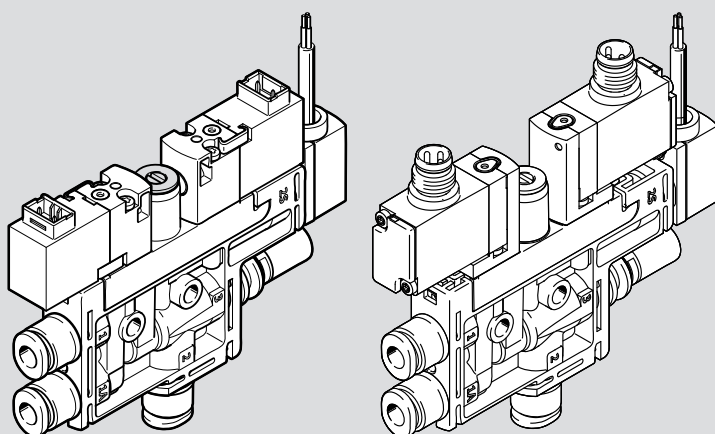


VEL
Vacuum generator

FESTO

Operating instructions



8243561

8243561
2025-08c
[8243563]

Original instructions

IO-Link is a registered trademark of its respective trademark holder in certain countries.

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1 Applicable documents



All available documents for the product → www.festo.com/sp.

Documents	Product	Content
Operating instructions	Pressure transmitter SPTE	–
Operating instructions	Pressure sensor SPAE	–

Tab. 1: Applicable documents

2 Safety

2.1 Safety instructions

- Only use the product in its original condition without unauthorised modifications.
- Observe the identifications on the product.
- Take into account the ambient conditions at the location of use.
- Store the product in a cool, dry environment protected from UV and corrosion. Keep storage times short.
- Before working on the product, switch off the compressed air supply and lock it to prevent it from being switched on again.
- Before working on the product: Switch off the power supply, ensure that it is off and secure it against being switched on again.
- The product is intended for use in industrial environments.
- Use the product only inside buildings.
- The product may generate high frequency interference, which may require interference suppression measures in residential areas.

2.2 Intended use

The vacuum generator is used to generate a vacuum.

2.3 Training of qualified personnel

Work on the product may only be carried out by qualified personnel who can evaluate the work and detect dangers. The qualified personnel have skills and experience in dealing with electropneumatic (open-loop) control technology.

2.4 Approval UL/CSA

In combination with the UL inspection mark on the product, the information in this section must also be observed in order to comply with the certification conditions of Underwriters Laboratories Inc. (UL) for USA and Canada.

Approval information UL/CSA	
Product category code	QUYX, QUYX7
File number	E322346
Considered standards	UL 61010-1 CAN/CSA C22.2 No. 61010-1
UL mark	

Tab. 2: Approval information UL/CSA

- If the equipment is used in a manner not specified by the manufacturer, the protection provided may be impaired.

⚠ WARNING

The unit shall be supplied by a power source which fulfils the requirements on a limited-energy circuit in accordance to IEC/EN/UL/CSA 61010-2-201 or on a Limited Power Source (LPS) in accordance to IEC/EN/UL/CSA 60950-1 or IEC/EN/UL/CSA 62368-1 or a Class 2 circuit in accordance to NEC or CEC.

3 Additional information

- Contact the regional Festo contact if you have technical problems
➔ www.festo.com.
- Accessories and spare parts ➔ www.festo.com/catalogue.

4 Product design

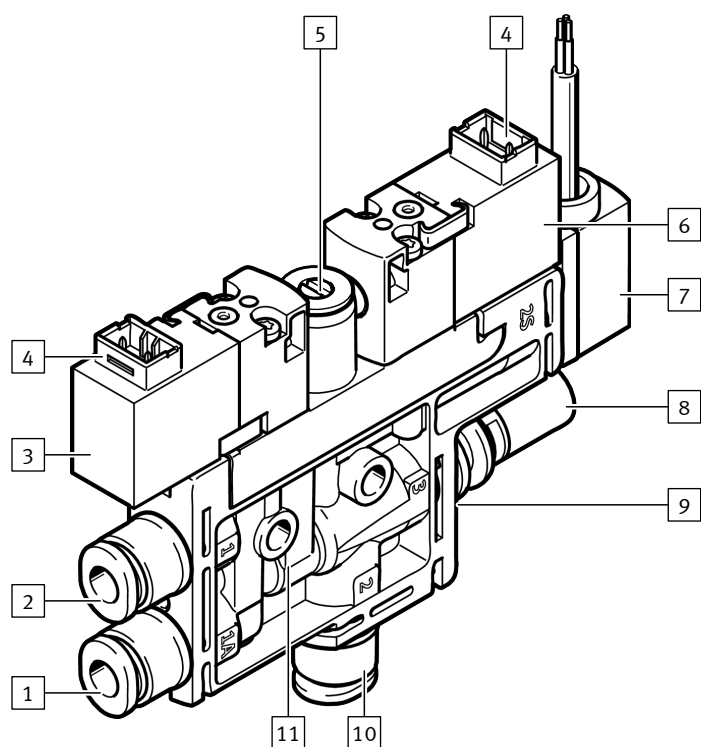


Fig. 1: Product design OVEL-...-H3

- | | |
|---|---|
| [1] Supply port for ejector pulse, optional | [7] Vacuum sensor, pressure sensor optional |
| [2] Compressed air connection | [8] Exhaust port, optional silencer |
| [3] Solenoid valve for vacuum generation | [9] Vacuum generator cartridge |
| [4] Electrical connection, H3 plug | [10] Vacuum port |
| [5] Flow control screw to adjust the intensity of the ejector pulse | [11] Housing with mounting holes |
| [6] Solenoid valve for ejector pulse, optional | |

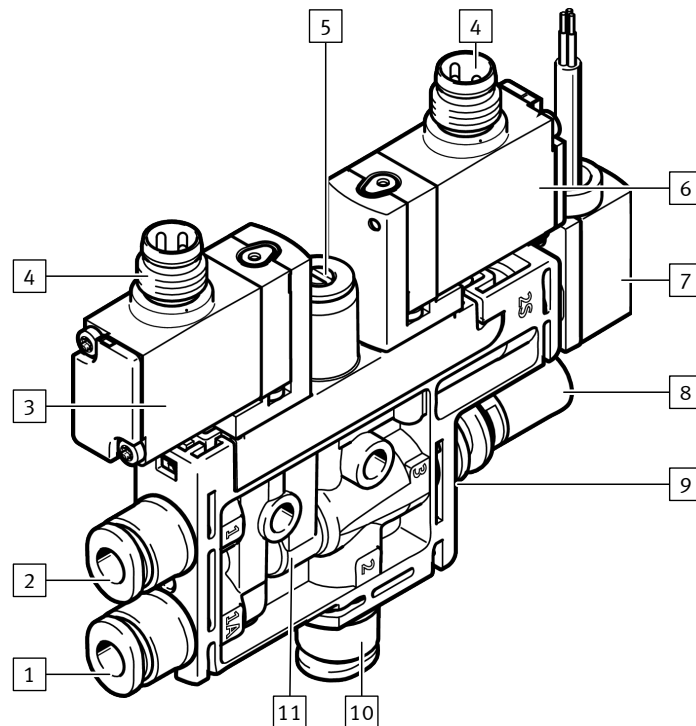


Fig. 2: Product design OVEL-...-R8

- | | |
|---|--|
| <p>1 Supply port for ejector pulse, optional</p> <p>2 Compressed air connection</p> <p>3 Solenoid valve for vacuum generation</p> <p>4 Electrical connection, M8</p> <p>5 Flow control screw to adjust the intensity of the ejector pulse</p> <p>6 Solenoid valve for ejector pulse, optional</p> | <p>7 Vacuum sensor, pressure sensor optional</p> <p>8 Exhaust port, optional silencer</p> <p>9 Vacuum generator cartridge</p> <p>10 Vacuum port</p> <p>11 Housing with mounting hole</p> |
|---|--|

5 Function

- The solenoid valve for vacuum controls the supply of compressed air for generating vacuum. A vacuum is generated so long as the vacuum solenoid valve is in the switching position.
- The ejector pulse solenoid valve generates an ejector pulse to release the workpiece safely from the suction cup with connector and to purge the vacuum quickly. A separate operating pressure can be created for the ejector pulse through the optional supply port.
- The vacuum sensor monitors the setpoint value for the generated vacuum.

6 Mounting



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

- Avoid condensate accumulation in the device through a suitable mounting position.
- Exhaust air must be able to flow out unhindered.

Direct mounting

- Fasten the vacuum generator with 2 screws M3.
– Tightening torque: $0.6 \text{ Nm} \pm 20 \%$

Mounting on common supply manifold

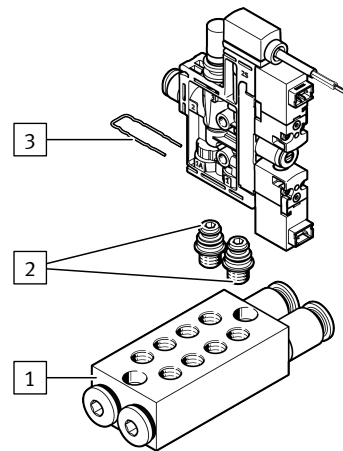
The QS fittings are not included with common supply manifold port.



The vacuum generator can be fastened to common supply manifolds with max. 8 positions.
Use mounting kit OABM-MK-G3 → www.festo.com/spareparts.



The vacuum generators with an 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
- 2 Connecting adapter
- 3 Supply port clamping clip

Fig. 3: Mounting on common supply manifold

- Screw the connecting adapter [2] into the common supply manifold [1].
- Plug the vacuum generator to the connecting adapter and lock it with the included clamping clip [3].
- Seal unused positions of the common supply manifold with blanking plugs.

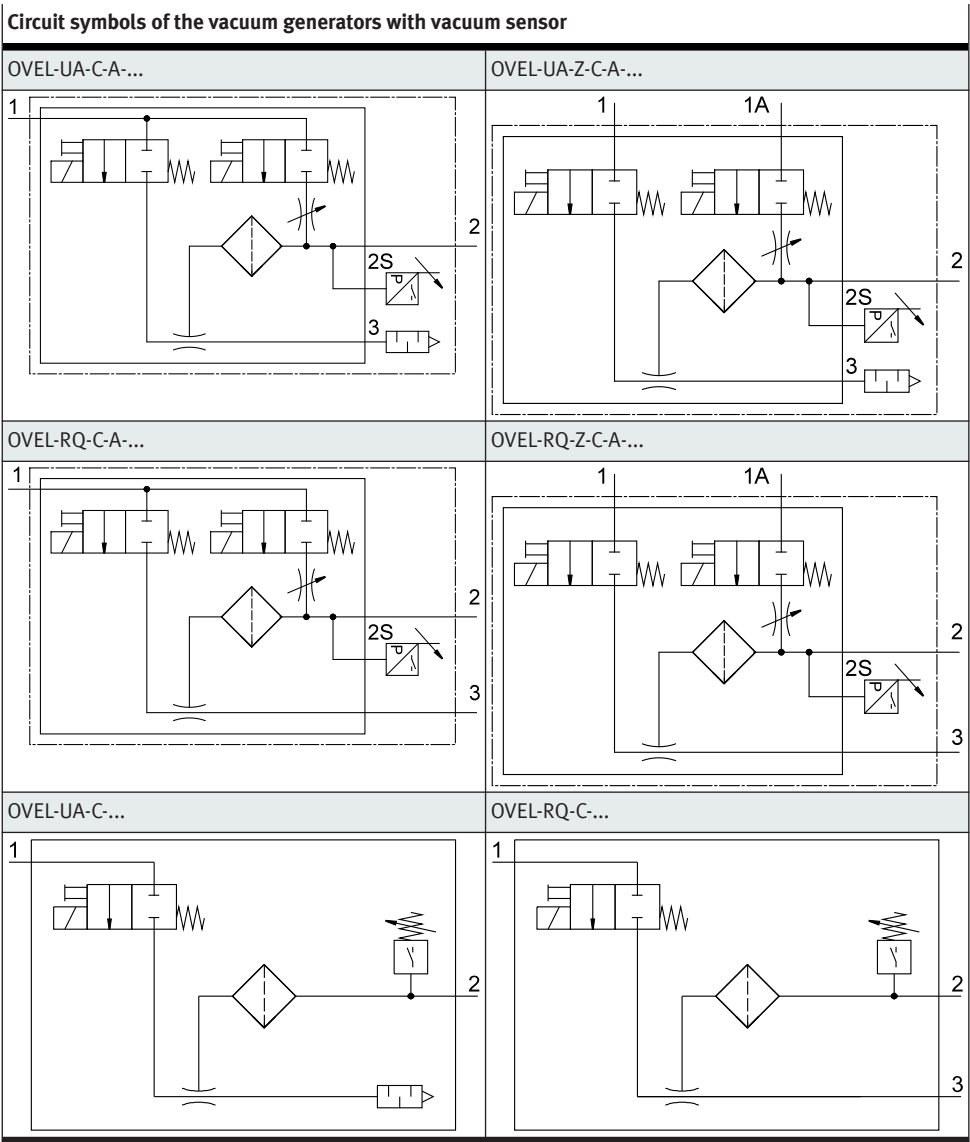


An allocation with OVEL-5 and OVEL-7/-10 is possible only with size 15 common supply manifolds.

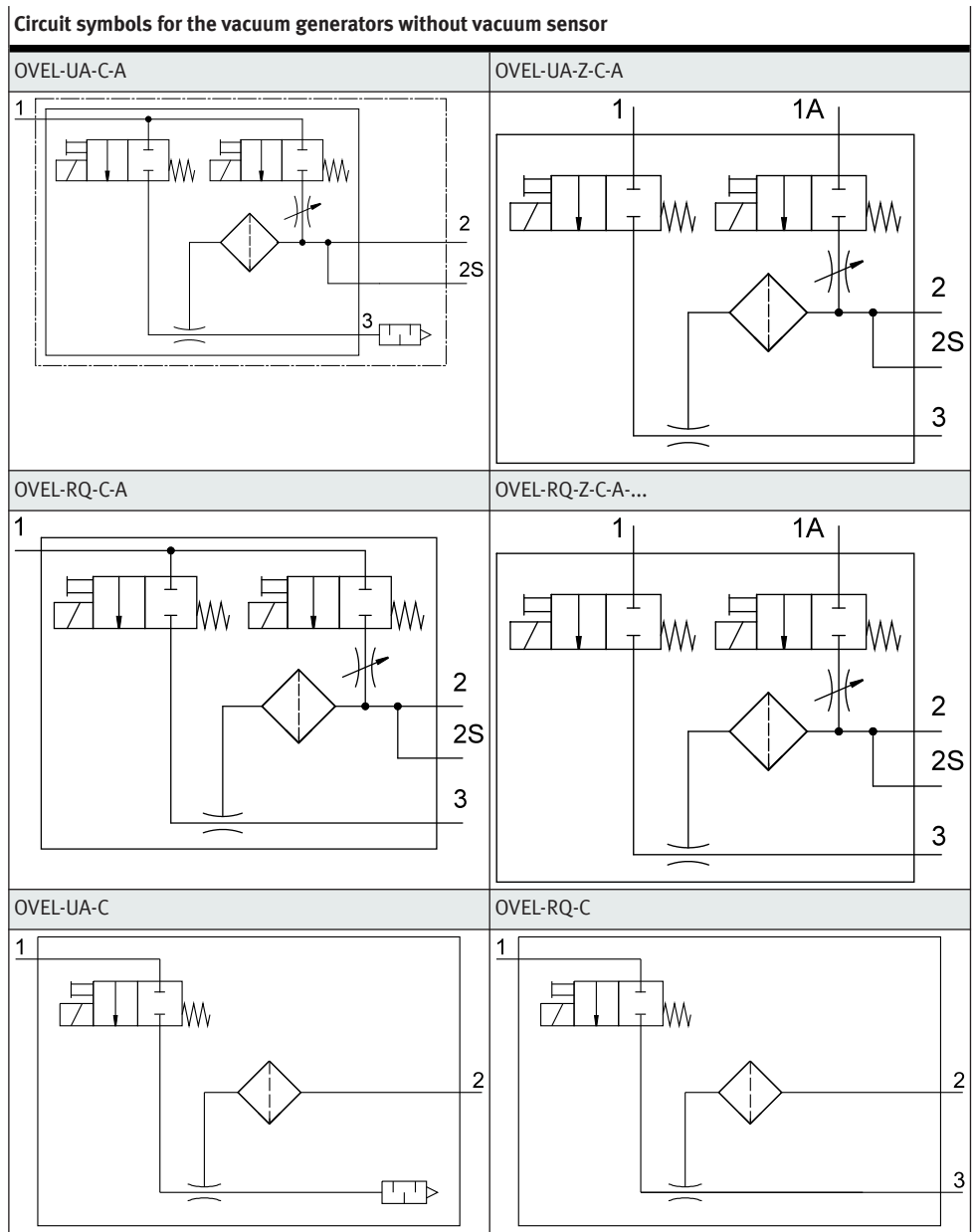
7 Installation

7.1 Pneumatic installation

- Connect tubing to the vacuum generator. Recommendation: use PUN type tubing → www.festo.com/catalogue.



Tab. 3: Circuit symbols



Tab. 4: Circuit symbols

7.2 Electrical installation

⚠ WARNING

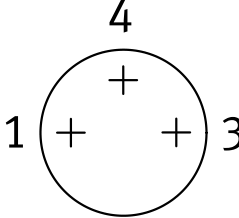
Risk of injury due to electric shock.

- For the electric power supply, use PELV circuits that guarantee a reliable electric disconnection from the mains network.
- Observe IEC 60204-1/EN 60204-1.
- Connect all circuits for the operating and load voltage supply.
- Connect the vacuum generator to the electrical connection.
 - Max. permissible line length: 30 m.

Pin allocation

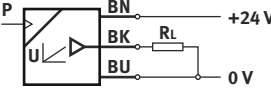
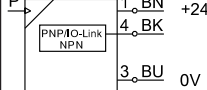
H3 plug	Pin	Allocation
	1	+/-
	2	-/+

Tab. 5: Pin allocation of H3 plug

M8 plug	Pin	Allocation
	1	Not assigned
	2	Not assigned
	3	+/-
	4	-/+

Tab. 6: Pin allocation of M8 plug

Circuit diagrams

OVEL-...-...B/V	OVEL-...-...PNLK
	

Tab. 7: Circuit diagrams

8 Commissioning

- Install the device description file IODD.



Firmware, software or configuration files → www.festo.com/sp.

Files	Product	Content
Device description file IODD	Vacuum generator OVEL	IO-Link parameters

Tab. 8: Device description file

8.1 Commissioning the vacuum generator

Requirement: the vacuum generator is fully mounted and connected → 6 Mounting.

- Check the operating conditions and critical limits → 12 Technical data.
- Apply the operating pressure to the supply port .
- Switch on the operating voltage.
- Activate suction: apply the voltage to both pins of the solenoid valve.
 - ⇒ Negative pressure is generated at the vacuum port .
 The vacuum generator is ready for operation.

8.2 Setting the intensity of the ejector pulse

Requirement: the vacuum generator is fully commissioned.

- Screw in the flow control screw completely.
 - ⇒ The channel for the ejector pulse is closed. An ejector pulse is not generated. Leakage is possible.
- Switch on the vacuum generation.
 - ⇒ A negative pressure is generated at the vacuum port .
- Switch off the vacuum generation.

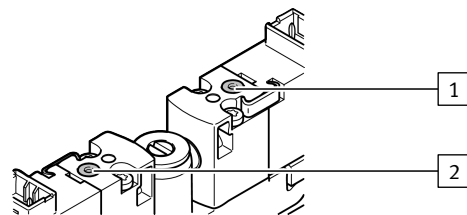
4. Unscrew flow control screw slightly.
5. Actuate the ejector pulse.
6. Screw the flow control screw out or in to adjust the ejector pulse to the required intensity.

8.3 Commissioning the vacuum sensor

Commissioning the pressure transmitter SPTE → 1 Applicable documents.

Commissioning the pressure sensor SPAE → 1 Applicable documents.

9 Operation



- 1 Manual override of the vacuum solenoid valve
- 2 Manual override of the ejector pulse solenoid valve

Fig. 4: Manual override of the solenoid valves

1. Press in the plunger of the manual override [1] or [2] with a blunt pin.
⇒ The solenoid valve switches.
2. Remove the pin.
⇒ The manual override plunger is automatically reset. The solenoid valve returns to the initial position.

10 Maintenance

10.1 Cleaning the device

1. Switch off the power supply:
 - Operating voltage
 - Compressed air
2. Clean the device with non-abrasive cleaning agents.
3. Clean the air filter and replace it if necessary.

10.2 Disassembly

1. Switch off the power supply:
 - Operating voltage
 - Compressed air
2. Disconnect the electrical and pneumatic connections from the device.
3. Loosen the mountings and remove the device.

10.3 Replacement

Replace air filter at
OVEL-5

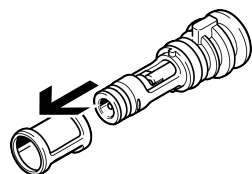


Fig. 5: Replacing air filter

Replace air filter at OVEL-7/-10

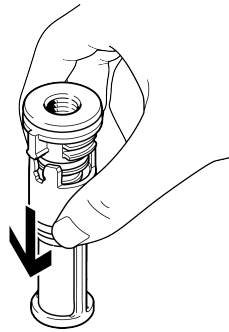


Fig. 6: Replacing air filter

1. Exhaust the vacuum generator.
2. Pull out the clamping clip on the vacuum generator cartridge . Do not lose the clamping clip.
3. Pull out the vacuum generator cartridge → Fig. 5.
4. For OVEL-7/-10 → Fig. 6 only : place the vacuum generator cartridge with the jet nozzle on a flat surface and press the filter down.
⇒ The snap hook unlatches.
5. Remove the filter.
6. Push the new filter on the jet nozzle.
⇒ For OVEL-7/-10 only: the snap hook detents.
7. Push in the vacuum generator cartridge.
8. Push the clamping clip on the vacuum generator cartridge until it locks.

Replacing vacuum sensor with OVEL-5

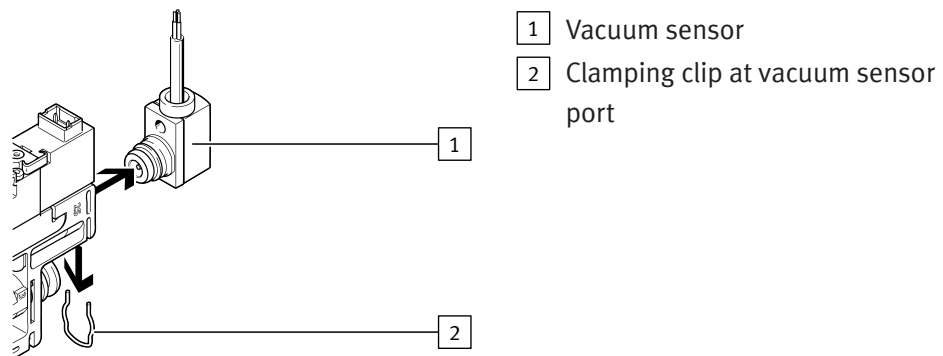


Fig. 7: Replacing vacuum sensor -
OVEL-5

1. Pull out the clamping clip on the vacuum generator cartridge → 4 Product design. Do not lose the clamping clip.
2. Pull out the vacuum generator cartridge.
3. Pull out the clamping clip on the vacuum sensor port [2].
4. Replace the vacuum sensor [1] and lock it with the clamping clip [2].
5. Push in the vacuum generator cartridge.
6. Push in the clamping clips at the vacuum sensor port until they lock.

Replacing vacuum sensor with OVEL-7/-10

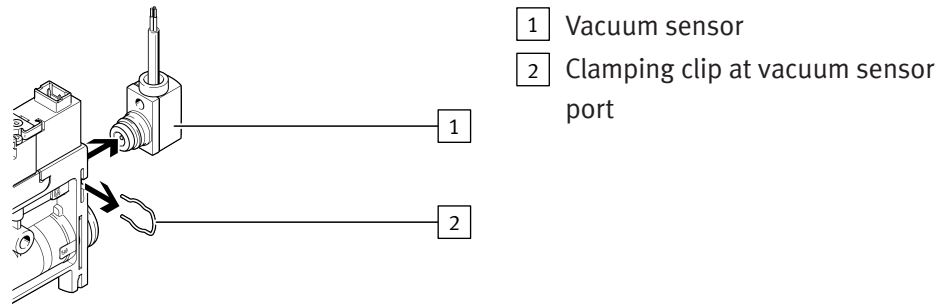


Fig. 8: Replacing vacuum sensor - OVEL-7/-10

1. Pull out the clamping clip on the vacuum sensor port [2].
2. Replace the vacuum sensor [1] and lock it with the clamping clip [2].

11 Fault clearance

Fault description	Cause	Remedy
The workpiece is not released from the suction cup with connector.	A device-independent vacuum between the workpiece and the suction gripper.	Activate the ejector pulse when lifting the suction gripper.
	The ejector pulse is not activated or is not sufficiently dimensioned.	
	A device-independent vacuum between the workpiece and the suction gripper.	Increase the intensity of the ejector pulse.
	The ejector pulse is not activated or is not sufficiently dimensioned.	
	The tubing is incorrectly dimensioned.	Replace the tubing.
	The flow control screw is closed.	Open the flow control screw.
	The silencer is clogged.	Clean the silencer and replace if necessary.
	The filter is clogged.	Clean the filter and replace if necessary.
	The pneumatic line at the vacuum port is kinked.	Avoid kinking the pneumatic lines.

Tab. 9: Fault clearance

12 Technical data

Technical data, general			
OVEL	-5	-7	-10
Certificates, declaration of conformity	➔ www.festo.com/sp		
Valve function	2/2-way, closed monostable, toward outside		
Mounting position	Any		
Degree of protection	IP40		
Corrosion resistance class (CRC)	2		
Vibration resistance in accordance with IEC 60068	10 ... 60 Hz: 0.35 mm		

Technical data, general	
Vibration resistance in accordance with IEC 60068	60 ... 150 Hz: 5 g
Shock resistance in accordance with IEC 60068	30 g acceleration with 11 ms duration (half-sine)

Tab. 10: Technical data, general

Operating conditions	
OVER	
Operating pressure	[MPa] 0.2 ... 0.7
	[bar] 2 ... 7
	[psi] 29 ... 102
Nominal operating pressure	[MPa] 0.4
	[bar] 4
	[psi] 58
Operating medium	Compressed air to ISO 8573-1:2010 [7:4:4]
Information on the operating medium	Lubricated operation not possible

Tab. 11: Operating conditions

Temperature ranges	
OVER	
Ambient temperature	[°C] 0 ... 50
Temperature of medium	[°C] 0 ... 50
Storage temperature	[°C] -20 ... +60

Tab. 12: Temperature ranges

Electrical characteristic values	
OVER	
Vacuum sensor OVER-...-...B	[V DC] 10 ... 30
Vacuum sensor OVER-...-...V	[V DC] 18 ... 30
Vacuum sensor OVER-...-...PNLK	[V DC] 18 ... 30
Solenoid valve operating voltage	[V DC] 24
Solenoid valve duty cycle	100%
Coil characteristics 24 V DC	[W] 1
Switching time	[ms] ≤ 12
Solenoid valve protective circuit	No

Tab. 13: Electrical characteristic values

Festo SE & Co. KG

Ruiter Straße 82
73734 Esslingen
Germany

Phone: +49 711 347-0
www.festo.com