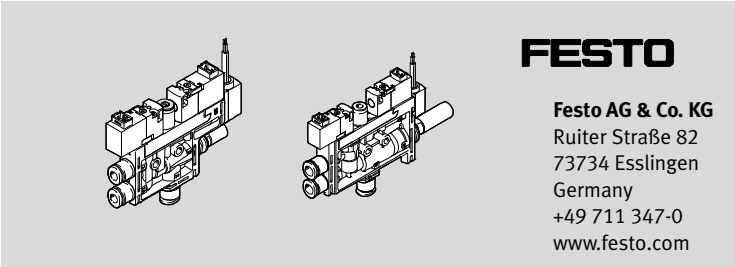


Vacuum generator
OVEL



Operating instructions (Original instructions) 8070874 2017-05 [8070876]

Vacuum generator OVEL English

1 About this document
This document describes the use of the above-mentioned product.
Certain aspects of use are described in other documents and must be observed
Applicable documents.

Table with 2 columns: Document, Contents. Row 1: Operating instructions, pressure transmitter SPTE / pressure sensor SPAE | Installation, commissioning, maintenance, technical data

Fig. 1
For all available product documentation -> www.festo.com/pk

Device description file (IODD) with the description of the IO-Link parameters -> www.festo.com/sp

2 Safety

2.1 Intended use
The OVEL vacuum generator is used to generate a vacuum.

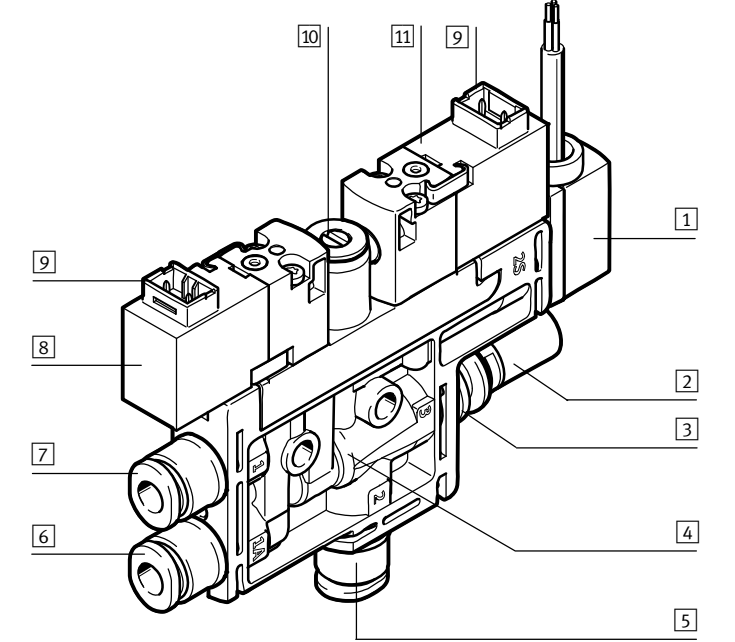
- 2.2 General safety information
• The product may only be used in its original status without unauthorized modifications.
• Only use the product if it is in perfect technical condition.
• Use the product only inside buildings.
• Take into consideration the ambient conditions at the location of use.
• Observe the specifications on the product labelling.

3 Service
• Contact the regional Festo contact if you have technical questions
-> www.festo.com.

4 Accessories
Accessories -> www.festo.com/catalogue

5 Product overview

5.1 Design
Fig. 2 shows the design of the vacuum generator in size 5. The design of the other sizes differs only minimally. The differences have no influence on the functioning.



- 1 Pressure transmitter/pressure sensor - optional (secured with clamp strap)
2 Exhaust port [3] (silencer optional)
3 Vacuum generator cartridge (secured with clamp strap)
4 Housing with mounting holes
5 Vacuum connection [2] (secured with clamp strap)
6 Supply port for ejector pulse [1A] - optional (secured with clamp strap) 1)
7 Supply port [1] (secured with clamp strap) 1)
8 Vacuum solenoid valve
9 Plug for electrical connection of the solenoid valve
10 Flow control screw for adjusting the intensity of the ejector pulse
11 Ejector pulse solenoid valve - optional

1) QS fittings not present with connection to common supply manifold.
Fig. 2

5.2 Characteristics

Table with 3 columns: Characteristic, Code, Type. Rows include Vacuum generator, Nominal width of laval nozzle, Vacuum type, Housing size / width, Supply air port, Vacuum port, Exhaust port, Ejector pulse connection, Vacuum valve, Additional function, Vacuum sensor pressure measuring range, Vacuum sensor output signal, and Electrical connection.

Fig. 3

6 Function

The solenoid valve vacuum controls the supply of compressed air for vacuum generation. A vacuum is generated as long as the vacuum solenoid valve is in the switching position.

The ejector pulse solenoid valve can be used to control and generate an ejector pulse to release the workpiece safely from the suction cup and to purge the vacuum rapidly. A separate operating pressure can be created through the optional supply port for the operating pressure.

The setpoint value for the generated vacuum can be monitored via an additional vacuum sensor.

7 Installation

7.1 Mechanical



Note

An unfavourable mounting position can impair the function of the product.

- Install the vacuum generator so that no condensation from the compressed air lines can gather in the device.
- Install the vacuum generator so that it cannot be heated above the maximum permissible operating temperature (plan for convection possibilities).
- Install the vacuum generator so that the exhaust can flow without hindrance.

Direct mounting

- Fasten vacuum generator with 2 M3 mounting screws.
 - Tightening torque: 0.6 Nm \pm 20 %

Mounting on common supply manifold

The vacuum generator can be fastened to the common supply manifold with max. 8 positions.

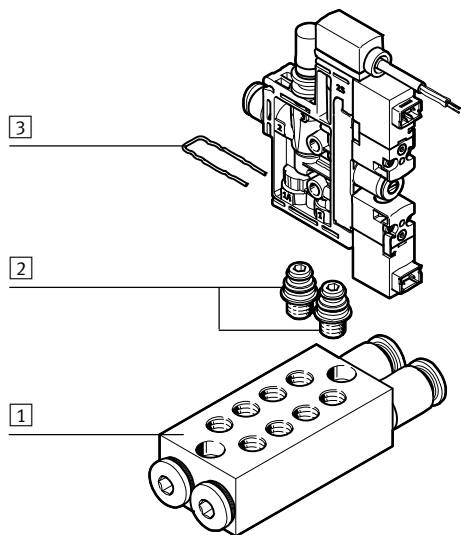


Use OABM-MK-G3 mounting kit for fastening to the common supply manifold → www.festo.com/spareparts.



Note

Vacuum generators with additional port for ejector pulse (OVEL-...-Z-C-A) cannot be combined with vacuum generators without an additional port (OVEL-...-C-A).



- 1 Common supply manifold 3 Supply port clamp strap
2 Connecting adapter

Fig. 4

1. Screw connecting adapter to common supply manifold.
2. Plug vacuum generator onto connecting adapter and secure it with the clamp strap supplied in the mounting kit.
3. Seal unused positions of the common supply manifold with blanking plugs.



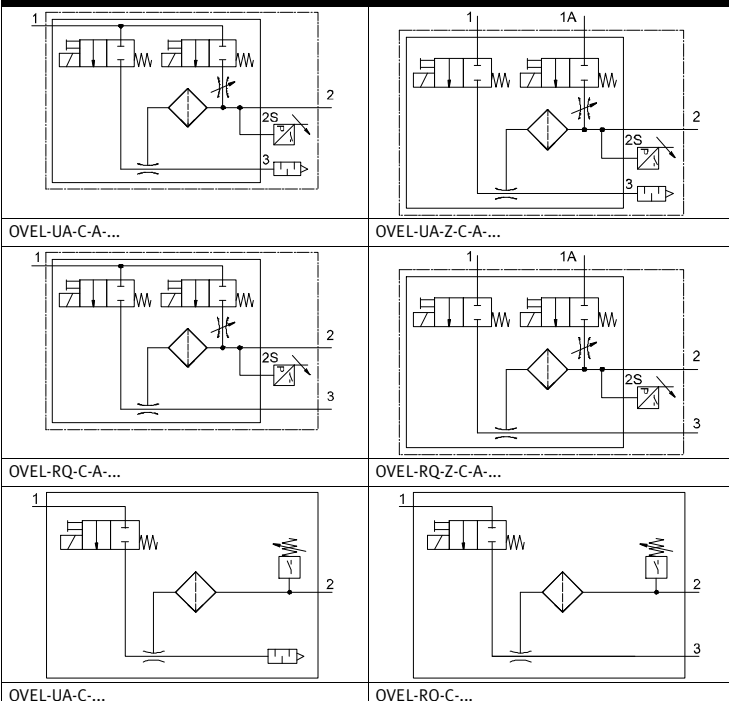
Assignment with OVEL-5 and OVEL-7/-10 is possible only for size -15 common supply manifolds.

7.2 Pneumatic

- Connect hoses to vacuum generator.
Recommendation: Use tubes of type PUN → www.festo.com/catalogue.

Circuit symbols

Vacuum generator with vacuum sensor



Vacuum generator without vacuum sensor

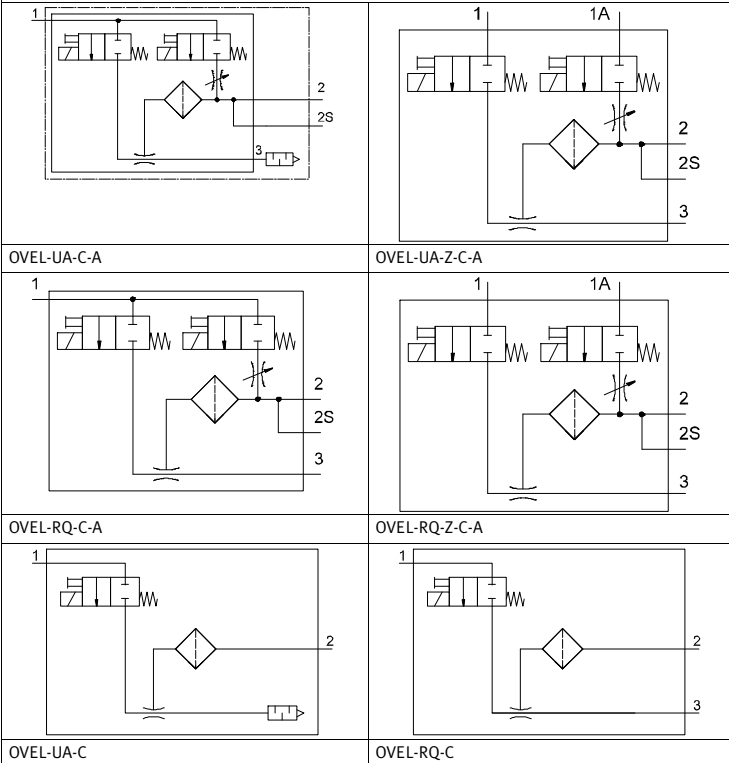


Fig. 5

7.3 Electric



Warning

Electric voltage

Injury caused by electric shock, damage to machine and to system

- For the electrical power supply, use only PELV circuits in accordance with IEC 60204-1/EN 60204-1.
- Use only voltage sources that ensure a reliable electric separation from the mains network in accordance with IEC 60204-1/EN 60204-1.
- Observe the requirements of IEC 60204-1/EN 60204-1 for PELV circuits.

- Connect the vacuum generator to the electrical connection.
Maximum permissible cable length: 30 m
- Maintain operating voltage → Technical data.

8 Commissioning



Note

Commissioning should only be carried out by qualified personnel.

8.1 Commissioning vacuum generator

Prerequisite

– Vacuum generator is fully mounted and connected → Chap. 7.

- 1. Check the operating conditions and limit values → Technical data.
- 2. Apply operating pressure to compressed air supply port (Fig. 2, 3).
- 3. Switch on the operating voltage.
- 4. Activate suction: Apply voltage to both pins of the solenoid valve.
 - Underpressure is generated at the vacuum connection (Fig. 2, 4).
 - The vacuum generator is ready for operation.

8.2 Set the intensity of the ejector pulse

Requirements

– Vacuum generator is in operation.

- 1. Completely screw in the flow control screw (Fig. 2, 10).
 - The channel for the ejector pulse is closed. No ejector pulse is generated. Leakage possible.
- 2. Switch on vacuum generation.
 - Underpressure is generated at the vacuum connection (Fig. 2, 4).
- 3. Switch off vacuum generation.
- 4. Unscrew flow control screw slightly.
- 5. Actuate ejector pulse.
- 6. Screw the flow control screw out or in until the required intensity of the ejector pulse is set.

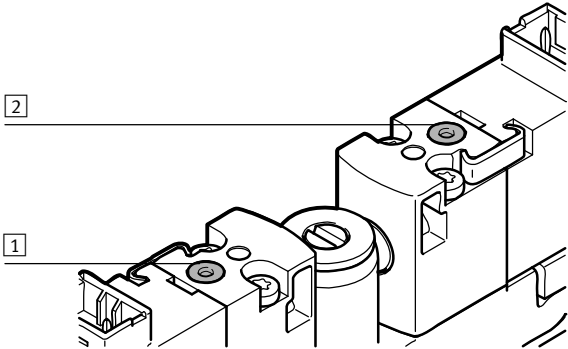
8.3 Placing vacuum sensor in operation

Commissioning pressure transmitter → SPTE operating instructions

Commissioning pressure transmitter → SPAE operating instructions

9 Operation

9.1 Operating manual override



- 1 Vacuum solenoid valve manual override
- 2 Ejector pulse solenoid valve manual override

Fig. 6

- 1. Press in the stem of the manual override with a blunt pin.
 - Solenoid valve switches.
- 2. Remove the pin.
 - The stem of the manual override automatically returns. The solenoid valve reverts to the basic position.

10 Fault clearance

Malfunction	Possible cause	Remedy
Workpiece does not release from the suction cup	Device-independent vacuum between workpiece and suction gripper, ejector pulse not activated or sufficiently dimensioned	<ul style="list-style-type: none">• Activate ejector pulse when lifting the suction gripper.• Increase the intensity of the ejector pulse.
	Tube dimensioned incorrectly	<ul style="list-style-type: none">• Replace tube.
	Flow control screw closed	<ul style="list-style-type: none">• Open the flow control screw.
	Silencer clogged	<ul style="list-style-type: none">• Clean silencer and replace, if necessary.
	Filter clogged	<ul style="list-style-type: none">• Clean filter and replace, if necessary.
	Pneumatic line kinked at the vacuum port	<ul style="list-style-type: none">• Avoid kinking the pneumatic lines.

Fig. 7

11 Maintenance

11.1 Cleaning device

- 1. Switch off energy sources:
 - operating voltage
 - compressed air
- 2. Clean device with non-abrasive cleaning agents.
- 3. Clean air filter and replace, if necessary.

11.2 Replace air filter

OVEL-5

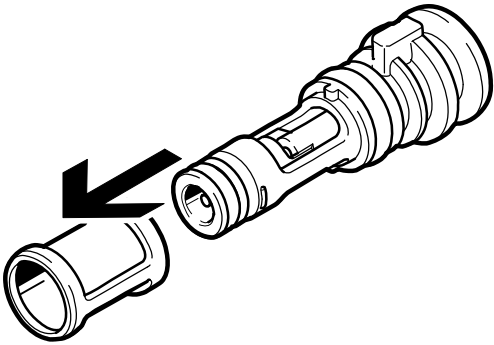


Fig. 8

OVEL-7/-10

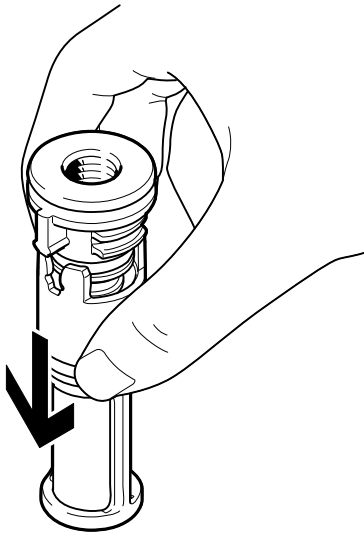


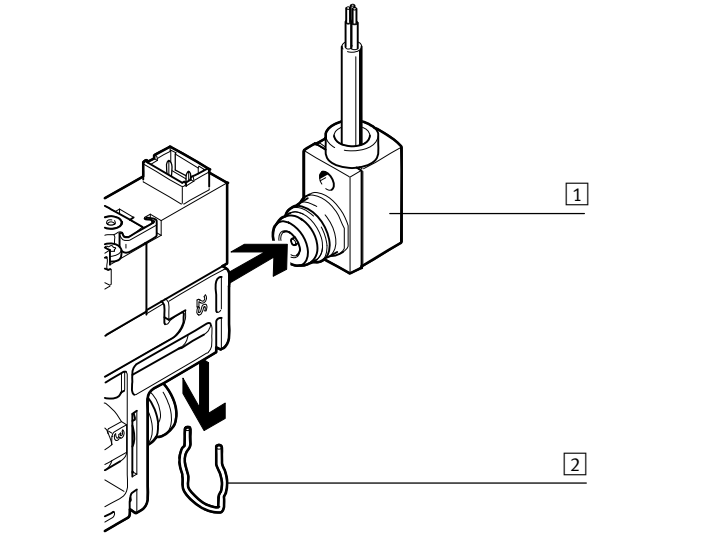
Fig. 9

- 1. Vent the vacuum generator.
- 2. Pull out vacuum generator cartridge clamp strap. Do not lose clamp strip.
- 3. Pull out vacuum generator cartridge.
- 4. Only for OVEL-7/-10: Place vacuum generator cartridge with the jet nozzle on an even surface and press the filter downward.
 - Snap hook unlatches.
- 5. Remove filter.
- 6. Push new filter onto jet nozzle.
 - Only for OVEL-7/-10: Snap hooks latch.
- 7. Push in vacuum generator cartridge.
- 8. Push clamp strap in up to the detent.

12 Conversion

12.1 Replace vacuum sensor

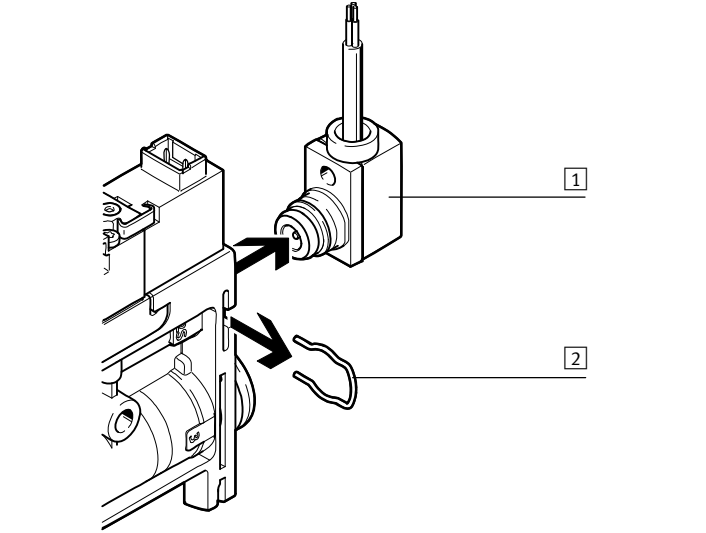
OVER-5



1 Vacuum sensor
2 Clamp strip, vacuum sensor port
Fig. 10

1. Pull out vacuum generator cartridge clamp strap.
2. Pull out vacuum generator cartridge.
3. Pull out vacuum sensor port clamp strip.
4. Replace vacuum sensor and secure with clamp strap.
5. Push in vacuum generator cartridge.
6. Push vacuum generator cartridge clamp strap in up to the detent.

OVER-7/-10



1 Vacuum sensor
2 Clamp strip, vacuum sensor port
Fig. 11

1. Pull out vacuum sensor port clamp strip.
2. Replace vacuum sensor and secure with clamp strap.

13 Disassembly

1. Switch off energy sources:
 - operating voltage
 - compressed air
2. Disconnect pneumatic and electrical connections from the device.
3. Loosen mountings and remove device.

14 Technical data

OVER	-5	-7/-10
Valve function	2/2-way, closed, monostable (toward outside)	
Mounting position	Any	
Operating pressure [bar]	2 ... 7	
Nominal operating pressure [bar]	4	
Operating medium	Compressed air in accordance with ISO 8573-1:2010 [7:4:4]	
Note on the operating medium	Lubricated operation not possible	
Ambient temperature [°C]	0 ... 50	
Temperature of medium [°C]	0 ... 50	
Operating voltage range vacuum sensor [V DC]	B: 10 ... 30 V / PNLK: 18 ... 30	
Solenoid valve operating voltage [V DC]	24 ± 10 %	
Solenoid valve duty cycle	100 %	
Coil characteristics 24 V DC [W]	1	
Inactive time [ms]	< 12	≤ 22
Protective circuit (solenoid valves)	No	
Degree of protection	IP40	
Vibration resistance	In accordance with IEC/EN 60068 part 2-6: 0.35 mm travel at 10 ... 60 Hz, 5 g acceleration at 60 ... 150 Hz	
Shock resistance	In accordance with IEC/EN 60068 part 2-27: 30 g acceleration with 11 ms duration (half-sine)	
Corrosion resistance class CRC	2	
PWIS criterion	PWIS-free	
CE marking (see declaration of conformity → www.festo.com/sp)	In accordance with EU EMC Directive	

Fig. 12