



COVAL

vacuum managers

CVG

vacuum grippers



COVAL CVG series: many

A single solution

With the CVG series, COVAL introduces the universal solution of the vacuum gripper: flexible, simple and economic.

The handling of parts with different sizes, shapes and weights is not a complex, expensive and laborious task anymore.

With a single CVG module, easily integrated into the process, the user can make random gripping of different parts in a simple and secure way.



COVAL is an ISO 9001: V2008 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 of the vacuum users around the world.

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Since more than 25 years, COVAL develops on request customized solutions for automated applications in the sector of packaging, food industry, plastics and automotive industry.

With a wealth of this long experience COVAL is today able to offer these CVG series vacuum grippers in their standard version.

Advantages of the CVG series

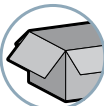
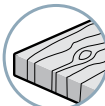
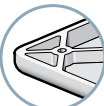
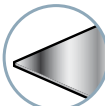


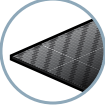
The CVG series are fitted with standard sub-units which allow offering a customized solution and fit to the applications and requirements of the integrators and users:

- Compact
- Lightweight
- Integrated functions
- Modularity
- Performance
- Ease of use
- Universal mounting
- ...



Solutions according to the applications

The CVG series vacuum grippers offer a single solution for the handling of products in different industrial sectors:

	PACKAGING		WOOD
	PLASTICS		METAL
	GLASS		CONCRETE/STONE
	CARBON	...	



The adaptability and the flexibility of COVAL vacuum grippers CVG series respond to the multiple robotic applications.



certified quality management system

applications . . . **one** solution

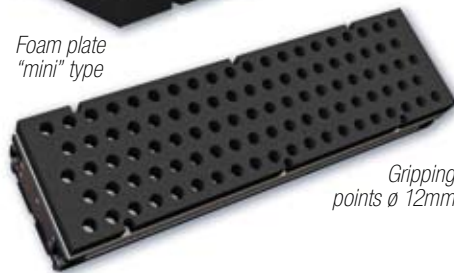
A complete system

- 1 light and robust aluminium profile
- 1 universal mounting system
- 3 standard lengths (424, 624, 824mm)
- 3 generator sizes
- 2 plate technologies (foam or suction cups)
- 3 gripping point distributions (mini or maxi)
- 2 flow rate control technologies (check valves or flow resistors)
- 2 control versions (vacuum and blow-off)
- 4 solutions for vacuum monitoring
- + The Vacuum Manager experience of COVAL

= your CVG solution



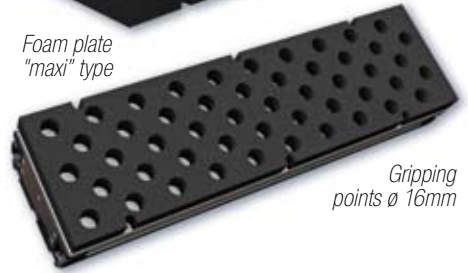
Foam plate
"mini" type



Gripping
points \varnothing 12mm



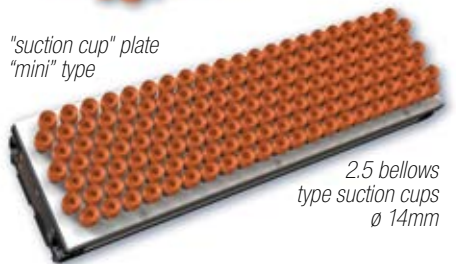
Foam plate
"maxi" type



Gripping
points \varnothing 16mm



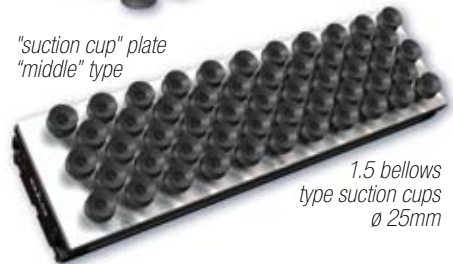
"suction cup" plate
"mini" type



2.5 bellows
type suction cups
 \varnothing 14mm



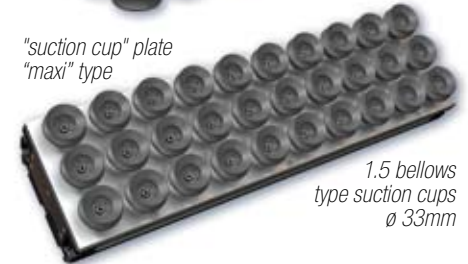
"suction cup" plate
"middle" type



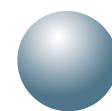
1.5 bellows
type suction cups
 \varnothing 25mm



"suction cup" plate
"maxi" type



1.5 bellows
type suction cups
 \varnothing 33mm



COVAL
vacuum managers

COVAL CVG series:

Technology regarding the gripping plate

The CVG vacuum gripper range offers 2 technologies regarding the gripping plate and meets the requirements of all applications.

“FOAM” PLATE

- Handling of rigid products.
- Gripping on structured and irregular surface conditions.
- Flow resistor or check valve.
- 2 diameters (Ø 12 and 16mm) and 2 gripping point distributions.
- 3 standard lengths (424, 624 and 824mm).

“SUCTION CUP” PLATE

- Handling of flexible or deformable products.
- Wide range of variants.
- Flow resistor (different diameters).
- 3 types of suction pads for standard models (Ø 14, Ø 25 and Ø 33mm).
- 3 gripping point distributions.
- 3 standard lengths (424, 624 and 824mm) ... or tailored length.



From now on, thanks to the CVG series, COVAL offers 2 complementary technologies for the vacuum handling: the vacuum grippers with foam and the vacuum grippers with cups: a wide range adaptable to all your applications.

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Gripping point distribution

In order to optimize the performances of the CVG vacuum grippers according to the applications, spacing

and gripping point diameters are optimized for each variant.

“MINI” TYPE PLATE

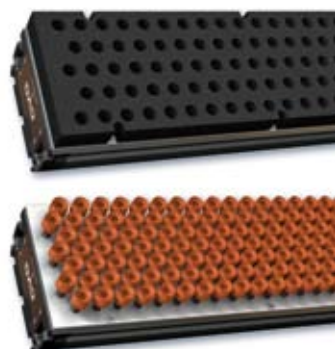
- Reduced centre distance ensuring the gripping of small parts.
- Multiple gripping points ensuring the gripping even in case of random position of the part.
- Dimensions, refer to page 9.

“MIDDLE” TYPE PLATE

- An intermediate distribution of gripping points between the "mini" and "maxi" type of plates.
- Ideal for the handling of dense loads with reduced gripping surface.
- Dimensions, refer to page 9.

“MAXI” TYPE PLATE

- Large surface of the gripping points which allows the gripping of heavy loads.
- Ideal for the gripping of parts with rigid gripping surface.
- Dimensions, refer to page 9.



Gripping force of the vacuum grippers

Part number	Total length of the vacuum gripper (mm)	Force at 85% vacuum (N)*	Force at 45% vacuum (N)*
CVG 424 _____	424	1100	600
CVG 624 _____	624	1650	900
CVG 824 _____	824	2200	1200

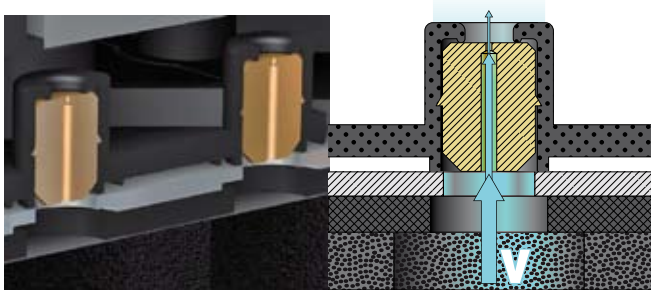
*Indicative force for a vacuum gripper covered at 100% by the load, without safety factor, on rigid and airtight surface.

integrated technologies

Flow rate control technologies

FLOW RESISTORS

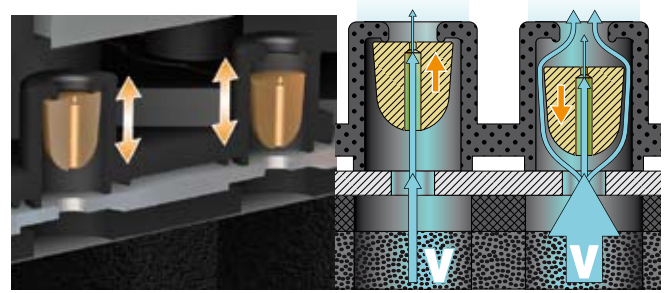
This simple and energy saving technology, available for the two types of gripping plates, allows calibrating precisely the vacuum leakage. It is easily adaptable by COVAL, thanks to a precise sizing according to the application. This system ensures the required vacuum level for the part gripping.



CHECK VALVES (Coval patent)

This technology (only available on the "foam" plates) ensures an instant gripping thanks to a high suction flow rate. The valves transfer the suction flow rate only when the part to handle is present and close automatically if the part is absent.

This system ensures an optimal gripping. It is therefore ideal for applications with short and dynamic cycles.



Vacuum generation

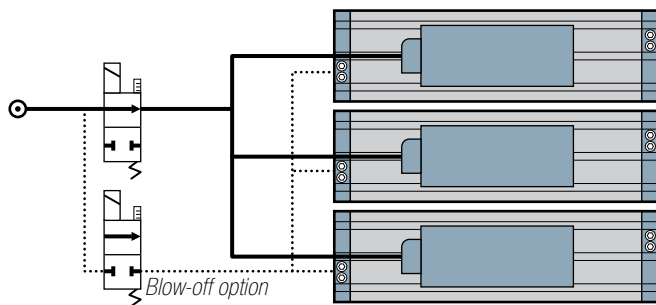
EXTERNAL VACUUM GENERATORS, CMSE SERIES

The integration of a multi-stage vacuum generator on the CVG vacuum gripper allows obtaining a compact, complete handling with an easy integration into your process.

Options: integration of a vacuum and/or blow-off control valve with M12 connector and a vacuum monitoring (electronic vacuum switch or vacuum gauge).

Advantages :

- A complete solution.
- 3 flow options.
- Vacuum and/or blow-off control.
- Vacuum monitoring.



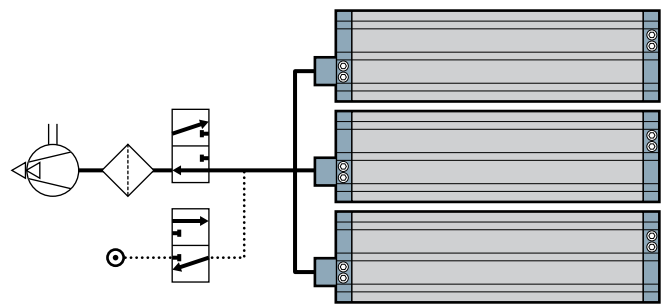
INDEPENDANT VACUUM GENERATORS

The CVG vacuum grippers may also be used with an independent vacuum generator. According to the application, an external generator may be necessary (a blower, an electrical vacuum pump or a pneumatic generator - see page 10). The CVG series vacuum gripper is fitted with a flange allowing the simple connection of the vacuum source.

Option: integration of vacuum monitoring (vacuum switch or vacuum gauge).

Advantages :

- Weight saving.
- Adaptation to the environment of use.
- Vacuum monitoring.



TECHNICAL DATA OF THE CMSE SERIES EXTERNAL VACUUM GENERATORS

External vacuum generator	Model	Consumption (NI/mn)	Flow-rate (NI/mn)	Max. vacuum (%)	Sound level (dBA)
CMSE 50	CVG _____ E1	190	900	85	65
CMSE 100	CVG _____ E2	380	1800	85	65
2xCMSE 100	CVG _____ E3	760	3600	85	65

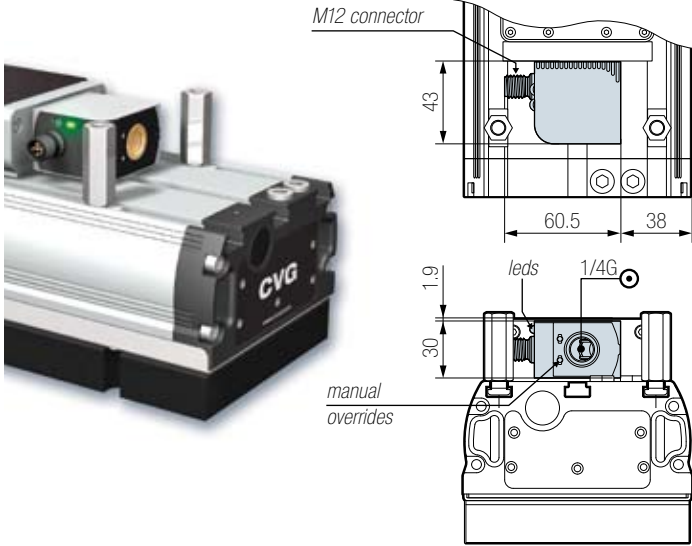
CONFIGURATION GENERATORS/VACUUM GRIPPER LENGTH

Vacuum generator	CVG 424		CVG 624		CVG 824	
	Possible config.	⊖ (Kg)	Possible config.	⊖ (Kg)	Possible config.	⊖ (Kg)
G0	■	2.1	■	2.7	■	3.5
E1	■	3.2				
E2	■	3.3	■	4.6	■	5.0
E3			■	5.4	■	5.75

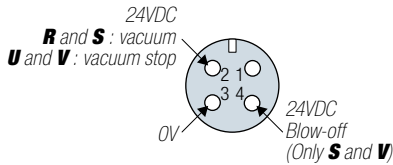
Vacuum generator control

According to the need, the CVG series vacuum grippers may be fitted with a vacuum and/or blow-off control valve in order to optimize the release of the gripped parts and to ensure the cleaning of the network, the flow resistors or check valves. They may also have a built-in vacuum level monitoring thanks to the options: vacuum gauge or vacuum switch (see below).

■ LAYOUT



■ ELECTRICAL M12 CONNECTIONS



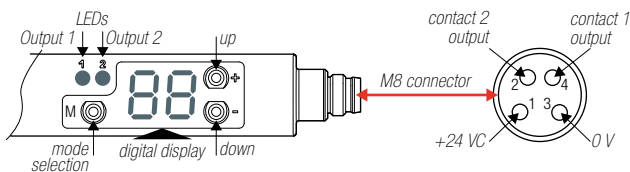
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■ ELECTRICAL CONTROL

- Control voltage: 24VDC (regulated) +/- 10 %.
- Current draw: 30 mA (0,7 W) vacuum or blow-off.
- Maximum usage frequency: 2Hz.
- Number of operations: 10 million cycles.

■ CVG _____ VA Display type electronic vacuum switch

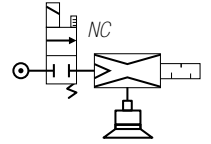
- Adjusting range: -1 ... 0 bar.
- Hysteresis: adjustable from 0 to 99%.
- Maximum overpressure: 3 bar.
- Repeatability: +/-1% of the range.
- Output thresholds: 2 x NO/NF.
- Switching capacity: 125mA transistor PNP.
- Threshold state display: 2 x leds.
- Display unit: vacuum % (2 digits).
- Electrical connection: M8 (4 pins).
- Power supply: 18 to 30 VDC (regulated).
- Current draw: < 100Ma.
- Protection: IP 65.
- Frame material: PA6.6 20%GF.



■ Option R - NC vacuum control, without blow-off:

CVG _____ F G_RV_

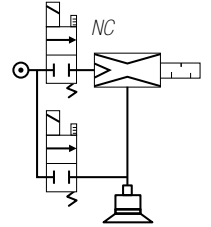
- 1 control signal.
- NC vacuum control valve.



■ Option S - NC vacuum control, with controlled blow-off:

CVG _____ F G_SV_

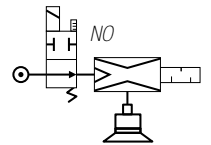
- 2 control signals.
- NC vacuum control valve.
- Blow-off controlled by external signal (NC control valve).



■ Option U - NO vacuum control, without blow-off:

CVG _____ F G_UV_

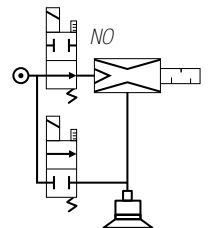
- 1 control signal.
- NO vacuum control valve.



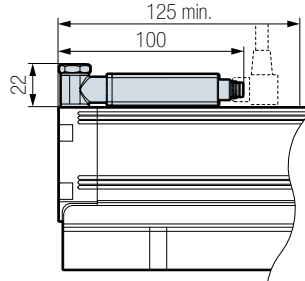
■ Option V - NO vacuum control, with controlled blow-off:

CVG _____ F G_VV_

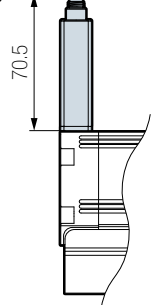
- 2 control signals.
- NO vacuum control valve.
- Blow-off controlled by external signal (NC control valve)



Mounting of the VA vacuum switch option for a gripper without vacuum generator (G0), or having a minimum space of 125mm depending on the length of the gripper and the choice of the vacuum generator.

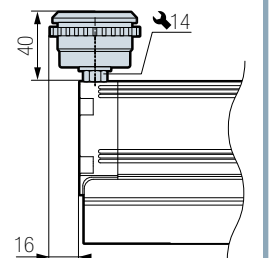


Mounting of the VA vacuum switch option for a gripper with vacuum generator (version E1, E2 or E3) and not having sufficient space for the horizontal mounting.



■ CVG _____ VF vacuum gauge

- Vacuum gauge with needle.
- Damping: by silicone movement (patented).
- Measuring: Bourdon tube in CuSn.
- Precision: cl. 2,5 (+/- 2.5% of max. scale value).
- Frame: black ABS



CVG series: selection for the application

CVG SERIES WITH FOAM PLATE: ONE COMPLETE PART NUMBER

CVG	424	V		S		F	E 1		R		V A
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GRIPPER LENGTH	TECHNOLOGY	GRIPPING SURFACES DIA.	*VACUUM GENERATOR	*VAC. GEN. CONTROL	MONITORING
424 mm 424	V Check valves	S mini	G0 Without vacuum generator	N Without control	VO Without
624 mm 624	H Flow resistors	B maxi	E1 1 x CMSE 50	R NC vacuum control	VA Electronic display type vacuum switch
824 mm 824			E2 1 x CMSE 100	S NC vac. control & NC blow-off control	VF Vacuum gauge
			E3 2 x CMSE 100	U NO vacuum control	
				V NO vac. control & NC blow-off control	

(1) integrated filter on the CVG series vacuum gripper with foam plate

* see page 5 table of the possible configurations

* only for E1 and E2

EXAMPLE :

CVG 424 V S F E1 R VA

(CVG vacuum gripper, length 424mm, check valve technology, foam plate "mini" type with filter, 1 integrated vacuum generator CMSE 50, NC vacuum control, display type electronic vacuum switch).

CVG SERIES WITH SUCTION CUP PLATE:

1- PART NUMBER OF THE FRAME

CVG	424		X		E 2		R		V O
------------	------------	--	----------	--	------------	--	----------	--	------------

GRIPPER LENGTH	*VACUUM GENERATOR	*VAC. GENERATOR CONTROL	MONITORING
424 424 mm	G0 Without vacuum generator	N Without control	VO Without
624 624 mm	E1 1 x CMSE 50	R NC vacuum control	VA Electronic display type vacuum switch
824 824 mm	E2 1 x CMSE 100	S NC vacuum control & NC blow-off control	VF Vacuum gauge
...	E3 2 x CMSE 100	U NO vacuum control	
		V NO vacuum control & NC blow-off control	

* see page 5 table of the possible configurations.
E1/E2 : mini. length of the gripper 280 mm.
E3 : mini. length of the gripper 545 mm.

* only for E1 and E2

2- PART NUMBER OF THE SUCTION CUP PLATE

CP	424	VSP14BF
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LENGTH OF THE VACUUM GRIPPER	SUCTION CUP AND FLOW RESISTOR MODELS ACCORDING TO THE PLATE
424 mm 424	VSP14BF "Mini" type plate 2.5 bellows suction cups ø 14 mm in silicone 30 Shore with flow resistors ø 0.7 mm
624 mm 624	VSA25JI "Middle" type plate 1.5 bellows suction cups ø 25 mm in natural rubber with flow resistors ø 0.9 mm
824 mm 824	VSA33JK "Maxi" type plate 1.5 bellows suction cups ø 33 mm in natural rubber with flow resistors ø 1.1 mm
...	Specific version →

EXAMPLE:

CVG 424 X E2 R VO

(CVG vacuum gripper length 424 mm without plate, with 1 integrated vacuum generator CMSE 100, NC vacuum control, without monitoring).

+ CP 424 VSP14BF

(suction cup plate for vacuum gripper length 424 mm, fitted out with VSP cups ø14mm Si3 and flow resistors ø0.7mm)

SPECIAL VERSIONS

Your job may sometimes bring situations of use for which our standard versions are not fully adapted.

COVAL is able to give you a customized reply following your specifications by integrating specific functions or by offering you tailored vacuum grippers (adjustment of length or selection of suction cup type).

Dimensions and mounting

DIMENSIONS AND CONNECTIONS

	CVG424	CVG624	CVG824
A	424	624	824
B	384	584	784

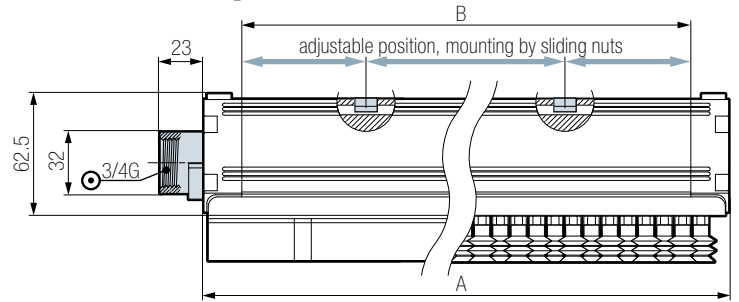
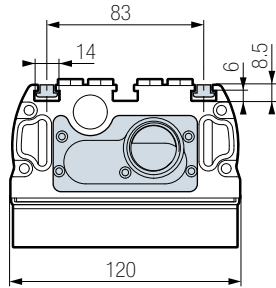
in mm, any versions

G1/4
blow-off connection G1/8
vacuum switch connection G1/8



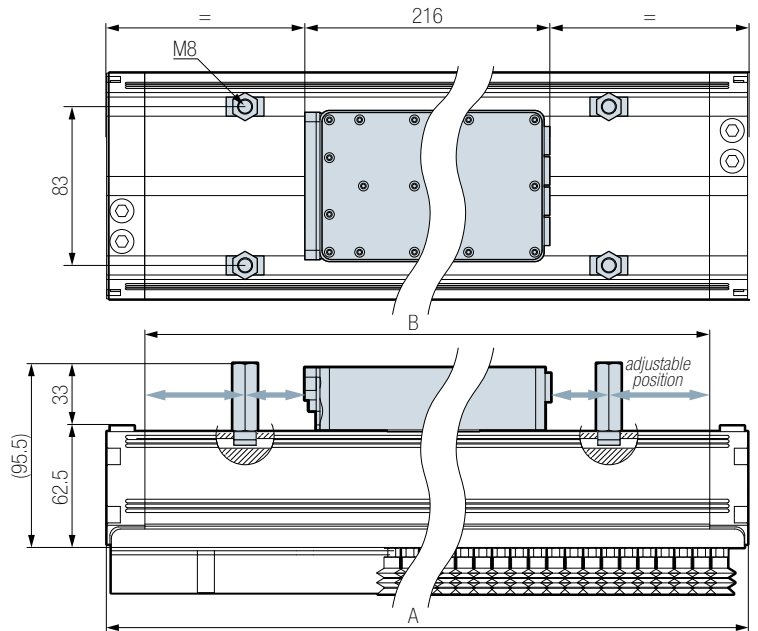
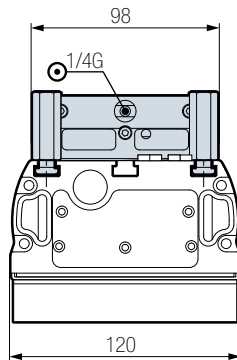
GO VERSIONS (WITH INDEPENDANT VACUUM GENERATOR).

The Coval vacuum grippers in series CVG are particularly simple to install and operate. Mounting on all types of automated systems or robots thanks to their universal fixing by 4 rectangular nuts sliding in the groove of the aluminium profile (fixation by 4 M8 screws). These nuts are fitted with a spring plate to allow keeping them in position during unscrewing.



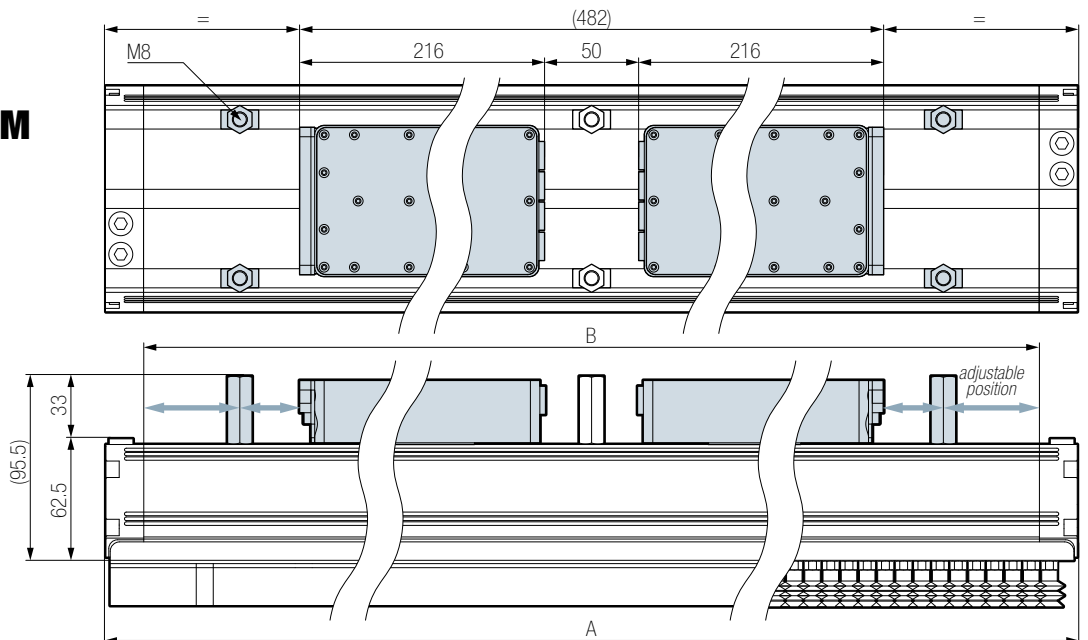
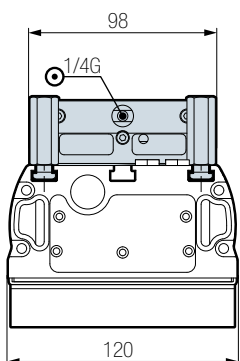
E1 OR E2 VERSIONS (1 EXTERNAL VACUUM GENERATOR, CMSE SERIES).

The CVG series COVAL vacuum grippers versions E1 and E2 are mounted on all types of automated systems or robots thanks to the 4 x M8 spacers on the groove of the aluminum profile (mounting by 4 x M8 screws).



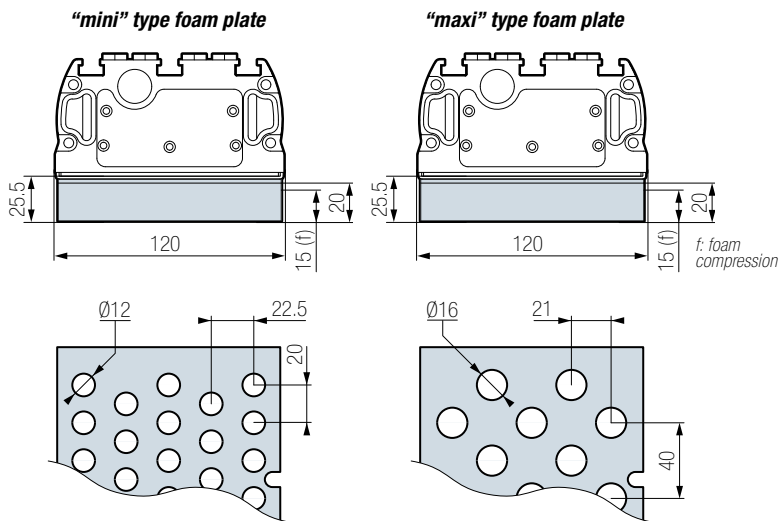
For the CVG series vacuum grippers version E3, there are 6 x M8 spacers which can be adjusted as per the requirement.

E3 VERSIONS (2 EXTERNAL VACUUM GENERATORS, CMSE SERIES).



Plates and technical data

CVG SERIES WITH FOAM PLATE

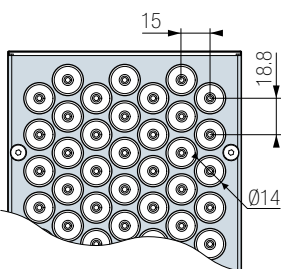
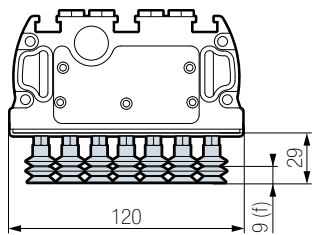


NUMBER OF GRIPPING APERTURES PER PLATE

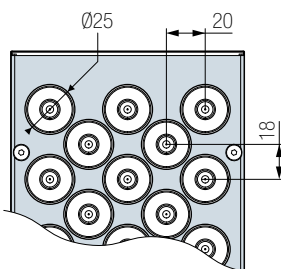
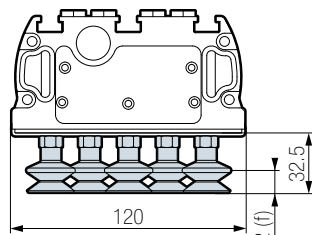
	CVG 424	CVG 624	CVG 824
« mini » type plate aperture Ø 12 mm	98	148	198
« maxi » type plate aperture Ø 16 mm	50	75	100

CVG SERIES WITH SUCTION CUP PLATE

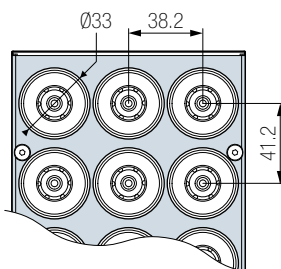
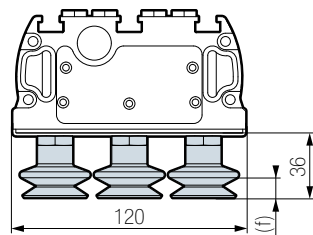
“Mini” type suction cup plate



“Middle” type suction cup plate



“Maxi” type suction cup plate

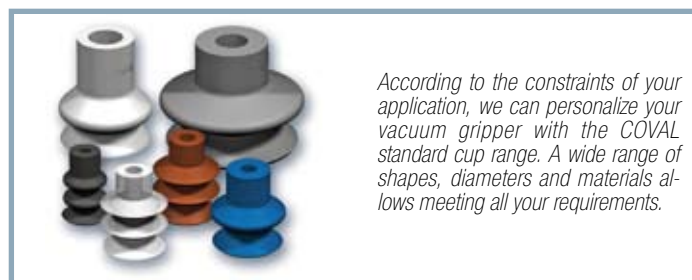


NUMBER OF SUCTION CUPS PER PLATE

	CVG 424	CVG 624	CVG 824
“Mini” type suction cup plate Ø 14 mm (or Ø 16 mm max.)	150	220	297
“Middle” type suction cup plate Ø 25 mm (or Ø 18 to 25 mm)	53	83	113
“Maxi” type suction cup plate Ø 33 mm (or Ø 36 mm max.)	30	42	57

GENERAL CHARACTERISTICS

- Supply: 5µ filtered, non-lubricated air relevant to ISO 8573-1 class 4 standard.
- Compressed air supply for CVG vacuum grippers with generator CMSE:
 - 1 supply for generator type E1 and E2.
 - 2 supplies for generator type E3.
 (see above drawings: 1/4 G pressure connection).
- Optimal working pressure: 6 bar (maximum pressure 8 bar).
- Blow-off: network supply pressure.
- Protection of the valve: IP65.
- Temperature: 10 to 60°C.
- Material of the gripper: aluminium, PA6.6 15%GF, brass, stainless steel, neoprene.
- Material of the valve: PA6.6 15%GF, POM, PC 15%GF, brass, aluminium, NBR.
- Foam material: EPDM.
- Suction cup material:
 - “mini” type plate: silicone 30 Shore.
 - “middle” or “maxi” type plate: natural rubber 50 Shore.



According to the constraints of your application, we can personalize your vacuum gripper with the COVAL standard cup range. A wide range of shapes, diameters and materials allows meeting all your requirements.

CMS series multi-stage vacuum

Advantages of CMS series

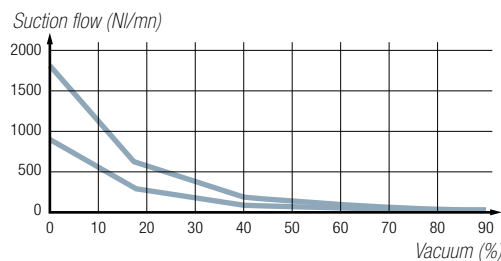
- Possibility to add a control valve for the control of vacuum and release.
- M12 Connector.



Characteristics

Model	Consumption (NI/mn)	Flow rate (NI/mn)	Max vacuum (%)	Weight (Kg)	Pression d'alimentation (Bar)	Supply pressure (bar)	Sound level (dBA)
CMS90X50...	190	900	85	1	5-7	6	65
CMS90X100...	380	1800	85	1	5-7	6	65

Performances

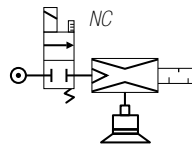


Material

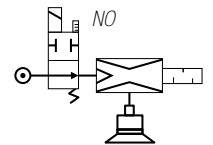
- Base body: PA 6 glass fibre loaded.
- Valve body: PA 6 glass fibre loaded.
- Silencer: aluminium with felt inner element.
- Screw: galvanized steel.
- Inside parts: brass, aluminium.
- Seals: NBR.
- Membrane: NBR.

Control versions

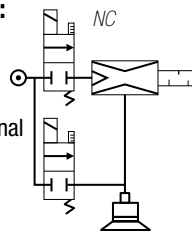
- **Option R**
NC vacuum control, without blow-off:
 CMS90X__RV__
 - 1 control signal.
 - NC vacuum control valve.



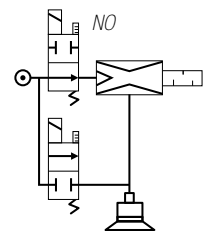
- **Option U**
NO vacuum control, without blow-off:
 CMS90X__UV__
 - 1 control signal.
 - NO vacuum control valve.



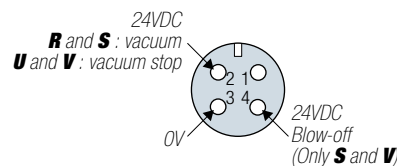
- **Option S**
NC vacuum control, with controlled blow-off:
 CMS90X__SV__
 - 2 control signals.
 - NC vacuum control valve.
 - Blow-off controlled by external signal (NC control valve).



- **Option V**
NO vacuum control, without blow-off:
 CMS90X__VV__
 - 1 control signal.
 - NO vacuum control valve.



■ ELECTRICAL M12 CONNECTIONS

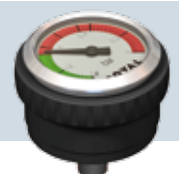


■ ELECTRICAL CONTROL

- Control voltage: 24VDC (regulated) +/- 10 %.
- Current draw: 30 mA (0,7 W) vacuum or blow-off.
- Maximum usage frequency: 2Hz.
- Number of operations: 10 million cycles.

Option
CMS90X__VF
Vacuum gauge with needle

- Damping: by silicone movement (patented).
- Measuring: Bourdon tube in CuSn.
- Precision: cl. 2,5 (+/- 2.5% of max. scale value).
- Frame: black ABS



With its multi-stage ejectors, **CMS series**, **COVAL** proposes an adapted response to all applications which need high suction flow; like emptying of high volume tanks or handling of porous objects.

Thanks to their characteristics, the **CMS** multi-stage vacuum generators are perfectly appropriate to feed the vacuum grippers from distance.

pump

To order:

CMS 90 X 100 R VF

VACUUM LEVEL	FLOW RATE	CONTROL	VACUUM GAUGE
90 % 90	50 900 NI/mn	N without control	VO without
	100 1800 NI/mn	R NC vacuum control	VF Vacuum gauge
		S NC vacuum control & NC blow-off control	
		U NO vacuum control	
		V NO vacuum control & NC blow-off control	

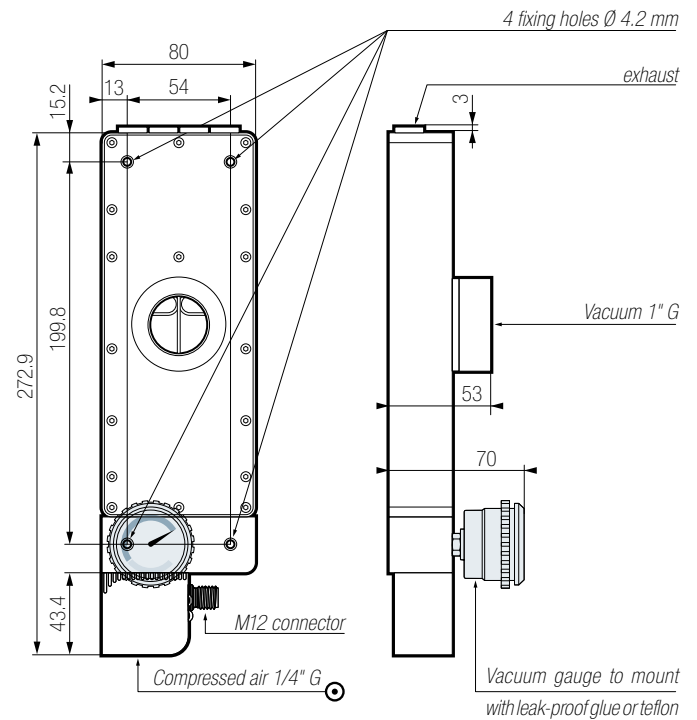
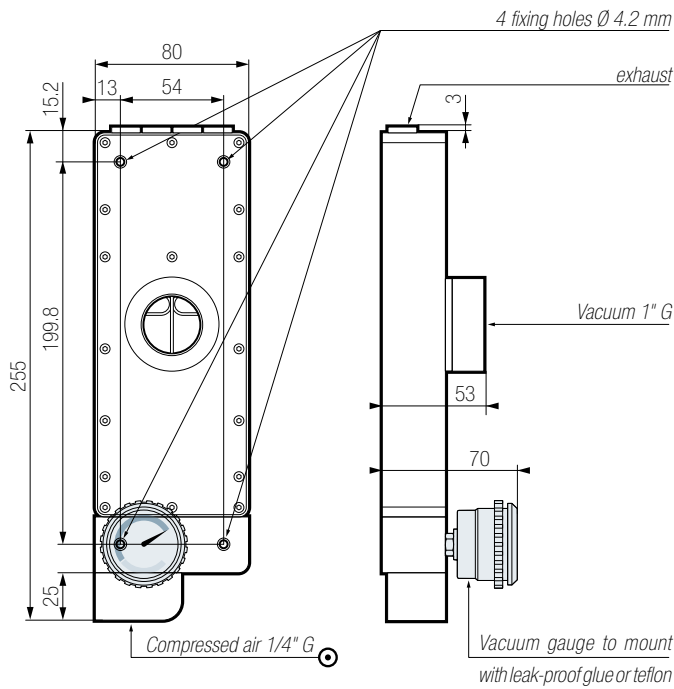
EXAMPLE:
CMS90X 100 R VF

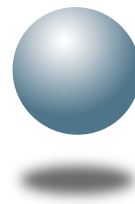
(Multi-stage vacuum pump, 90% max. vacuum, flow rate 1800 NI/mn, with NC vacuum control valve and vacuum gauge with needle).

Dimensions

■ **CMS WITHOUT CONTROL:**
CMS90X_ **N** V_

■ **CMS WITH CONTROL VALVE:**
CMS90X_ **R** V_ CMS90X_ **S** V_
CMS90X_ **U** V_ CMS90X_ **V** V_





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: V2008 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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