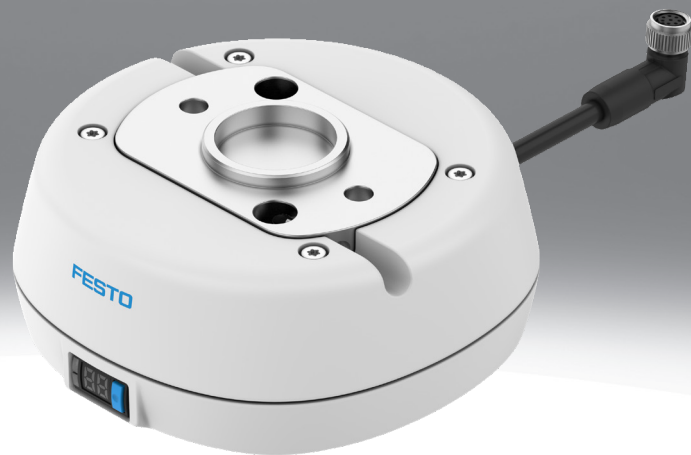


Vacuum generator OVEH

FESTO



Characteristics

At a glance

Vacuum generator for HRC applications (human-robot collaboration), where the basic functionalities such as vacuum generation, sensors, display and operation are integrated in a compact housing.

- Can be used with many different cobots and robots thanks to the mechanical robot interface to ISO 9409-1-50-4-M6
- Preset ejection impulse
- With integrated pressure sensor with various switching outputs and LCD display, IO-Link® and teach function
- Central connector plug M8 (8-pin) for supplying the solenoid valves and controlling and parameterizing the sensor/switching output

Diagrams

[Link](#) [oveh](#)



The diagrams shown in this document are also available online. There, it is possible to display precise values.

Vacuum type

There are two vacuum generator versions for use in different applications.

[H] High vacuum

Vacuum generators for high vacuum are optimized to generate a high vacuum. Application examples include dense materials such as sheet metal.

[L] High suction rate

Vacuum generators for high suction volume flows can achieve very short evacuation times due to the high suction volume flow. Application examples include air-permeable materials such as cardboard packaging, where external air must be compensated for.

Exhaust connection

[UA] Pneumatic muffler, open, UO

Open muffler to reduce soiling of the suction nozzle.

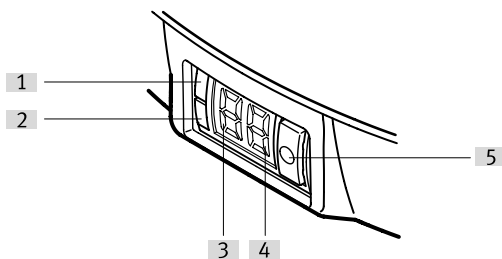
Vacuum valve

[C] Normally closed

Solenoid valve for controlling the compressed air supply in the NC switching function - normally closed, i.e. no vacuum generation in the basic position of the solenoid valve.

Output signal, vacuum sensor

[PNLK] PNP or NPN or IO-Link®



Control element and displays:

- [1] Switching status display / LED1
- [2] Switching status display / LED2
- [3] Number segment LED display / segment 1
- [4] Number segment LED display / segment 2
- [5] Key

Characteristics

Robot connection

[HRC] Human-robot collaboration ISO 9409-1-50-4-M6

The mechanical interface of the vacuum ejector is designed in accordance with ISO 9409-1-50-4-M6 so that it can be mounted on the most widely used cobots/robots.

Type code

001	Series	
OVEH	Vacuum generator	
002	Vacuum generation	
7	Laval nozzle 0.7 mm	
10	Laval nozzle 0.95 mm	
003	Vacuum type	
H	High vacuum	
L	High suction rate	
004	Supply air connection	
Q6	Push-in connector, 6 mm	
005	Vacuum connection	
G18	Female thread G1/8	

006	Exhaust connection	
UA	Pneumatic muffler, open, UO	
007	Vacuum valve	
C	Normally closed	
008	Output signal, vacuum sensor	
PNLK	PNP or NPN or IO-Link®	
009	Electrical connection	
R12	M8 single plug, 8-pin	
SR12	M8 single socket, 8-pin	
010	Robot connection	
HRC	Human-robot collaboration ISO 9409-1-50-4-M6	

Datasheet

Connection to robots

OVEH-10-H-Q6-G18-UA-C-PNLK-**R12**-HRC (Part No. 8205189)

OVEH-7-H-Q6-G18-UA-C-PNLK-**R12**-HRC (Part No. 8205191)

OVEH-10-L-Q6-G18-UA-C-PNLK-**R12**-HRC (Part No. 8205193):

Compatible with all robots with bushing M8x1, 8-pin and switch input NPN/PNP.

OVEH-10-H-Q6-G18-UA-C-PNLK-**SR12**-HRC (Part No. 8205190)

OVEH-7-H-Q6-G18-UA-C-PNLK-**SR12**-HRC (Part No. 8205192)

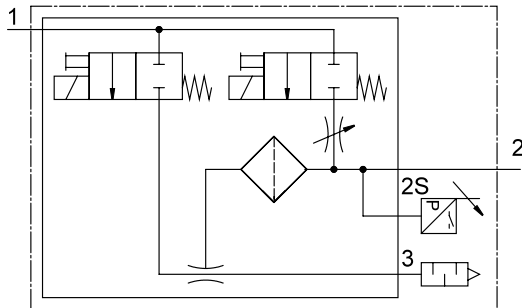
OVEH-10-L-Q6-G18-UA-C-PNLK-**SR12**-HRC (Part No. 8205194):

Compatible with all robots with plug M8x1, 8-pin and switching input NPN/PNP.

Examples of compatible robots:

- Fanuc CRX-5iA, CRX-10iA, CRX-10iA/L, CRX-20iA/L, CRX-25iA
- Universal Robots UR3e, UR5e, UR10e, UR16e (with new robot connection using UR adapter)
- Hanwha HCR-3A, HCR-5A, HCR-12A (with adapter IO1/IO2)
- Yaskawa HC10
- Siasun SCR3, SCR5

General technical data



Ejector characteristics	High vacuum, Standard		High suction flow, Standard
Nominal width of Laval nozzle	0.7 mm	0.95 mm	
Type of mounting	With mounting kit, As per ISO 9409		
Mounting position	Any		
Integrated function	Ejector pulse, electric Pressure sensor Electric on-off valve Filter Muffler, closed		
Valve function	Closed		
Structural design	Human-robot collaboration (HRC)		
Method of measurement	Piezoresistive pressure sensor with display		
Measuring principle	Piezoresistive		
Measured variable	Pressure		
Pneumatic connection 1	For pneumatic tubing outside diameter 6 mm		
Pneumatic connection 3	Muffler open		
Vacuum connection	G1/8		
Note on vacuum connection	Additional accessories possible		
Grade of filtration	40 µm		
Switching function	Freely programmable		
Switching element function	N/C contact/N/O contact, switchable		
Setting options	IO-Link® Teach-in Via display and keys		
Protocol	IO-Link®		
Muffler construction type	Open		
Manual override	None		
Protection against tampering	PIN code		
Product weight	415 g		

Datasheet

Pressure measuring range

Display type	LED indicator, 2-digit
Pressure measuring range	-0.1 ... 0 MPa
Pressure measuring range	-1 ... 0 bar
Pressure measuring range	-14.5 ... 0 psi
Accuracy in $\pm$ % FS	1.5 %FS
Reproducibility, switching value FS	0.3%

Technical data – IO-Link®

IO-Link®, protocol version	Device V 1.1
IO-Link®, profile	Smart sensor profile
IO-Link®, function classes	Binary data channel (BDC) Process data variable (PDV) Identification Diagnostics Teach channel
IO-Link®, communication mode	COM2 (38,4 kBd)
IO-Link®, SIO mode support	Yes
IO-Link®, port class	A
IO-Link®, process data width OUT	0 bytes
IO-Link®, process data width IN	2 Byte
IO-Link®, process data content IN	14 bit PDV (pressure measurement) 2 bit BDC (pressure monitoring)
IO-Link®, minimum cycle time	3 ms
IO-Link®, data memory required	0.5 byte

Operating and environmental conditions

Operating pressure	0.2 ... 0.7 MPa
Operating pressure	2 ... 7 bar
Operating pressure	29 ... 101.5 psi
Nominal operating pressure	0.4 MPa
Nominal operating pressure	4 bar
Nominal operating pressure	58 psi
Operating medium	Compressed air as per ISO 8573-1:2010 [7:4:4]
Information on operating and pilot media	Operation with oil lubrication not possible
Ambient temperature	0 ... 50°C
Temperature of medium	0 ... 50°C
Relative air humidity	Max. 93% at 40°C
Degree of protection	IP40
CE marking (see declaration of conformity)	As per EU EMC directive
UKCA marking (see declaration of conformity)	To UK instructions for EMC
Corrosion resistance class (CRC) ¹⁾	2 - Moderate corrosion stress
Vibration resistance	Transport application test with severity level 2 as per FN 942017-4 and EN 60068-2-6
Shock resistance	Shock test with severity level 2 as per FN 942017-5 and EN 60068-2-27
Cleaning advice	Soap suds

1) Further information, visit www.festo.com/x/topic/kbk

Datasheet

Performance data – high vacuum

Nominal width of Laval nozzle	0.7 mm	0.95 mm
Operating pressure for max. suction rate	0.4 MPa	
Operating pressure for max. suction rate	4 bar	
Operating pressure for max. suction rate	58 psi	
Operating pressure for max. vacuum	0.45 MPa	0.41 MPa
Operating pressure for max. vacuum	4.5 bar	4.1 bar
Operating pressure for max. vacuum	65.25 psi	59.45 psi
Max. vacuum	92%	
Max. suction rate with respect to atmosphere	15 l/min	18 l/min
Air supply time at nominal operating pressure with ejector pulse	1.2 s	1 s
Noise level at nominal operating pressure	48 dB(A)	55 dB(A)
Sound power level at nominal operating pressure	60 dB(A)	66 dB(A)

Performance data – high suction volume flow

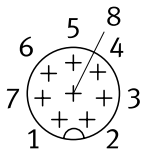
Operating pressure for max. suction rate	0.6 MPa	
Operating pressure for max. suction rate	6 bar	
Operating pressure for max. suction rate	87 psi	
Max. vacuum	85%	
Max. suction rate with respect to atmosphere	30 l/min	
Air supply time at nominal operating pressure with ejector pulse	0.4 s	
Noise level at nominal operating pressure	55 dB(A)	
Sound power level at nominal operating pressure	66 dB(A)	

Datasheet

Electrical data

Electrical connection 1, cable outlet	Angled
Electrical connection 1, design	Round
Electrical connection 1, connection technology	M8x1 A-coded as per EN 61076-2-104
Electrical connection 1, number of pins/wires	8
Electrical connection 1, occupied pins/wires	5
Electrical connection 1, tightening torque	0.2 Nm
Electrical connection input, function	Ejector pulse, Power supply, Vacuum generation
Electrical connection output, function	Digital output
Cable characteristic	Suitable for robot applications
Cable diameter	5 mm
Cable diameter tolerance	± 1 mm
Cable length	0.3 m
Reverse polarity protection	Yes
Switching status indication	Yellow LED
Short-circuit protection	Yes
DC operating voltage range	21.6 ... 26.4 V
Duty cycle	100%
Max. output current	100 mA
Switching output	PNP/NPN switchable
Coil characteristics	24 V DC: 1.0 W

Pin assignment plug

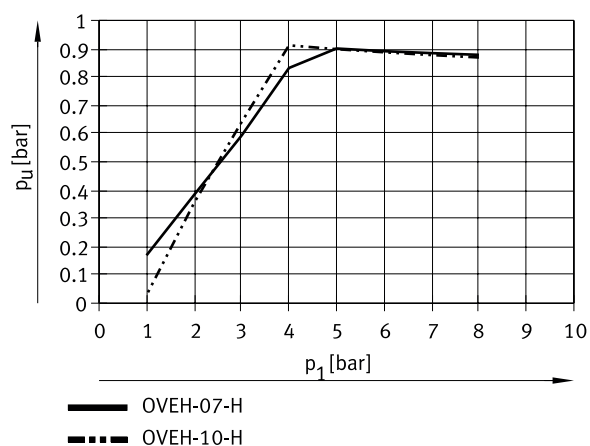
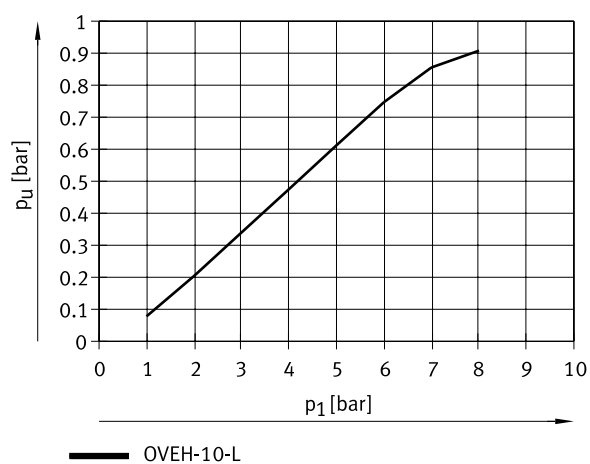
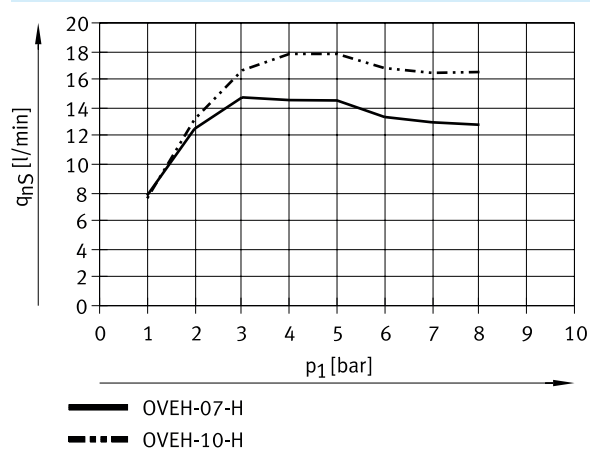


- [1] Not assigned
- [2] Not assigned
- [3] Not assigned
- [4] Digital output 2 (NPN/PNP, freely programmable via IO-Link® or display keys)
- [5] Supply voltage +24 V DC
- [6] Digital switching input 2 (eject pulse „off“ = 0V / „on“ = 24V)
- [7] Digital switching input 1 (vacuum „off“ = 0V / „on“ = 24V)
- [8] 0 V DC

Materials

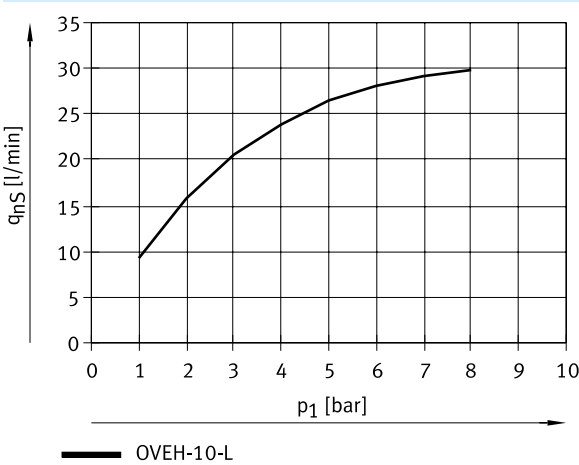
Housing material	PA-reinforced
Female nozzle material	POM
Material of jet nozzle	Wrought aluminum alloy
Material of adjusting screw	Steel
Hollow bolt material	Wrought aluminum alloy
Material of screws	Steel
Material of connecting thread	Wrought aluminum alloy, anodized
Seals material	NBR
Compressed air filter material	POM
Muffler material	PA-reinforced, Protective grounding
Material of cable sheath	PVC
Color cable sheath	Black
Note on materials	RoHS compliant
LABS (PWIS) conformity	VDMA24364-B1/B2-L

Datasheet

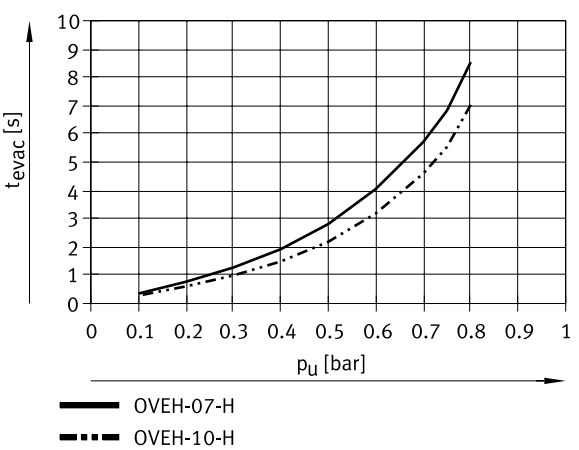
Vacuum p_u as a function of operating pressure p_1 (high vacuum)Vacuum p_u as a function of operating pressure p_1 (high suction volume flow)Suction volume flow q_{nS} in relation to atmosphere as a function of operating pressure p_1 (high vacuum)

Datasheet

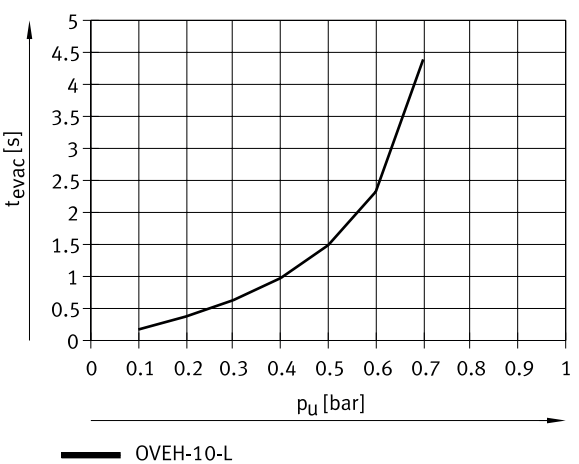
Suction volume flow q_{nS} in relation to atmosphere as a function of operating pressure p_1 (high suction volume flow)



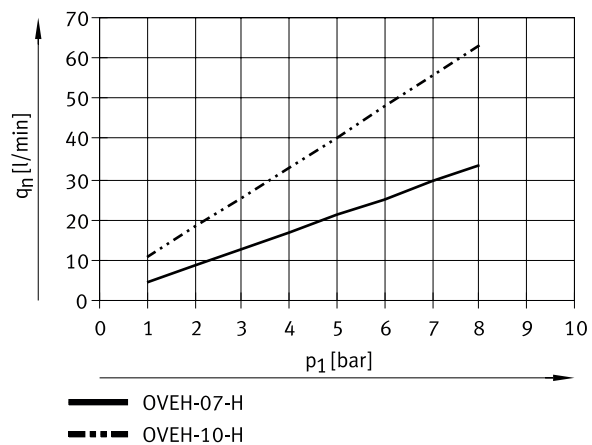
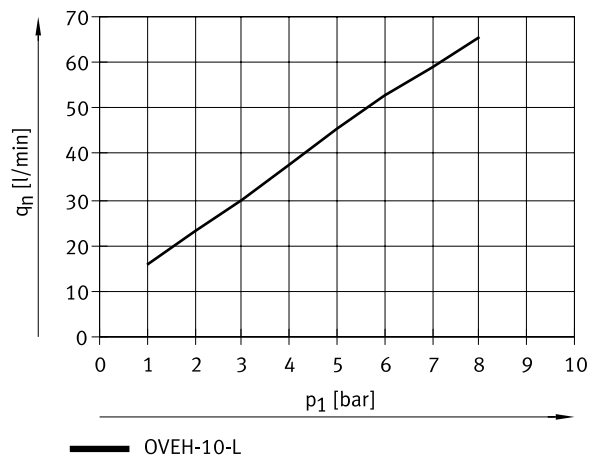
Evacuation time t as a function of vacuum p_u for 1 l volume at 6 bar operating pressure (high vacuum)



Evacuation time t as a function of vacuum p_u for 1 l volume at 6 bar operating pressure (high suction volume flow)

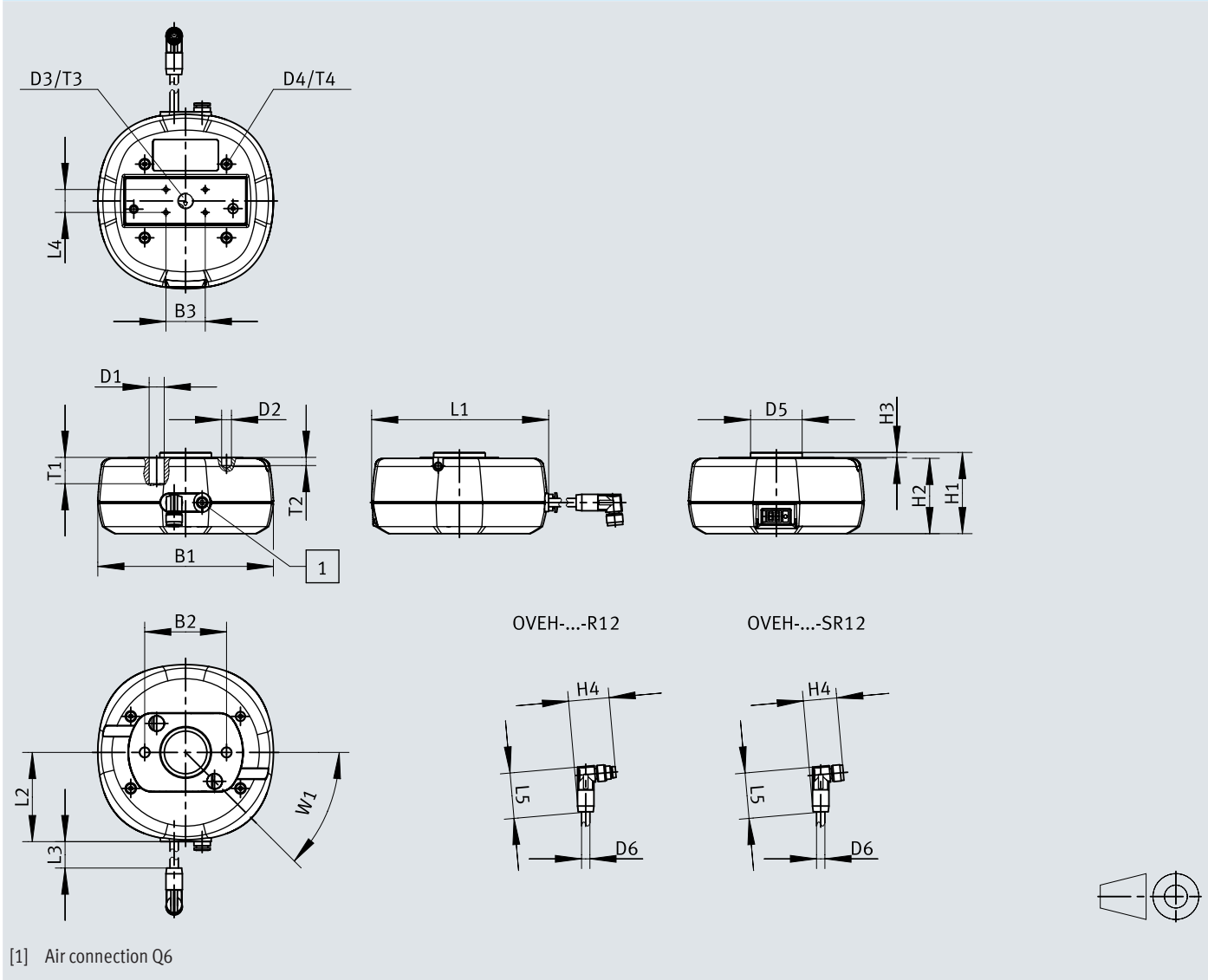


Datasheet

Vacuum p_u as a function of operating pressure p_1 (high vacuum)Vacuum p_u as a function of operating pressure p_1 (high suction volume flow)

Dimensions

Dimensions – OVEH Download CAD data www.festo.com

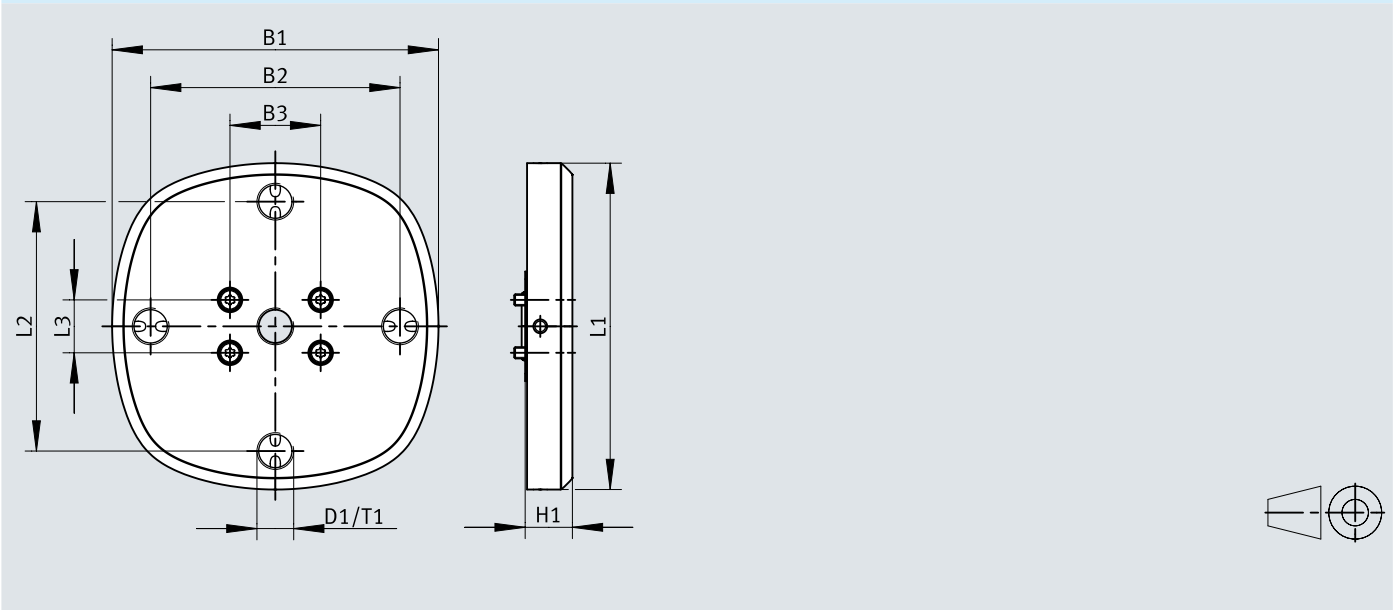


	B1	B2	B3	D1 ø H12	D2 ø H7	D3	D4	D5 ø h7	D6 ø	H1	H2
OVEH-10-H-Q6-G18-UA-C-PNLK-R12-HRC	107,3	50	24	9,2	6	G1/8	M3	31,5	5,1	49,6	46
OVEH-10-H-Q6-G18-UA-C-PNLK-SR12-HRC											
OVEH-7-H-Q6-G18-UA-C-PNLK-R12-HRC											
OVEH-7-H-Q6-G18-UA-C-PNLK-SR12-HRC											
OVEH-10-L-Q6-G18-UA-C-PNLK-R12-HRC											
OVEH-10-L-Q6-G18-UA-C-PNLK-SR12-HRC											
	H3	H4	L1	L2	L3	L4	L5	T1	T2	T3	T4
OVEH-10-H-Q6-G18-UA-C-PNLK-R12-HRC	3	25	108,1	54,5	302,7	14	28	16,1	5	7	7,5
OVEH-10-H-Q6-G18-UA-C-PNLK-SR12-HRC		20,5									
OVEH-7-H-Q6-G18-UA-C-PNLK-R12-HRC		25									
OVEH-7-H-Q6-G18-UA-C-PNLK-SR12-HRC		20,5									
OVEH-10-L-Q6-G18-UA-C-PNLK-R12-HRC		25									
OVEH-10-L-Q6-G18-UA-C-PNLK-SR12-HRC		20,5									

Dimensions

Dimensions – OAMC-PA-G18-5

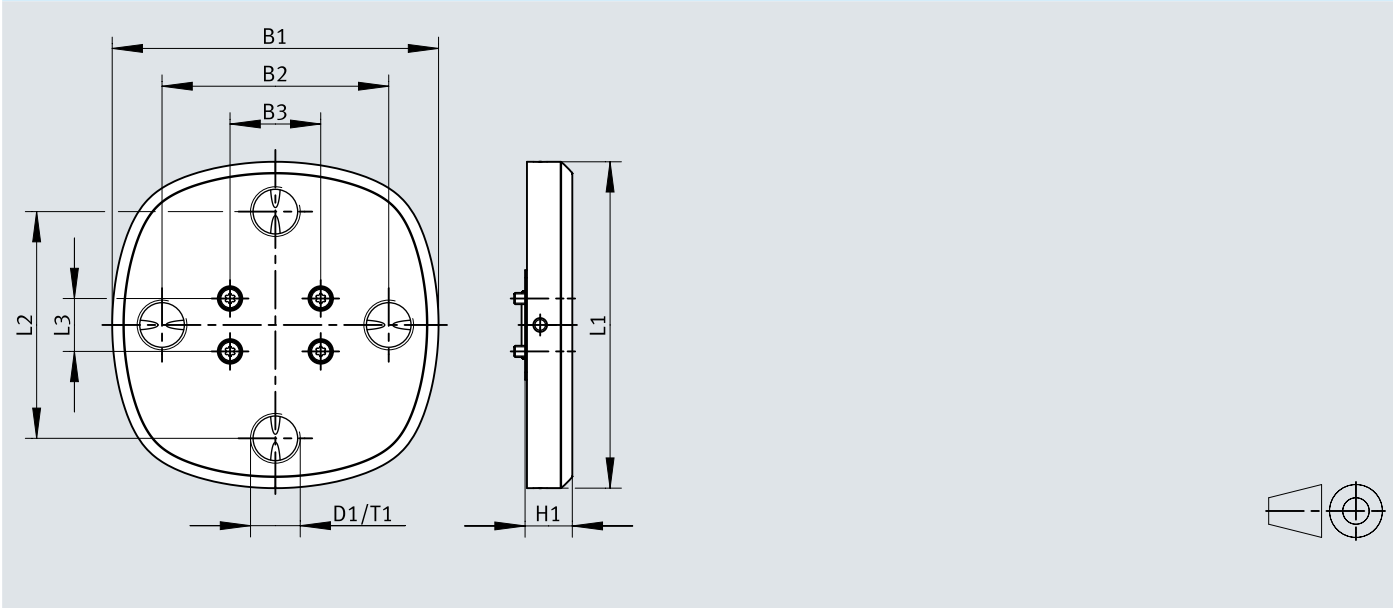
Download CAD data www.festo.com



	B1	B2	B3	D1	H1	L1	L2	L3	T1
OAMC-PA-G18-5	86,4	66	24	G1/8	12,5	86,4	66	14	5,9

Dimensions

Dimensions – OAMC-PA-G14-4 Download CAD data www.festo.com

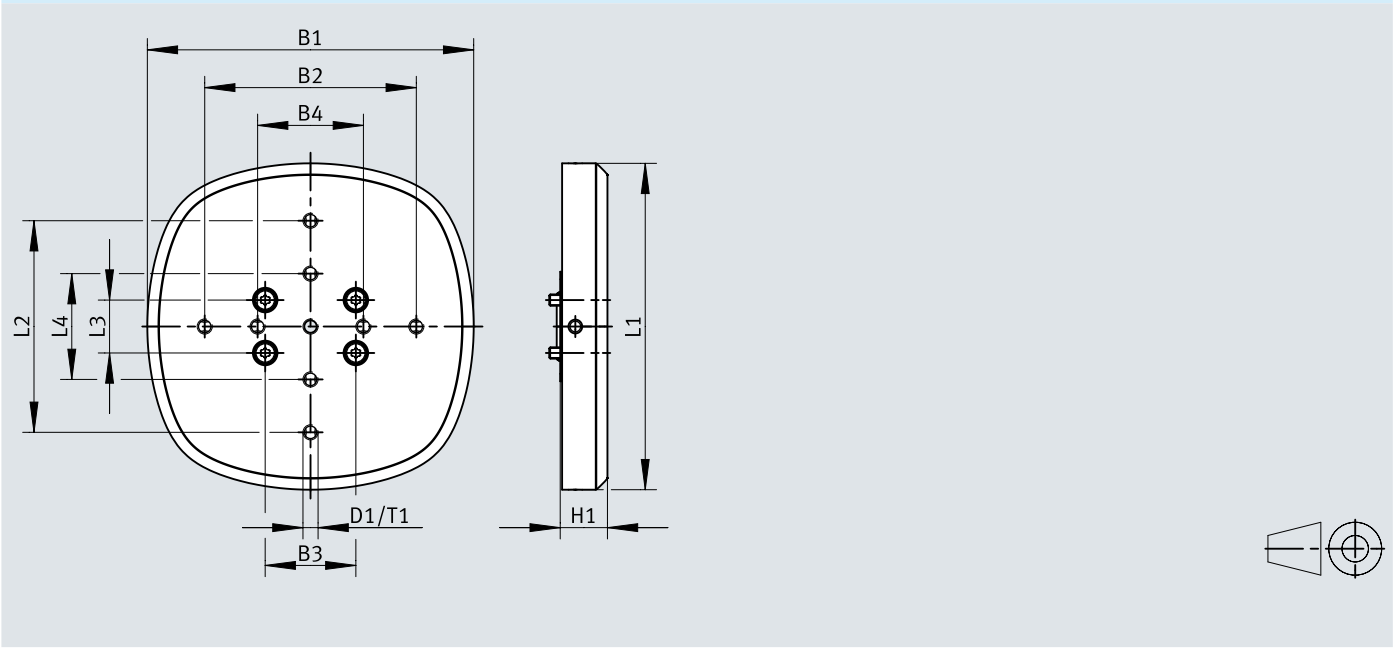


	B1	B2	B3	D1	H1	L1	L2	L3	T1
OAMC-PA-G14-4	86,4	60	24	G1/4	12,5	86,4	60	14	6,5

Dimensions

Dimensions – OAMC-PA-M4-9

Download CAD data www.festo.com



	B1	B2	B3	B4	D1	H1	L1	L2	L3	L4	T1
OAMC-PA-M4-9	86,4	56	24	28	M4	12,5	86,4	56	14	28	6

Ordering data

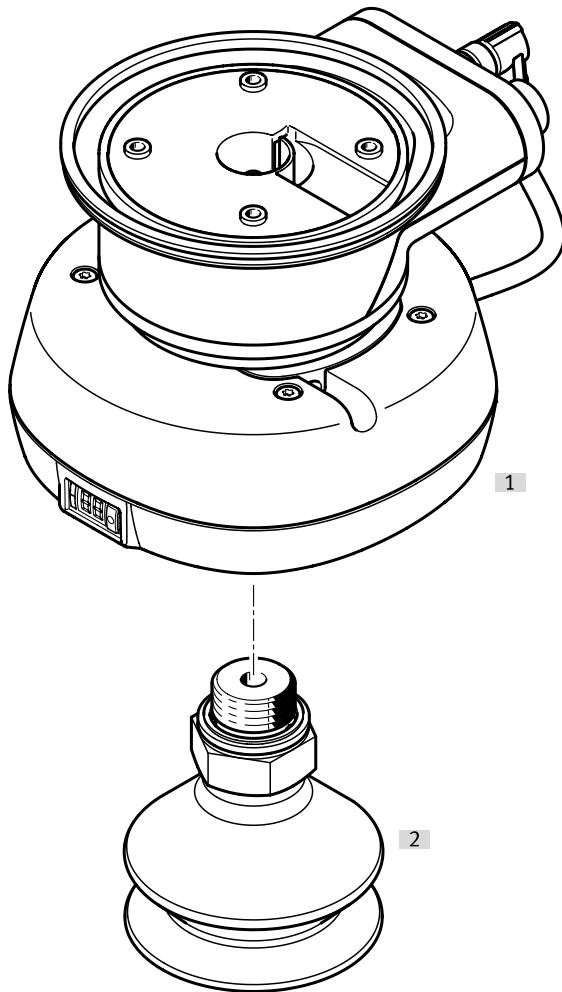
Ordering data



Ejector characteristics	Nominal width of Laval nozzle	Electrical connection 1, connection type	Product weight	Part no.	Type
High suction flow, Standard	0.95 mm	Cable with socket	415 g	8205194	OVEH-10-L-Q6-G18-UA-C-PNLK-SR12-HRC
		Cable with plug		8205193	OVEH-10-L-Q6-G18-UA-C-PNLK-R12-HRC
High vacuum, Standard	0.7 mm	Cable with socket		8205192	OVEH-7-H-Q6-G18-UA-C-PNLK-SR12-HRC
		Cable with plug		8205191	OVEH-7-H-Q6-G18-UA-C-PNLK-R12-HRC
	0.95 mm	Cable with socket		8205190	OVEH-10-H-Q6-G18-UA-C-PNLK-SR12-HRC
		Cable with plug		8205189	OVEH-10-H-Q6-G18-UA-C-PNLK-R12-HRC

Peripherals overview

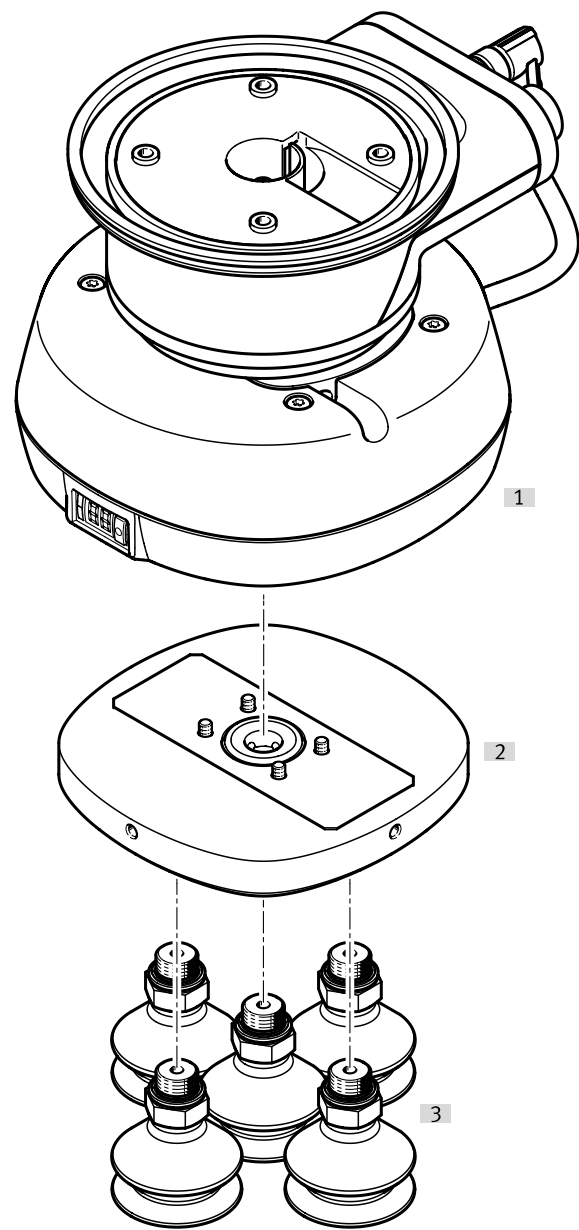
OVEH without adapter plate with 1 suction cup with connector



Accessories		→ Page/Internet
Type/order code	Description	
[1] OVEH		☞ oveh
[2] Suction cups with connection VAS, VASB, OGVN	Suction cup sizes 15; 20; 30; 35	21
[3] Vacuum security valve ISV	Optional, without illustration	21
[4] Double nipple NPFC	Optional, not shown, for suction cups with connection OGVN-...F with internal thread	21

Peripherals overview

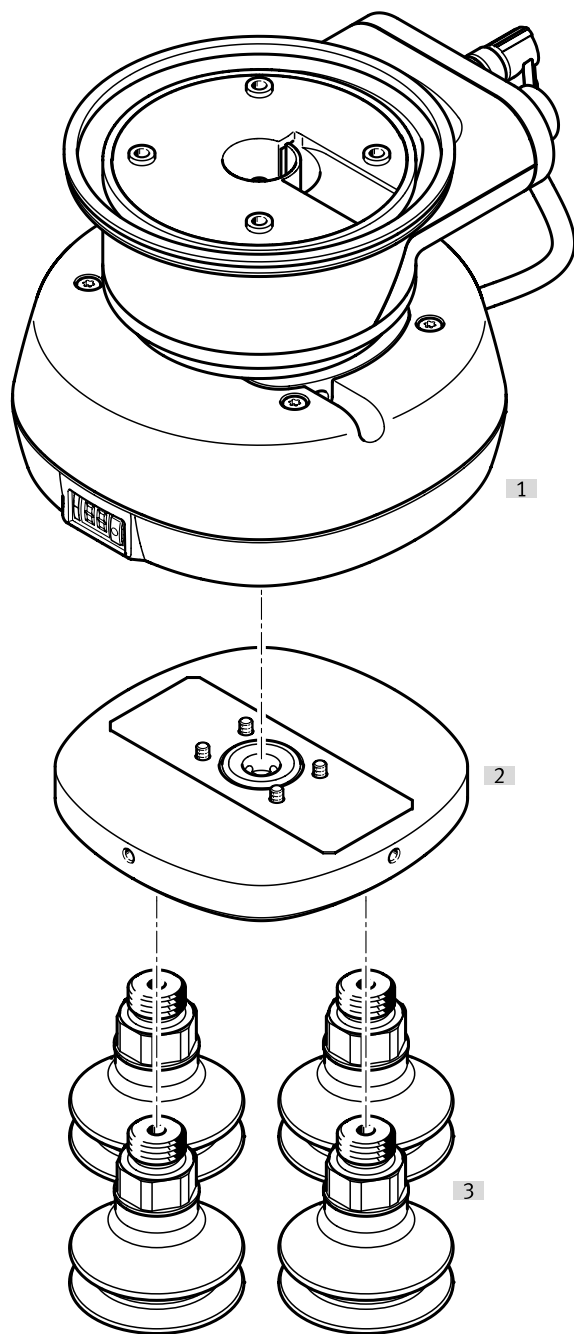
OVEH with adapter plate OAMC-PA-G18-5 with 5 suction cups with connector



Accessories		→ Page/Internet
Type/order code	Description	
[1] OVEH		oveh
[2] Adapter plate OAMC-PA-G18-5	Suction cup sizes 15; 20; 30; 35	21
[3] Suction cups with connection VAS, VASB, OGVN	Suction cup sizes 15; 20; 30; 35	21
[4] Vacuum security valve ISV	Optional, without illustration	21
[5] Double nipple NPFC	Optional, not shown, for suction cups with connection OGVN-...-F with internal thread	21

Peripherals overview

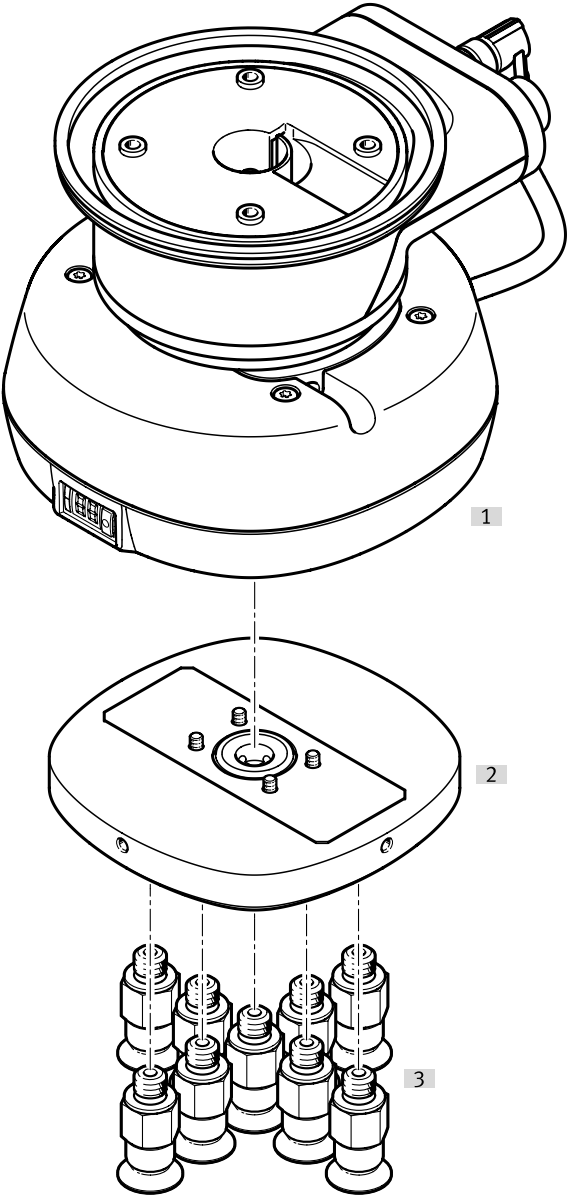
OVEH with adapter plate OAMC-PA-G14-4 with 4 suction cups with connector



Accessories		→ Page/Internet
Type/order code	Description	
[1] OVEH		oveh
[2] Adapter plate OAMC-PA-G14-4	Suction cup sizes 15; 20; 30; 35	21
[3] Suction cups with connection VAS, VASB, OGVN, OGVM	Suction cup sizes 20; 30; 35; 40	21
[4] Vacuum security valve ISV	Optional, without illustration	21
[5] Double nipple NPFC	Optional, not shown, for suction cups with connection OGVN-...-F with internal thread	21

Peripherals overview

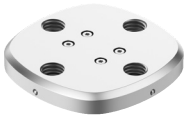
OVEH with adapter plate OAMC-PA-M4-9 with 9 suction cups with connector



Accessories		→ Page/Internet
Type/order code	Description	
[1] OVEH		oveh
[2] Adapter plate OAMC-PA-M4-9	Suction cup sizes 15; 20; 30; 35	21
[3] Suction cup with connection ESS	Suction cup sizes 10; 15	22
[4] Vacuum security valve ISV	Optional, without illustration	22

Accessories

Adapter plate OAMC



Suction cup mounting	Suction cup mounting, quantity	Plate material	Product weight	Part no.	Type
Internal thread G1/8	5	Wrought aluminum alloy, anodized	215 g	8205195	OAMC-PA-G18-5
Internal thread G1/4	4			8205196	OAMC-PA-G14-4
Internal thread M4	9			8205197	OAMC-PA-M4-9

Accessories without adapter plate ¹⁾

Series	Type code	Suction cup diameter	Suction cup material	Product weight	Part no.	Type
Suction cup	VAS	15 mm	PUR	11 g	1396087	VAS-15-1/8-PUR-B
			VMQ (silicone)	4 g	1376604	VAS-15-1/8-SI-B
		30 mm	PUR	12 g	1396090	VAS-30-1/8-PUR-B
			VMQ (silicone)	5 g	1377752	VAS-30-1/8-SI-B
Suction cup with connection, Protective bellows	VASB	15 mm	PUR	11 g	1395671	VASB-15-1/8-PUR-B
			VMQ (silicone)	4 g	1377689	VASB-15-1/8-SI-B
		30 mm	PUR	14 g	1395690	VASB-30-1/8-PUR-B
			VMQ (silicone)	7 g	1377637	VASB-30-1/8-SI-B
Vacuum security valve	ISV			9 g	8217204	ISV-1/8-F1A
Fitting	NPFC			10 g	8133311	NPFC-D-2G18-M-F1A
Suction cup with connection	OGVN	20 mm	PUR	1.1 g	8204816	OGVN-20-A-U-G18
		35 mm		5.1 g	8204818	OGVN-35-A-U-G18-F
		52 mm		14.2 g	8204832	OGVN-52-A-U-G18-F

1) Double nipple NPFC: for suction cups OGVN-...-F with internal thread

Accessories with adapter plate OAMC-PA-G18-5 (5 Suction connections, max. diameter per Suction cup = 30 mm) ¹⁾

Series	Type code	Suction cup diameter	Suction cup material	Product weight	Part no.	Type
Suction cup	VAS	15 mm	PUR	11 g	1396087	VAS-15-1/8-PUR-B
			VMQ (silicone)	4 g	1376604	VAS-15-1/8-SI-B
		30 mm	PUR	12 g	1396090	VAS-30-1/8-PUR-B
			VMQ (silicone)	5 g	1377752	VAS-30-1/8-SI-B
Suction cup with connection, Protective bellows	VASB	15 mm	PUR	11 g	1395671	VASB-15-1/8-PUR-B
			VMQ (silicone)	4 g	1377689	VASB-15-1/8-SI-B
		30 mm	PUR	14 g	1395690	VASB-30-1/8-PUR-B
			VMQ (silicone)	7 g	1377637	VASB-30-1/8-SI-B
Vacuum security valve	ISV			9 g	8217204	ISV-1/8-F1A
Fitting	NPFC			10 g	8133311	NPFC-D-2G18-M-F1A
Suction cup with connection	OGVN	20 mm	PUR	1.1 g	8204816	OGVN-20-A-U-G18
		35 mm		5.1 g	8204818	OGVN-35-A-U-G18-F

1) Double nipple NPFC: for suction cups OGVN-...-F with internal thread

Accessories with adapter plate OAMC-PA-G14-4 (4 Suction connections, max. diameter per Suction cup = 40 mm) ¹⁾

Series	Type code	Suction cup diameter	Suction cup material	Product weight	Part no.	Type	
Suction cup	VAS	40 mm	PUR	26 g	1396092	VAS-40-1/4-PUR-B	
			VMQ (silicone)	14 g	1379454	VAS-40-1/4-SI-B	
Suction cup with con- nection, Protective bellows	VASB		PUR	30 g	1395691	VASB-40-1/4-PUR-B	
	VASB		VMQ (silicone)	18 g	1372910	VASB-40-1/4-SI-B	
Vacuum security valve	ISV			16 g	8217205	ISV-1/4-F1A	
Fitting	NPFC			17.2 g	8030272	NPFC-D-2G14-M	
Vacuum suction cup	OGVM	20 mm	NBR	6 g	8073847	OGVM-20-G-N-G14F	
				12 g	8073834	OGVM-20-A-N-G14F	
		30 mm		7 g	8073848	OGVM-30-G-N-G14F	
				8 g	8073816	OGVM-30-S-N-G14F	
				15 g	8073835	OGVM-30-A-N-G14F	
		40 mm		10 g	8073817	OGVM-40-S-N-G14F	
				17 g	8073836	OGVM-40-A-N-G14F	

Accessories

Accessories with adapter plate OAMC-PA-G14-4 (4 Suction connections, max. diameter per Suction cup = 40 mm) ¹⁾

Series	Type code	Suction cup diameter	Suction cup material	Product weight	Part no.	Type
Suction cup with connection	OGVN	35 mm	PUR	5.1 g	8204819	OGVN-35-A-U-G14

1) Double nipple NPFC: for suction cups OGVN-...-F with internal thread

Accessories with adapter plate OAMC-PA-M4-9 (9 suction connections, max. diameter per suction cup = 10 mm)

Series	Type code	Suction cup diameter	Suction cup material	Product weight	Part no.	Type	
Suction cup	ESS	10 mm	FPM	1.5 g	189287	ESS-10-SF	
			NBR		189288	ESS-10-SNA	
					189284	ESS-10-SN	
				1.6 g	189398	ESS-10-CN	
				1.8 g	189374	ESS-10-BN	
			PUR	1.5 g	189285	ESS-10-SU	
			1.8 g	189375	ESS-10-BU		
			VMQ (silicone)	1.5 g	189286	ESS-10-SS	
				1.6 g	189399	ESS-10-CS	
				1.8 g	189376	ESS-10-BS	
			15 mm	FPM	1.9 g	189337	ESS-15-EF
				NBR		189292	ESS-15-SF
		189289				ESS-15-SN	
		189334				ESS-15-EN	
		189293				ESS-15-SNA	
		PUR		189290		ESS-15-SU	
		189335		ESS-15-EU			
		VMQ (silicone)		189291		ESS-15-SS	
		189336	ESS-15-ES				
		Vacuum security valve	ISV			1.5 g	545996