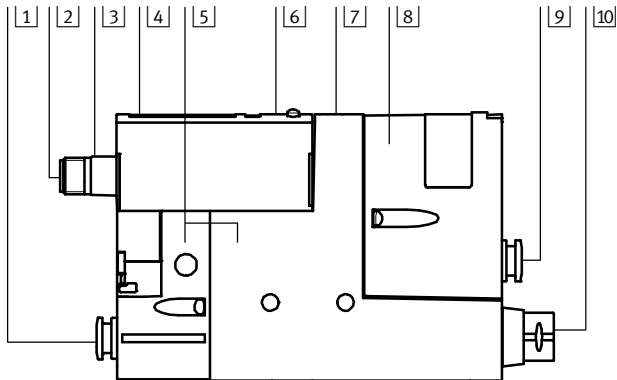
# Vacuum generators OVEM, NPT

Technical data

**FESTO**

## Materials

Sectional view



OVEM		2P/2N/PU/PI	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	Key pad	TPE-U	PA-reinforced
7	Adjusting screw	CE/OE	Steel
8	Filter housing		PA-reinforced
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
–	Receiver 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 PWIS (paint-wetting impairment substances)

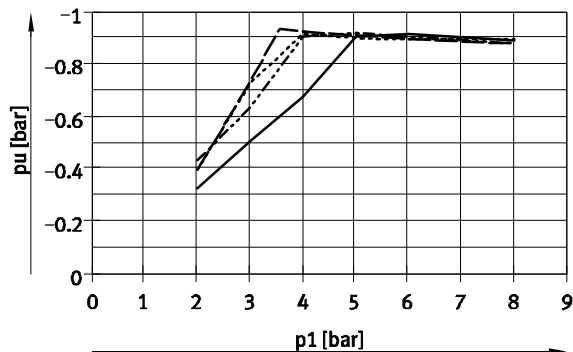
# Vacuum generators OVEM, NPT

FESTO

Technical data

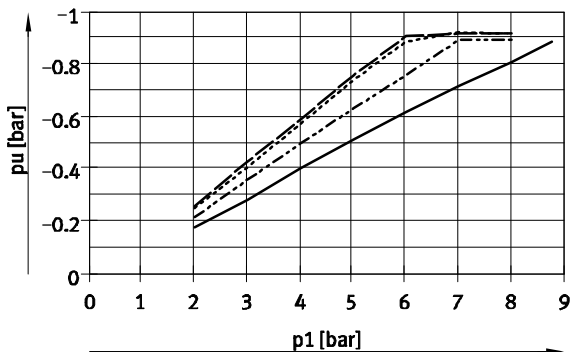
## Vacuum $p_u$ as a function of operating pressure $p_1$

High vacuum



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

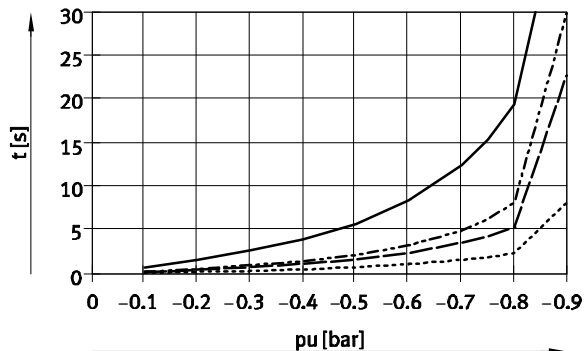
High suction rate



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

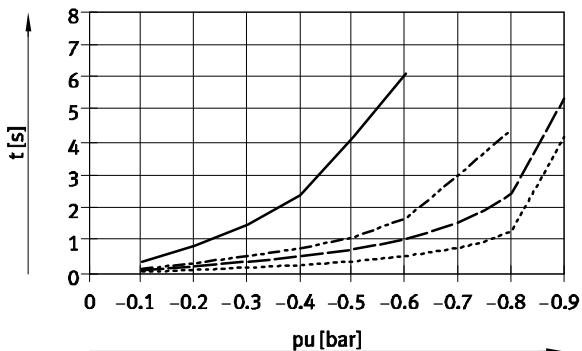
## Evacuation time $t$ as a function of vacuum $p_u$ for 1 l volume at 6 bar operating pressure

High vacuum



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

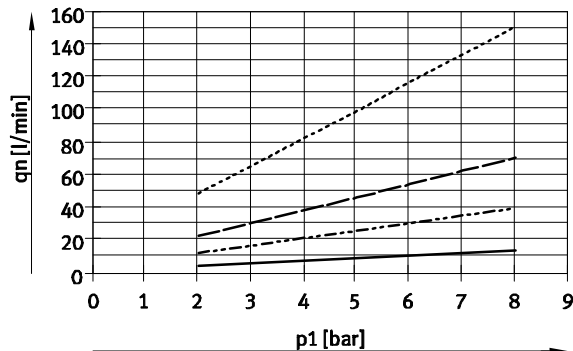
High suction rate



— 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

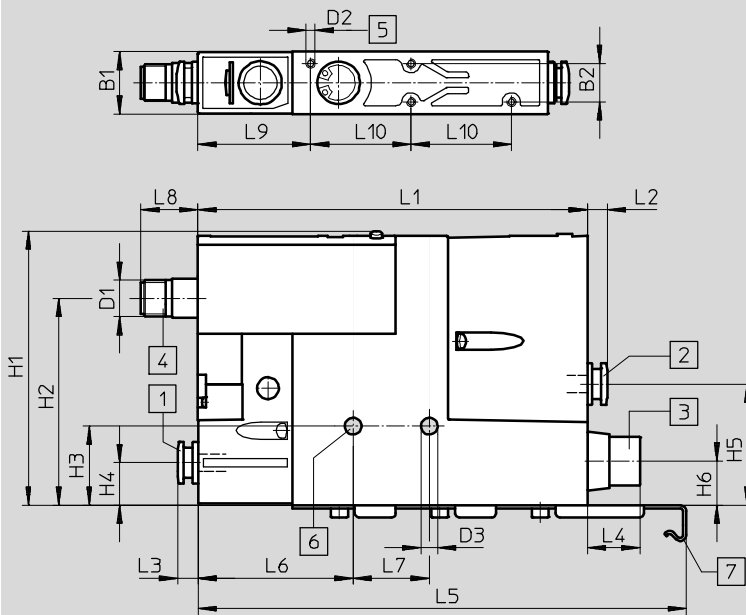
Technical data

**FESTO**

## Dimensions

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

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 <sup>2)</sup>									
OVEM-05-...-PL-...	(G1/4) <sup>1)</sup>		QS-5/16									
OVEM-05-...-PO-...			SD <sup>2)</sup>									
OVEM-05-...-GN-...	1/8 NPT	1/8 NPT	1/8 NPT									
OVEM-05-...-GO-...			SD <sup>2)</sup>									

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	160.5										
OVEM-05-...-PO-...						-											
OVEM-05-...-GN-...				8.2	8.2	8.2	-										
OVEM-05-...-GO-...						-											

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

2) SD = Silencer

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

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

# Vacuum generators OVEM, NPT

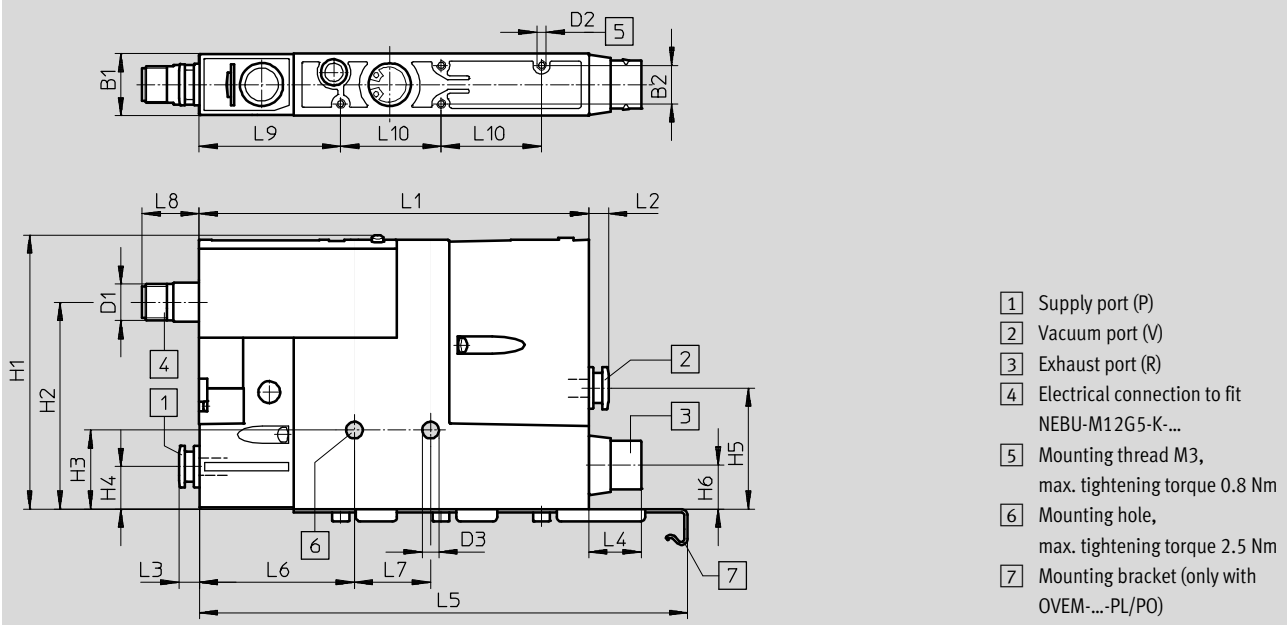
Technical data

**FESTO**

## Dimensions

OVEM-07/10

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



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 <sup>2)</sup>									
OVEM-07/10-...-PL-...			QS-5/16									
OVEM-07/10-...-PO-...	(G1/4) <sup>1)</sup>		SD <sup>2)</sup>									
OVEM-07/10-...-GN-...	1/4 NPT	1/4 NPT	1/4 NPT									
OVEM-07/10-...-GO-...			SD <sup>2)</sup>									

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-...						17.3						
OVEM-07/10-...-GN-...				17.2	17.2	15	-					
OVEM-07/10-...-GO-...						17.3						

1) Thread for mounting on the common supply manifold (→ 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	
Tubing length	< 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

# Vacuum generators OVEM, NPT

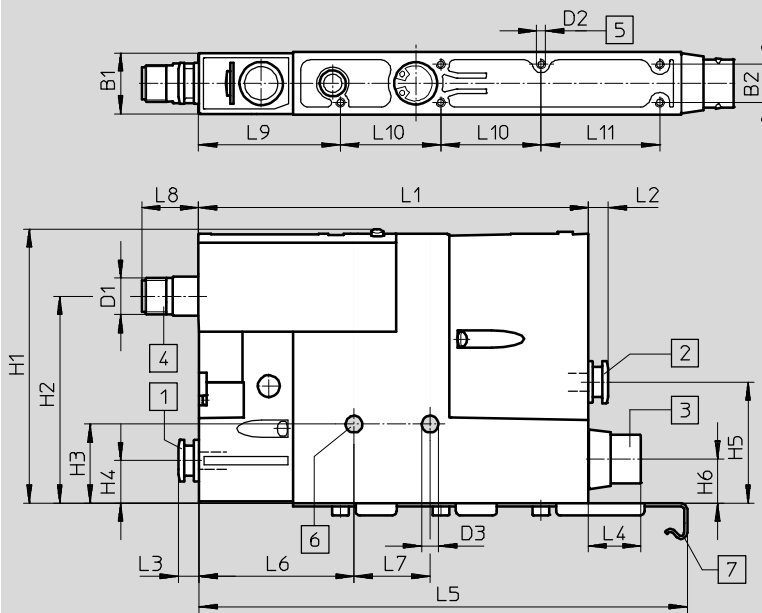
Technical data

**FESTO**

## Dimensions

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

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 <sup>2)</sup>										
OVEM-14-...-PL-...	(G1/4) <sup>1)</sup>		QS-5/16										
OVEM-14-...-PO-...			SD <sup>2)</sup>										
OVEM-14-...-GN-...	1/4 NPT	1/4 NPT	1/4 NPT										
OVEM-14-...-GO-...			SD <sup>2)</sup>										

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	160.5												
OVEM-14-...-PO-...						17.3													
OVEM-14-...-GN-...				17.2	17.2	15	-												
OVEM-14-...-GO-...						17.3													

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

2) SD = Silencer

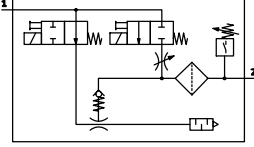
## Minimum inside diameter [mm] of the connection tubes for connections with female thread

Type	OVEM-14-...-GN/GO	
Tubing 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

# Vacuum generators OVEM, NPT

FESTO

Technical data

Ordering data and weight							
Circuit symbol	Description	Electrical switching output	Display	Nominal size [mm]	Weight [g]	Part No.	Type
Normally open							
	With ejector pulse, P-V with QS fitting, R with open silencer	2x PNP	LCD	1.4	380	539999	OVEM-14-H-BN-QO-OE-N-2P



# Vacuum generators OVEM, NPT

FESTO

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				
	1 switching output PNP		<b>-1P</b>		
	1 switching output NPN		<b>-1N</b>		
	2 switching outputs PNP		<b>-2P</b>		
	1 switching output PNP, 1 analogue output 0 ... 10 V		<b>-PU</b>		
	1 switching output PNP, 1 analogue output 4 ... 20 mA		<b>-PI</b>		
	2 switching outputs NPN		<b>-2N</b>		
Alternative vacuum display	inch H2O		<b>-W</b>		
	bar		<b>-B</b>		

**[M]** Mandatory data

**[O]** Options

Transfer order code

539075 OVEM - - - BN - - - N - - -

# Vacuum generators OVEM, NPT

Accessories

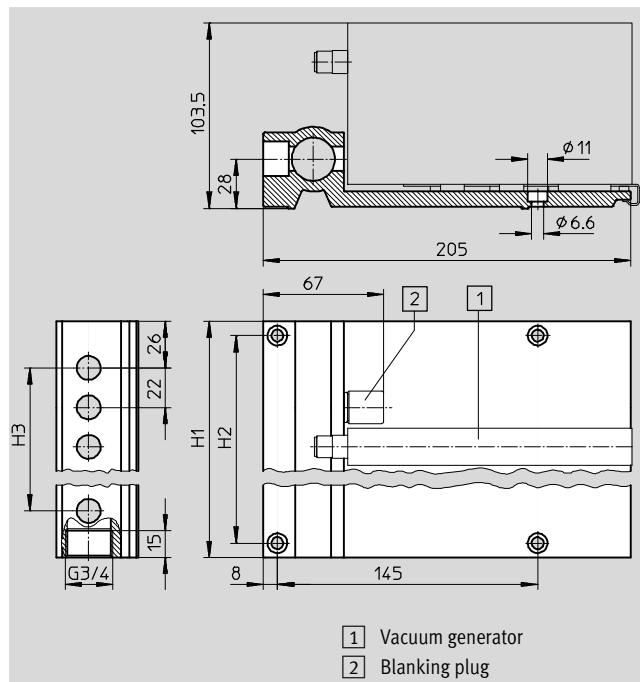
FESTO

**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 <sub>i</sub> as a function of total air consumption q <sub>nN</sub>																	
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																	
PUN-4	PUN-6	PUN-8	PUN-10	PUN-12	PUN-16	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 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 locations	CRC <sup>1)</sup>	Weight [g]	Part No.	Type
Common supply manifold	4	2	767	549456	OABM-P-4
	6	2	1,045	549457	OABM-P-6
	8	2	1,330	549458	OABM-P-8

1) CRC2: Corrosion resistance class to Festo standard 940 070  
Components with medium corrosion exposure. Externally visible components with significant decorative function in direct contact with normal industrial atmosphere or media such as coolants and lubricants.

# Vacuum generators OVEM, NPT

FESTO

Accessories

## 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) CRC2: Corrosion resistance class to Festo standard 940 070

Components with medium corrosion exposure. Externally visible components with significant decorative function in direct contact with normal industrial atmosphere or media such as coolants and lubricants.

## H-rail mounting kit

OABM-H

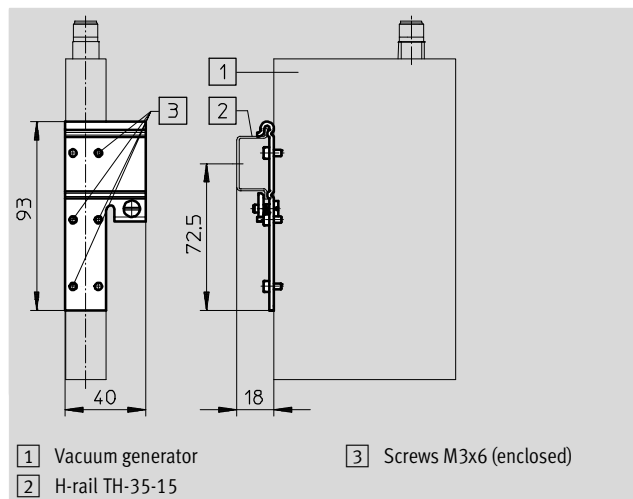
for vacuum generator OVEM

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

Material: Galvanised steel

Note on materials:

RoHS-compliant

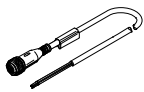
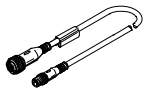
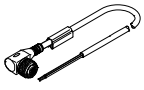


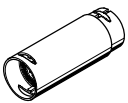
Ordering data				
	Weight [g]	Part No.	Type	
H-rail mounting kit	52	549461	OABM-H	

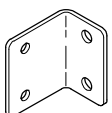
# Vacuum generators OVEM, NPT

Accessories

**FESTO**

Ordering data – Connecting cable NEBU-M12				Technical data → 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			Technical data → Internet: uoms	
	Design structure	Mounting type	Part No.	Type
	Open silencer	Detenting	538436	UOMS-1/4

Ordering data – Mounting bracket HRM		Technical data → Internet: hrm	
	Material	Part No.	Type
	Steel galvanised	9769	HRM-1