COVAL

vacuum managers

CVPC
CVP/CBP

Controlled Vacuum and Blow-off Cartridges



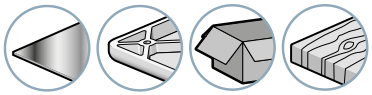
ADVANCED VACUUM SOLUTIONS

CVPC
Controlled Vacuum Cartridges
General Information



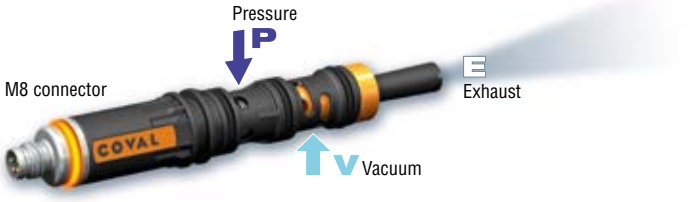
The ultra-compact and light **CVPC** Series controlled vacuum cartridges are used to effortlessly install a vacuum generation system equipped with an electric control, as close to the corresponding application as possible. They perfectly meet the flexibility, customization and performance needs of machine manufacturers and integrators of robotic solutions, who want to easily design flexible, modular and efficient gripping tools.

Industry-specific applications



CVPC Series controlled vacuum cartridges are suitable for a broad variety of applications and are available in different sizes and suction capacities:

- Size 1: nozzle dia. 1.2, 1.4 and 1.6 mm generating a suction flow rate ranging from 41 to 90 Nl/min. Max. vacuum 85%.
- Size 2: nozzle dia. 2.2 and 2.7 mm generating a suction flow rate ranging from 160 to 215 Nl/min. Max. vacuum 85%.



SIZE 1
Nozzle dia. 1.2, 1.4 or 1.6 mm

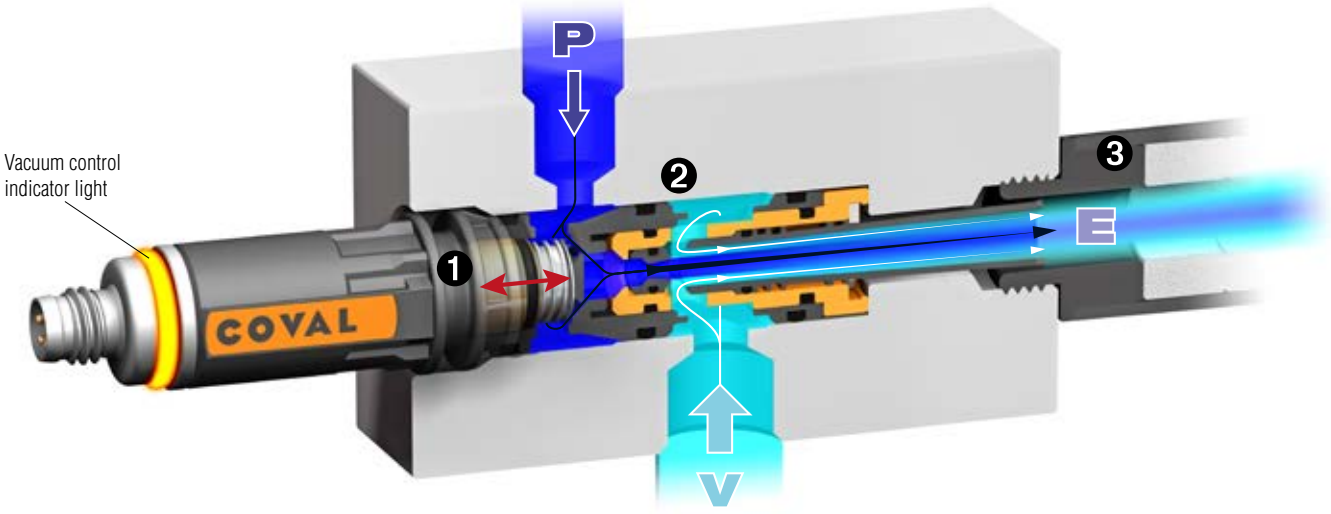


SIZE 2
Nozzle dia. 2.2 or 2.7 mm

Advantages

- Ultra-light and compact cartridge design allows for great flexibility and easy integration.
- Integrated pilot control solenoid valve reduces response times.
- Vacuum technology: powerful single-stage Venturi that is dust resistant and maintenance-free.

Compact integration



❶ Solenoid valve. ❷ Single-stage Venturi (nozzle + mixer system). ❸ Option: non-clogging through-type silencer.

The innovative and patented design of the **CVPC** Series controlled vacuum cartridges combines two integrated functions:

- A single-stage Venturi that uses compressed air to generate a powerful vacuum, thus guaranteeing short evacuation times. The single-stage technology, consisting of a nozzle and a mixer, works without any moving parts, is dust resistant and maintenance-free.
- An electro-pneumatic valve that controls compressed air in order to regulate vacuum, ensuring high reactivity and thus a quick response time, meeting the requirements of ultra-fast pick & place applications.

CVPC
Controlled Vacuum Cartridges
Implementation, Applications



Implementation

1



1. Recess is machined to integrate the cartridge.

2



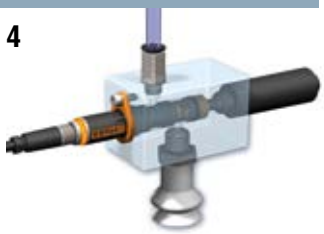
2. Vacuum cartridge is installed. Two mounting solutions are available: flange or threaded ring (see p. 5).

3



3. Peripheral equipment is assembled.

4



4. Pneumatic and electrical connections are established for use.

3D COVAL Data You will find the 3D files of the cartridges as well as the specifications of the machining operations to be carried out on our website **www.coval.com**

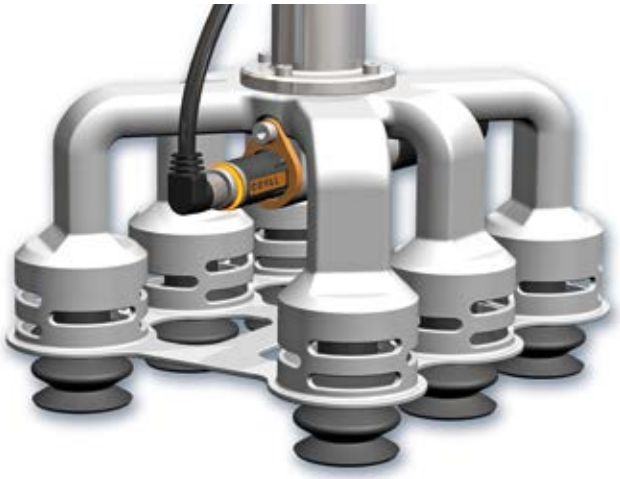
Application examples



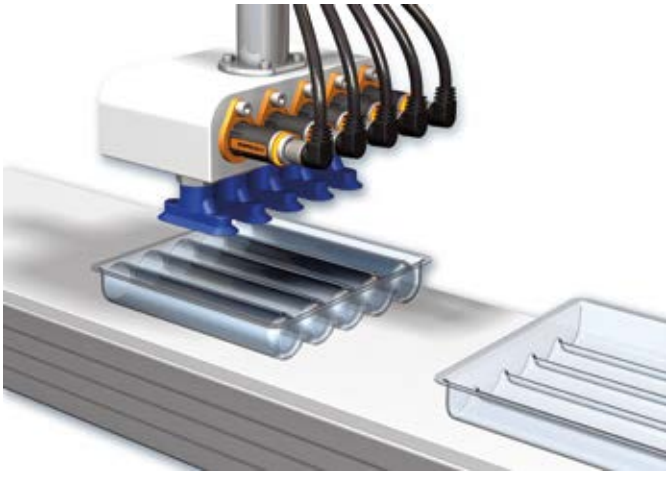
- 1 CVPC series controlled vacuum cartridge
- 1 CBP series controlled blow-off cartridge
- 1 PSK series miniature electronic vacuum switch
- 1 FPC series FlowPack suction cup



- 1 CVPC series controlled vacuum cartridge
- 1 MVS series soft and flexible suction cup



- 1 CVPC series controlled vacuum cartridge
- 6 VS series 2.5 bellows suction cups



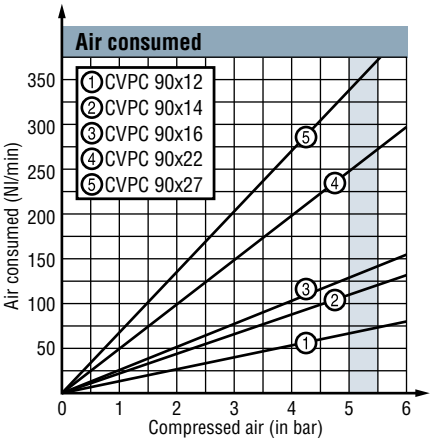
- 5 CVPC series controlled vacuum cartridges
- 5 VPO series oblong suction cups

CVPC
Controlled Vacuum Cartridges
Technical and Performance Data



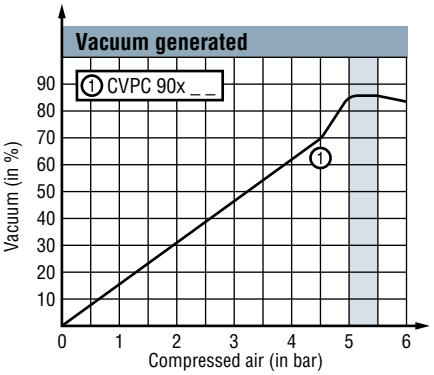
Characteristics

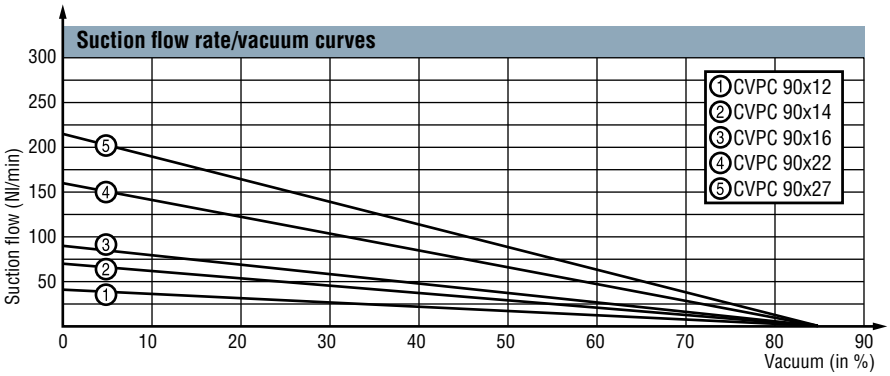
Model	Ø nozzle (mm)	Air consumed (Nl/min)	Maximum vacuum (%)	Air drawn in (Nl/min)	At optimal air pressure (bar)
CVPC90x12	1.2	70	85	41	5 to 5.5
CVPC90x14	1.4	115	85	70	5 to 5.5
CVPC90x16	1.6	135	85	90	5 to 5.5
CVPC90x22	2.2	260	85	160	5 to 5.5
CVPC90x27	2.7	355	85	215	5 to 5.5

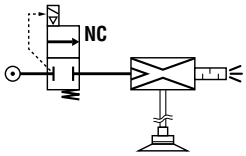


Evacuation time in seconds per liter

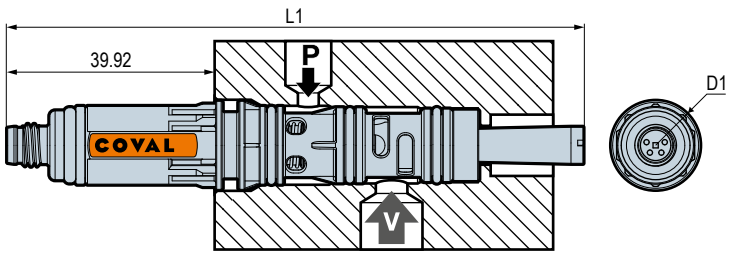
% vacuum	20	30	40	50	60	70	80
CVPC90x12	0.31	0.53	0.83	1.25	1.91	3.23	6.14
CVPC90x14	0.21	0.35	0.55	0.83	1.27	2.14	4.16
CVPC90x16	0.15	0.25	0.38	0.57	0.83	1.35	2.63
CVPC90x22	0.07	0.11	0.17	0.25	0.37	0.58	1.07
CVPC90x27	0.05	0.08	0.12	0.18	0.26	0.44	0.8





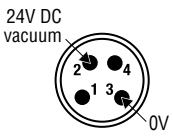


Dimensions and electrical connections



Model	L1	D1
CVPC90X12	98	16.9
CVPC90X14	105	16.9
CVPC90X16	110	16.9
CVPC90X22	134	16.9
CVPC90X27	147	16.9

Note: All dimensions are in mm



M8 male connector, 4-pin

Overall characteristics

- C.A. supply 5µ filtered, non-lubricated air relevant to standard ISO 8573-1:2010 [4:5:4].
- Operating pressure: 4.5 to 7 bar. (Optimal at 5 to 5.5 bar.)
- Max. vacuum: 85%.
- Suction flow rate: 41 to 215 Nl/min depending on model.
- Air consumption: 70 to 355 Nl/min depending on model.
- Electrical degree of protection: IP40.
- Control voltage: 24 V DC (regulated ±10%).
- Current drawn: 35 mA (0.84 W).
- Maximum operating frequency: 4 Hz.
- Endurance: 30 million cycles.
- Weight: 22 g.
- Operating temperature: from 0 to 50 °C.
- Materials: PA 6-6 15 % GF, brass, aluminum, NBR.
- Noise level with silencer (option K):
  - CVPC90X12K : 54 dBA
  - CVPC90X14K : 59 dBA
  - CVPC90X16K : 64 dBA
  - CVPC90X22K : 67 dBA
  - CVPC90X27K : 75 dBA

CVPC
Controlled Vacuum Cartridges
Ordering, Accessories



To place an order

CVPC	90	X		12		K

VACUUM LEVEL	
85% max. vacuum	90

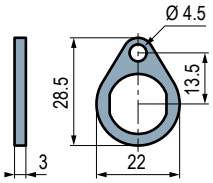
NOZZLE DIAMETER	
1.2 mm nozzle Ø	12
1.4 mm nozzle Ø	14
1.6 mm nozzle Ø	16
2.2 mm nozzle Ø	22
2.7 mm nozzle Ø	27

THROUGH-TYPE SILENCER	
–	Without
K	With silencer

Mounting accessories

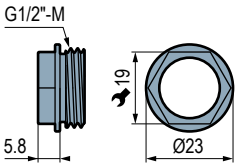
The CVPC controlled vacuum cartridges offer two mounting solutions:

Option CVPCFIX1
- Flange mounting





Option CVPCFIX2
- Mounting with G1/2"-M threaded ring





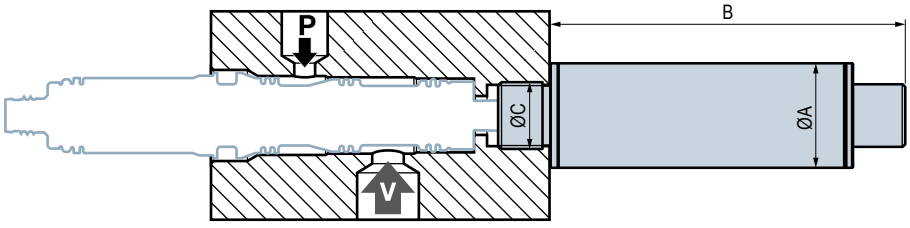
Through-type silencers - option K

- Lateral noise absorption on sound-absorbing material.
- Unrestricted exhaust without pressure loss or clogging.
- Average sound attenuation of 20 dBA.

Model	ØA	B	ØC	Weight (g)
Silencer for size 1	20	68	G1/4"-M	25
Silencer for size 2	30	121	G1/2"-M	92

➔ Silencer for **CVPC size 1**
(CVPC90X**12K**/CVPC90X**14K**/CVPC90X**16K**)
- **G1/4"-M** silencer
  - Materials: - aluminum thread
    - PA6 tube, 30% GF

➔ Silencer for **CVPC size 2**
(CVPC90X**22K**/CVPC90X**27K**)
- **G1/2"-M** silencer
  - Material: - polycarbonate, 30% GF



Blow-off valve

In some cases, a blow-off function must be added to the equipment to guarantee quick release and reduce cycle times.

This is why COVAL developed an easy-to-integrate controlled blow-off cartridge.
➔ See **CBP** Series, page 10.

CVP
Vacuum Cartridges
General Information



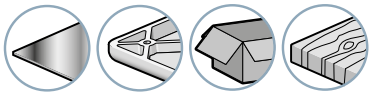
Owing to their compact size and light weight, the **CVP** Series vacuum cartridges can be used to easily install a simple and reliable vacuum generation system as close to the application as possible.

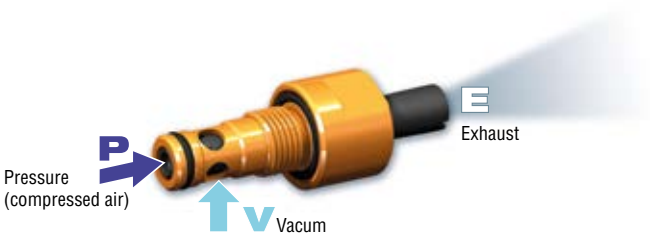
They meet the flexibility, customization and performance needs of machine manufacturers and integrators of robotic solutions, who wish to easily design flexible, modular and efficient gripping tools.

CVP Series vacuum cartridges are suitable for a broad variety of applications and are available in different sizes and suction capacities:

- Size 1: nozzle dia. 1.2, 1.4 and 1.6 mm generating a suction flow rate ranging from 41 to 90 Nl/min. Max. vacuum 85%.
- Size 2: nozzle dia. 2.2 and 2.7 mm generating a suction flow rate ranging from 160 to 215 Nl/min. Max. vacuum 85%.

Industry-specific applications





SIZE 1
Nozzle dia. 1.2, 1.4 or 1.6 mm

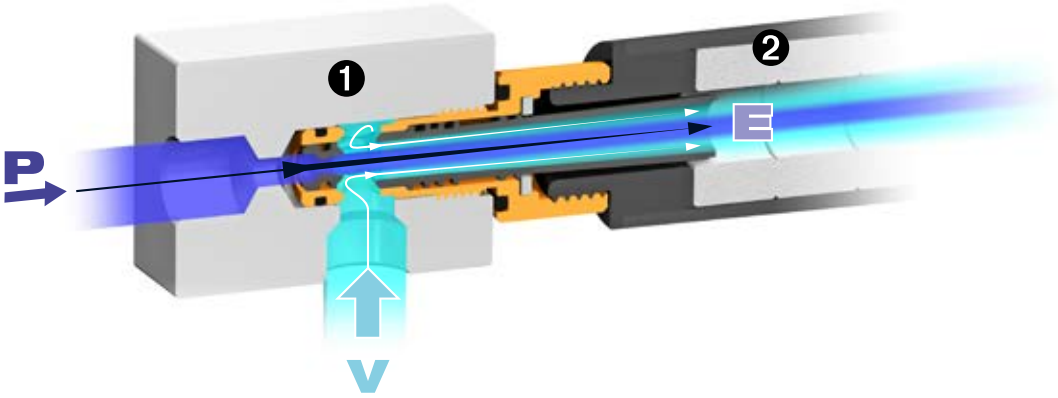


SIZE 2
Nozzle dia. 2.2 or 2.7 mm

Advantages

- Ultra-light and compact cartridge design allows for great flexibility and easy integration.
- Vacuum technology: powerful single-stage Venturi that is dust resistant and maintenance-free.

Compact integration



❶ Single-stage Venturi (nozzle + mixer system) ❷ Option: non-clogging through-type silencer

The CVP Series vacuum cartridges include a single-stage Venturi that uses compressed air to generate a powerful vacuum, thus guaranteeing short evacuation times.

The single-stage technology, consisting of a nozzle and a mixer, works without any moving parts, is dust resistant and maintenance- free.

CVP
Vacuum Cartridges
Implementation, Applications



Implementation

1



1. Recess is machined to integrate the cartridge

2



2. Vacuum cartridge is installed.

3



3. Peripheral equipment is assembled.

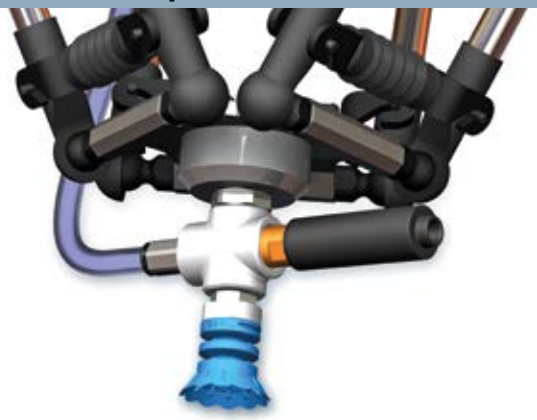
4



4. Pneumatic connections are established for use.

3D COVAL Data You will find the 3D files of the cartridges as well as the specifications of the machining operations to be carried out on our website **www.coval.com**

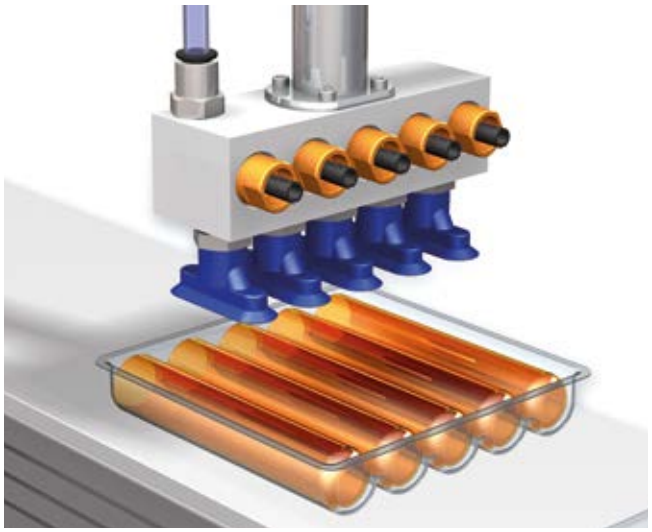
Application examples



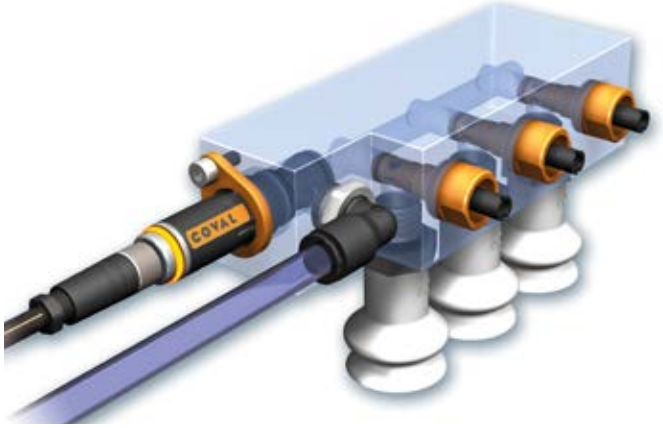
- 1 CVP series vacuum cartridge, with silencer
- 1 FPC series FlowPack suction cup



- 2 CVP series vacuum cartridges
- 2 VSAJ series soft and flexible suction cups



- 5 CVP series vacuum cartridges
- 5 VPO series oblong suction cups



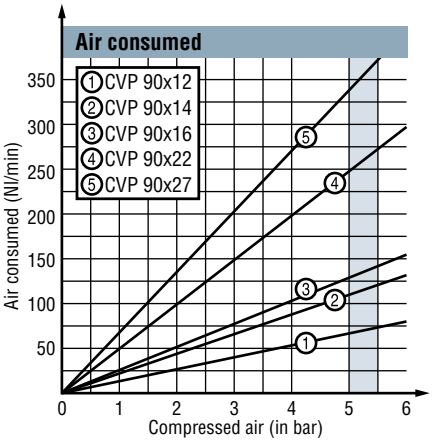
- 1 CBP series multi-cartridge control valve
- 3 CVP series vacuum cartridges
- 3 MVS series soft and flexible suction cups

CVP
Vacuum Cartridges
Technical and Performance Data



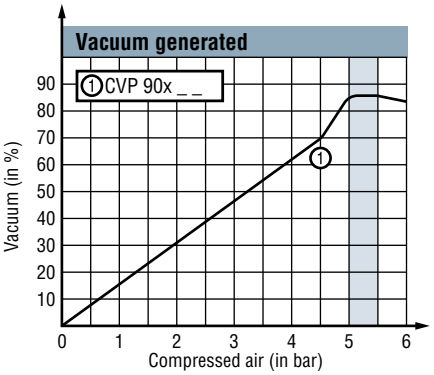
Characteristics

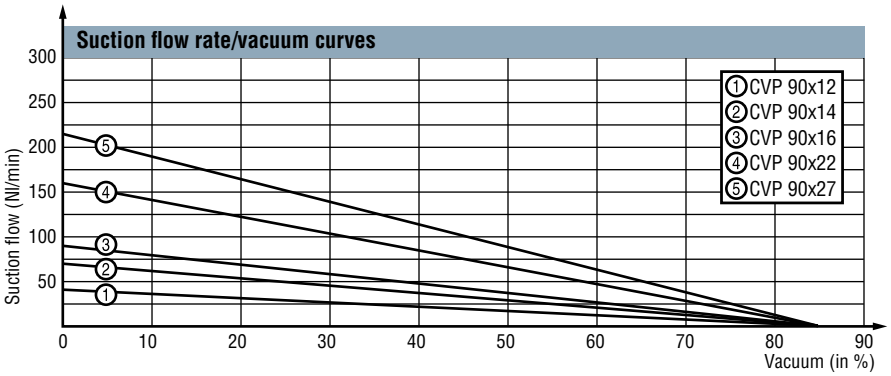
Model	Ø nozzle (mm)	Air consumed (Nl/min)	Maximum vacuum (%)	Air drawn in (Nl/min)	At optimal air pressure (bar)
CVP90x12	1.2	70	85	41	5 to 5.5
CVP90x14	1.4	115	85	70	5 to 5.5
CVP90x16	1.6	135	85	90	5 to 5.5
CVP90x22	2.2	260	85	160	5 to 5.5
CVP90x27	2.7	355	85	215	5 to 5.5

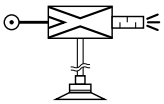


Evacuation time in seconds per liter

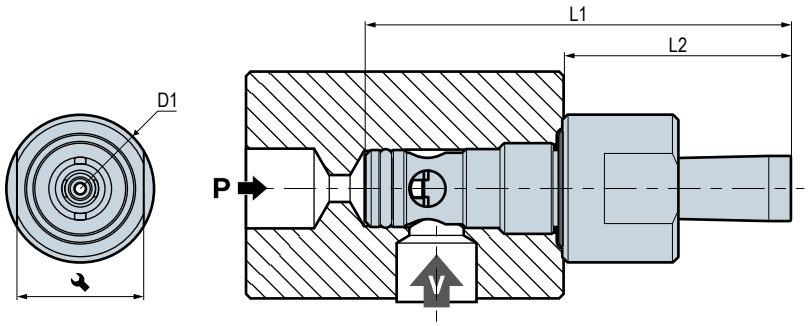
% vacuum	20	30	40	50	60	70	80
CVP90x12	0.31	0.53	0.83	1.25	1.91	3.23	6.14
CVP90x14	0.21	0.35	0.55	0.83	1.27	2.14	4.16
CVP90x16	0.15	0.25	0.38	0.57	0.83	1.35	2.63
CVP90x22	0.07	0.11	0.17	0.25	0.37	0.58	1.07
CVP90x27	0.05	0.08	0.12	0.18	0.26	0.44	0.8







Dimensions



Model	D1	L1	L2	
CVP90X12	16	34.2	12.5	14
CVP90X14	16	41.1	19.4	14
CVP90X16	16	46.6	24.9	14
CVP90X22	25	73.4	32.9	22
CVP90X27	25	85.3	44.8	22

Note: All dimensions are in mm

Overall characteristics

- C.A. supply 5µ filtered, non-lubricated air relevant to standard ISO 8573-1:2010 [4:5:4].
- Operating pressure: 4.5 to 7 bar. (Optimal at 5 to 5.5 bar.)
- Max. vacuum: 85%.
- Suction flow rate: 41 to 215 Nl/min depending on model.
- Air consumption: 70 to 355 Nl/min depending on model.
- Operating temperature: from 0 to 50 °C.
- Weight : • size 1 : 6 g
  • size 2 : 23 g.
- Materials : PA 6-6 15 % GF, aluminum, NBR.
- Noise level with silencer (option K):
  - CVP90X12K: 54 dBA
  - CVP90X14K: 59 dBA
  - CVP90X16K: 64 dBA
  - CVP90X22K: 67 dBA
  - CVP90X27K: 75 dBA

CVP
Vacuum Cartridges
Ordering, Accessories



To place an order

CVP	90	X		12		K

VACUUM LEVEL	
85% max. vacuum	90

NOZZLE DIAMETER	
1.2 mm nozzle Ø	12
1.4 mm nozzle Ø	14
1.6 mm nozzle Ø	16
2.2 mm nozzle Ø	22
2.7 mm nozzle Ø	27

THROUGH-TYPE SILENCER	
–	Without
K	With silencer

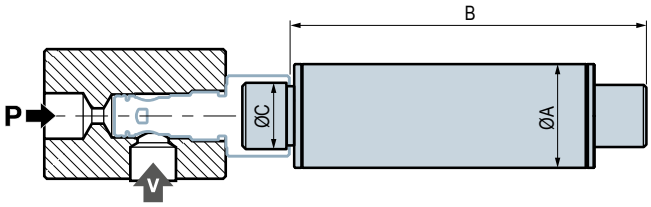
Through-type silencers - option K

- Lateral noise absorption on sound-absorbing material.
- Unrestricted exhaust without pressure loss or clogging.
- Average sound attenuation of 20 dBA.

➔ Silencer for **CVP size 1**
(CVP90X**12K**/CVP90X**14K**/CVP90X**16K**)
- **G1/4"-M** silencer
  - Materials: - aluminum thread
    - PA6 tube, 30% GF

➔ Silencer for **CVP size 2**
(CVP90X**22K**/CVP90X**27K**)
- **G1/2"-M** silencer
  - Material: - polycarbonate, 30% GF

Model	ØA	B	ØC	Weight (g)
Silencer for size 1	20	68	G1/4"-M	25
Silencer for size 2	30	121	G1/2"-M	92



Controlled blow-off / multi-cartridge control valve

In addition to the CVP vacuum cartridges, COVAL has developed a CBP series pilot control valve used to provide equipment with a controlled blow-off function or to pneumatically control one or several CVP series vacuum cartridges.

➔ See **CBP** Series, page 10.

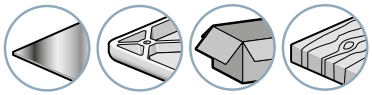
CBP
Pilot Control Cartridge
General information



By means of a cylindrical cartridge design and an M8 connector, the **CBP** series pilot control cartridge easily fulfills the function of a compressed air control valve with an electric control installed as close as possible to where it is needed, and thus meeting the requirements of multiple applications.

The **CBP** Series pilot control cartridge is complementary to the CVPC Series controlled vacuum cartridges for its controlled blow-off function or, when combined with the CVP Series vacuum cartridges, for remote control and/or multi-cartridge control. It is easy to install and meets the needs of machine manufacturers and of integrators of robotic solutions in terms of flexibility and performance.

Industry-specific applications







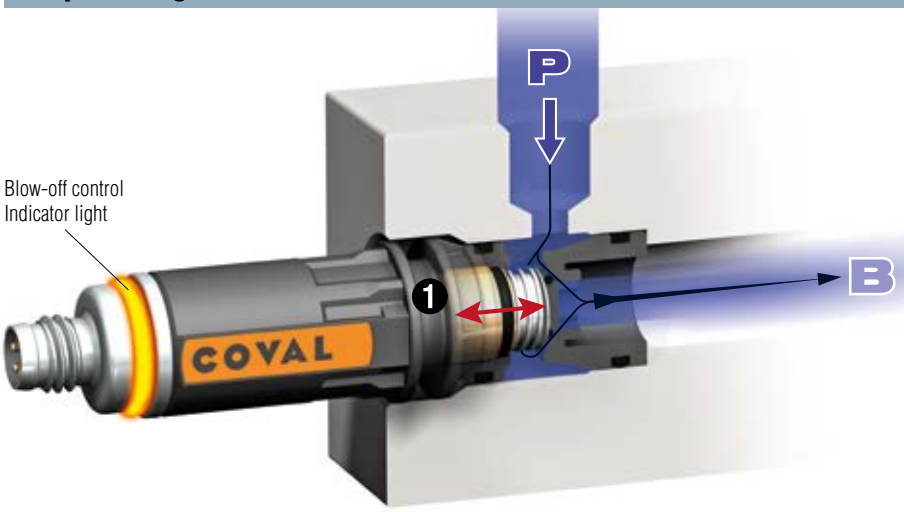
Advantages

- Ultra-light and compact cartridge design allows for great flexibility and easy integration.
- Pilot solenoid valve 2/2-way.
- Control indicator light.
- M8 connector.

Use cases

- Electro-pneumatic control valve 2/2-way.
- Blow-off control valve
- Single and multi-cartridge control valve.
- …

Compact integration



❶ Solenoid valve.

The innovative and patented design of the **CBP** Series controlled blow-off / multi-cartridge control valve includes an electro-pneumatic valve that controls the compressed air, providing great reactivity and thus a very short response time.

Application examples



- 6 CBP series controlled blow-off cartridges



- 1 CBP series multi-cartridge control valve
- 3 CVP series vacuum cartridges
- 3 MVS series soft and flexible suction



- 1 CVPC series controlled vacuum cartridge
- 1 CBP series controlled blow-off cartridge
- 1 PSK series miniature electronic vacuum switch
- 1 FPC series FlowPack suction cup

CBP
Pilot Control Cartridge
Implementation, Technical Data and Ordering



Implementation

1



1. Recess is machined to integrate the cartridge.

2



2. Cartridge is installed. Two mounting solutions are available: flange or threaded ring (see below).

3



3. Peripheral equipment is assembled.

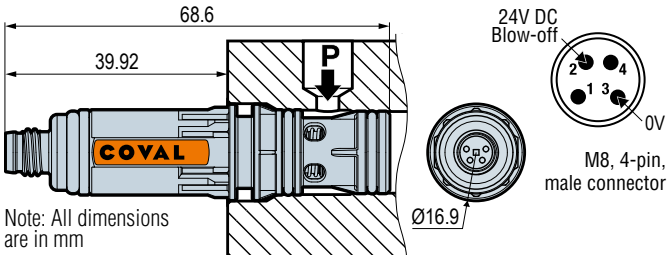
4



4. Pneumatic and electrical connections are established for use.

3D COVAL Data You will find the 3D files of the cartridges as well as the specifications of the machining operations to be carried out on our website **www.coval.com**

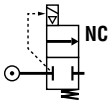
Dimensions and electrical connections



Note: All dimensions are in mm

Characteristics

Model	Type	Nominal flow rate at 6 bar Δp1 (Nl/min)	Nominal diameter (mm)
CBP300	2/2	355	3



Overall characteristics

- C.A. supply 5µ filtered, non-lubricated air relevant to standard ISO 8573-1:2010 [4:5:4].
- Operating pressure: 2.5 to 7 bar.
- Electrical degree of protection: IP40.
- Control voltage: 24 V DC (regulated ±10%).
- Current drawn: 35 mA (0.84 W).
- Maximum operating frequency: 4 Hz.
- Endurance: 30 million cycles.
- Type of control mechanism: spring return leak valve controlled by an electromagnet.
- Response time for opening/closing: 20/30 ms.
- Weight: 18 g.
- Operating temperature: from 0 to 50 °C.
- Materials: PA 6-6 15 % GF, brass, aluminum, NBR.

To place an order

CBP 300

FLOW RATE	
355 Nl/min	300

Capacity

One CBP pilot control cartridge can be used to control several CVP vacuum cartridges:

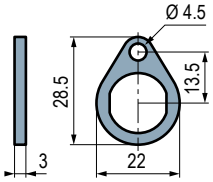
- CVP90X12 > 5 cartridges
- CVP90X14 > 3 cartridges
- CVP90X16 > 2 cartridges
- CVP90X22 > 1 cartridge
- CVP90X27 > 1 cartridge

Mounting accessories

There are two mounting solutions for the CBP Pilot Control Cartridge:

Option CVPCFIX1

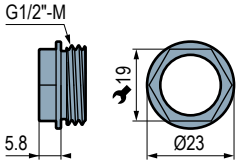
- Flange mounting.





Option CVPCFIX2

- Mounting with G1/2"-M threaded ring.





COVAL
vacuum managers

vacuum
components



A TECHNOLOGICAL PARTNER ON A GLOBAL SCALE

Located in the southeast region of France, COVAL conceives, manufactures and globally distributes high performance, advanced vacuum automation components and systems for industrial applications in all branches.

COVAL is an ISO 9001: V2015 certified company which offers innovative solutions integrating reliable and optimized components with intelligent functionalities. The focus is to provide the most personalized and economic solution to a given application while assuring a significant improvement in the productivity and the safety for the vacuum users around the world.

COVAL has an ambition for technical excellence and innovation. As a specialist in vacuum automation, COVAL is reputed for offering reliable, personalized, cost effective and productive solutions.

The references of COVAL can be found in several industrial sectors (Packaging, Automotive Industry, Plastic, Graphic, Aeronautic…) where vacuum handling is important for high efficiency and productivity.

COVAL markets its products and services all over Europe, in the United States and South America through its subsidiaries and authorized distribution network. COVAL strives to provide customer driven solutions and gives the best possible treatment to satisfy all its clients.

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