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vacuum managers

Modular Vacuum Grippers MVG

COVAL's MVG Series: Customized

Customized Solution

COVAL's MVG series vacuum grippers correspond perfectly to the expectations of integrators and users: thanks to their high degree of modularity, they provide the optimal handling solution for products of varied sizes, shapes and weights.

With a single MVG gripper, easily integrated into the process, the user can carry out single or multiple grips of diverse products, both simply and safely.

Standard Customization

The modular design, in standard variations, of the MVG series vacuum grippers gives it a high degree of flexibility with regards to format, gripping interface and vacuum pump, to respond perfectly to application requirements.

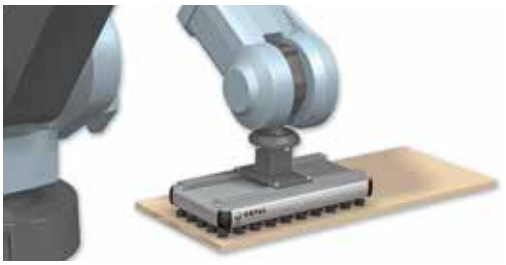
Furthermore, to optimize production cycles and palletization planning, MVG grippers can be equipped with several independent gripping zones (multi-zone), ensuring multiple or staggered gripping/release points.

Advantages

- Customized formats
- Compact and lightweight
- Adaptation to products
- Multi-zone
- Adaptation to installation
- Simple to install and use
- Readily available
- COVAL service

*For more than 30 years, **COVAL** has developed, on request, customized solutions for automated applications in the packaging, food processing, plastics and automotive sectors.*

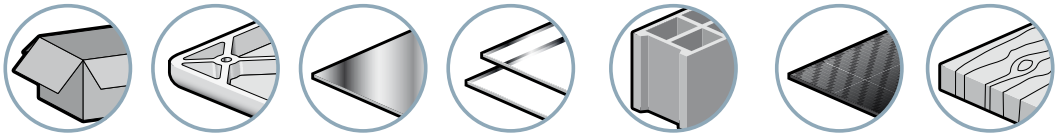
*With this wealth of experience, **COVAL** is now able to offer these customized, fully-configurable grippers, with the introduction of the **MVG series.***



COVAL-flex

Applications

MVG series vacuum grippers offer a unique solution for handling products in different industrial sectors:



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

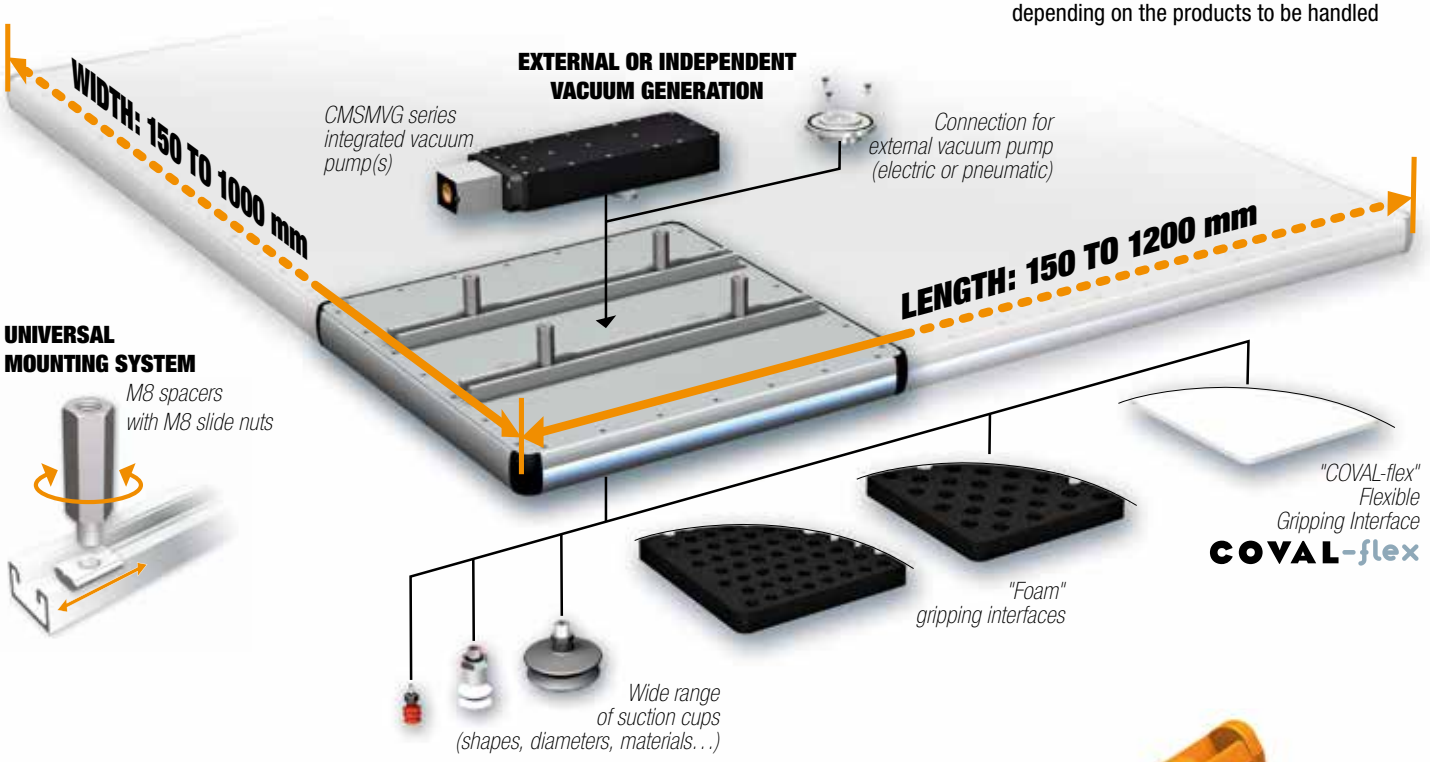
LLOYD'S REGISTER · LRQA
ISO 9001
certified quality management system

Modular Grippers

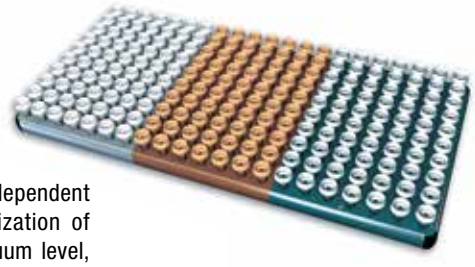
CUSTOM SIZING
From (150x150) to (1200x1000) mm

ULTRA-LIGHT
Reduced payload weight

CONFIGURABLE GRIPPING INTERFACE
depending on the products to be handled



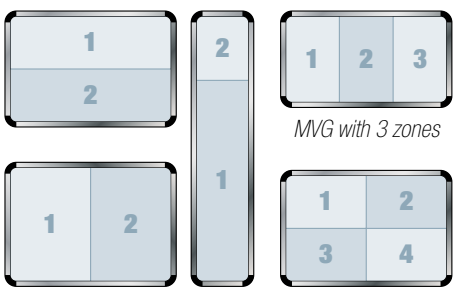
MULTI-ZONE



MVG vacuum grippers can create independent gripping zones, guaranteeing optimization of vacuum management (increased vacuum level, reduced leaks and energy consumption).

- ➔ Staggered grip/release points
- ➔ Management of formats to be handled
- ➔ Pallet Layer Optimization
- ➔ Simple or multiple grip/release points

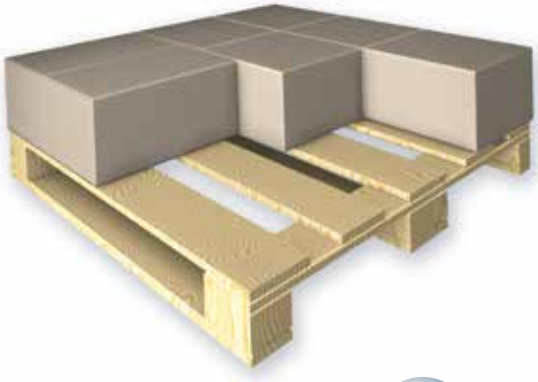
Examples of configuration:



MVG with 2 zones

MVG with 3 zones

MVG with 4 zones



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COVAL MVG Series:

With MVG, COVAL gives you a choice of 3 complementary gripping interface technologies: vacuum grippers with foam, suction cup grippers and grippers with our new “COVAL-Flex” interface.

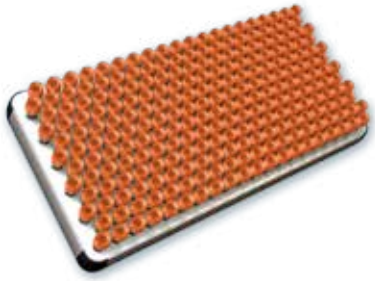
In order to optimize the performance of the MVG series for different applications, the vacuum grippers are available in different gripping patterns, hole diameters, and cup sizes.
➔ A broad range which meets all application requirements.

Choice of Gripping Interface

“FOAM” INTERFACE
- Handling of rigid products
- Gripping textured or uneven surfaces
- 2 standard hole diameters (Ø12 and Ø16 mm)
- 2 standard hole patterns

“SUCTION CUP” INTERFACE
- Handling of flexible products
- Wide range of options
- 3 types of standard suction cups (Ø14, Ø25 and Ø33 mm)
- 3 standard cup patterns

“COVAL-FLEX” INTERFACE
- Handling of aluminum cans, canned food, glass containers…
- Flexible interface, extremely tear-resistant
- 2 thicknesses available: 3 and 6 mm
- Hole pattern dependent upon application requirements, completely customizable



Standard Hole/Cup Patterns

“MINI” TYPE INTERFACES
- Reduced hole spacing, allowing small, flexible pieces to be gripped
- The multitude of gripping points guarantee a strong grip, even with random positioning of products
- Sizes, see page 7

“MEDIUM” TYPE INTERFACE
- Intermediary gripping point distribution between the mini and maxi interfaces
- Ideal for handling dense loads, where gripping surfaces are reduced
- Sizes, see page 7

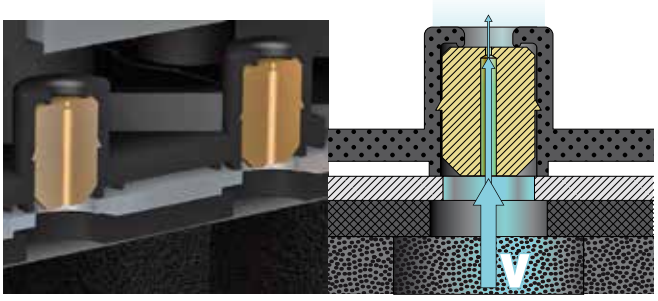
“MAXI” TYPE INTERFACES
- Large gripping point surfaces, allowing heavy loads to be gripped
- Ideal for gripping products with rigid gripping surfaces
- Sizes, see page 7

Flow Management

FLOW CONTROL NOZZLES

This technology enables calibration of vacuum leakage, and is easily customizable by COVAL. The controlled flow will ensure maximum gripping potential through reduced leakage in the system.

This system guarantees the requisite vacuum level necessary to grip the piece.



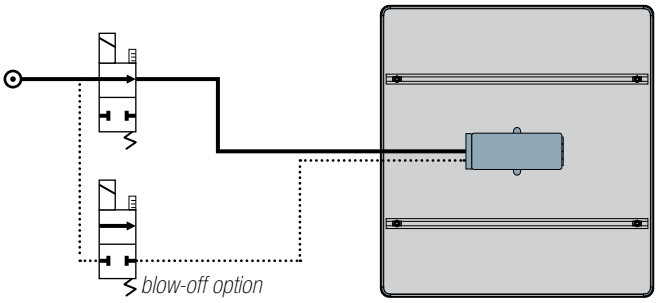
Integrated Technologies

Vacuum Generation

INTEGRATED VACUUM GENERATOR, CMSMVG SERIES

Integration of a multi-stage vacuum generator on the MVG gripper provides a comprehensive and compact gripping solution, as well as easy integration in your process.
Options: integration of a vacuum and/or blow-off solenoid control valve with M12 connector and a vacuum level display (electronic vacuum switch display or vacuum gauge)

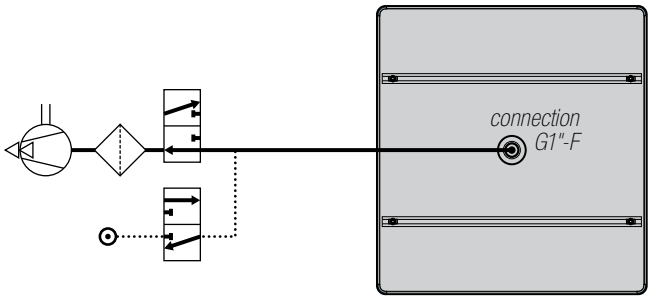
Advantages:
- A comprehensive solution
- 3 standard sizes
- Option: vacuum and/or blow-off control valve
- Option: visual display of vacuum level



EXTERNAL VACUUM GENERATOR

MVG vacuum grippers can be used with an external vacuum pump. Depending on the application, an independent generator is necessary (a regenerative blower, an electric vacuum pump or a pneumatic generator – see page 10). This version of the MVG series is equipped with a G1"-F interface enabling the vacuum source to be easily connected.
Option: integration of a vacuum level display (vacuum switch or vacuum gauge).

Advantages:
- Reduced weight
- Adaptation to user environment
- Option: visual display of vacuum level

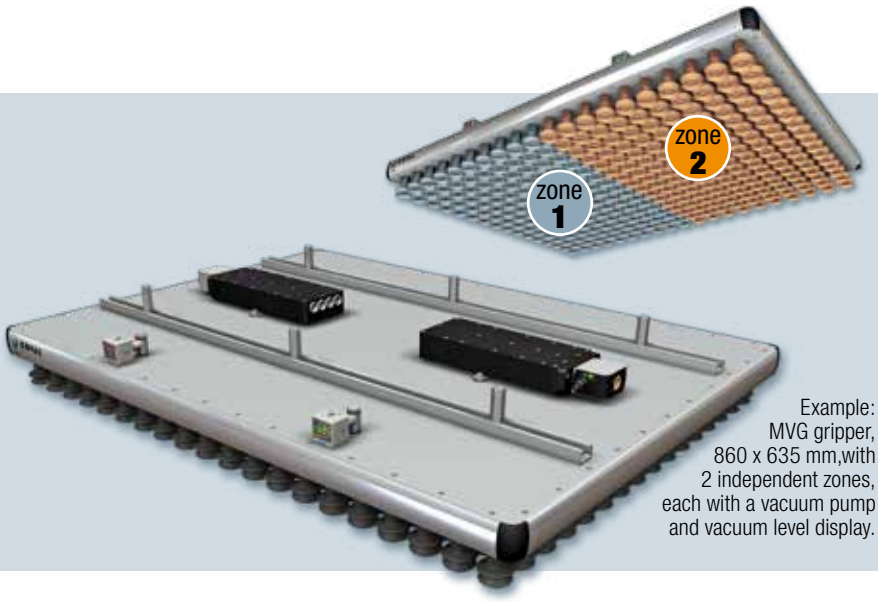


Integrated generator	Model	Consumption (SCFM)	Flow rate (SCFM)	Max. vacuum (%)	Sound level (dBA)
CMSMVG 50	MVG _ _ ... **E1** _ _ _	6.71	31.78	85	65
CMSMVG 100	MVG _ _ ... **E2** _ _ _	13.42	63.57	85	65
2xCMSMVG 100	MVG _ _ ... **E3** _ _ _	26.84	127.13	85	65

VACUUM GENERATION AND MULTI-ZONE

COVAL's Multi-zone technology provides independently defined vacuum zones on the same gripper. For this reason, each zone has a separate vacuum pump, either integrated or external.

As each multi-zone application is different, we will work with you to determine the best configuration for your process.



Example:
MVG gripper,
860 x 635 mm,with
2 independent zones,
each with a vacuum pump
and vacuum level display.

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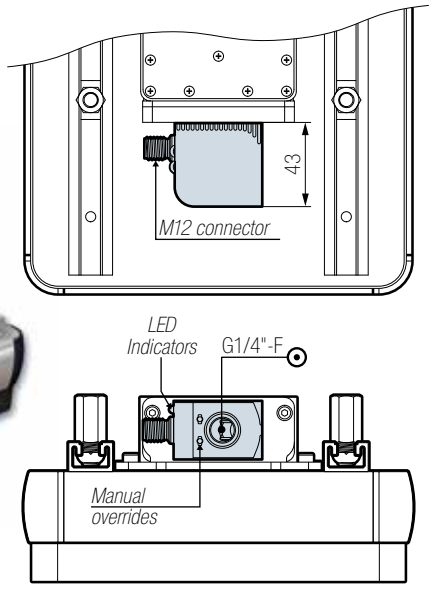
Control and Visualization

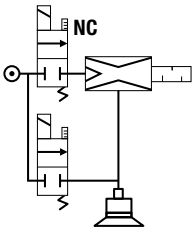
Vacuum Pump Control

When necessary, the MVG vacuum grippers can be equipped with a vacuum control valve and/or blowoff to optimize product release. This also enables cleaning of the vacuum network and flow restricting nozzles.
A vacuum switch or analog gauge is available as an option for those requiring a visual display of the vacuum level in the system.

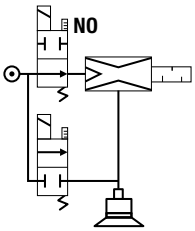
■ IMPLEMENTATION



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



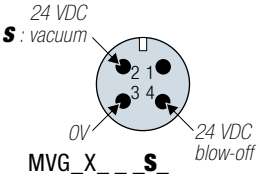
■ **Option V - NO vacuum control, with controlled blow-off:**
MVG_X_ _ _**V**_
- 2 control signals.
- NO vacuum control valve.
- Blow-off controlled by external signal (NC control valve)



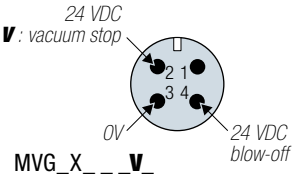
■ ELECTRICAL CONTROL

- 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.

■ ELECTRICAL M12 CONNECTIONS



MVG_X_ _ _**S**_



MVG_X_ _ _**V**_

Visualization of Vacuum Level

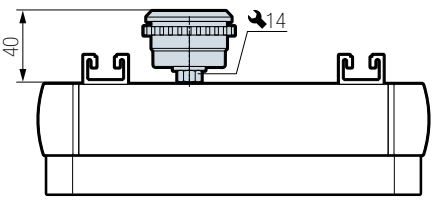
When required, MVG series grippers can incorporate a vacuum level display with an electronic vacuum switch or vacuum gauge:

■ **Option VA - electronic vacuum switch with 3-color display** (PSD100CPNP)**:**
MVG_X_ _ __**VA**

- Pressure rating range: 0.0 ~ -101.3 kPa.
- Pressure setting range: 10.0 ~ -101.3 kPa.
- Max. pressure: 300 kPa.
- Fluid: Air, non-corrosive/non-flammable gas.
- Hysteresis: adjustable.
- Response time: ≤ 2.5ms, with anti-vibration function.
- 7 segment LCD display : 2 color (red/green) main display, orange sub-display (refresh rate: 5 times/1sec.)
- Choice of pressure unit display: kPa, MPa, kgf/cm², bar, psi, lnHg, mmHg.
- Power supply voltage: 12 to 24 V DC ±10%.
- Current consumption: ≤ 40 mA (without load).
- Repeatability (switch ouptut): ≤ ±0.2% F.S. ±1 digit.
- Electrical connection: M8 (4-pin).
- Protection: IP40.
- Ambient temperature range: 32 to 140°F (operation).
- Material (enclosure): PA6.6 20%GF.

■ **Option VF - vacuum gauge** (VAF11140)**:**
MVG_X_ _ __**VF**

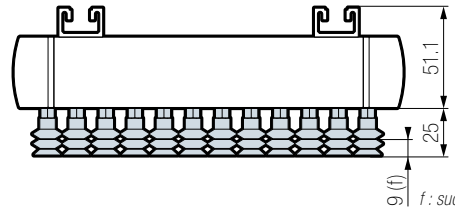
- Vacuum gauge with needle.
- Damping: by silicone movement (patented).
- Measuring: Bourdon tube in CuSn.
- Precision: +/- 2.5% of max. scale value.
- Frame: black ABS

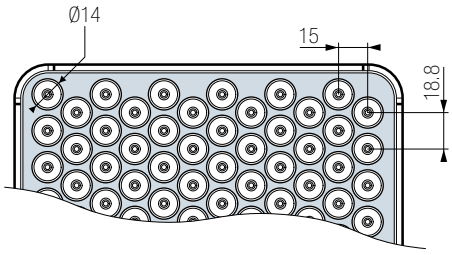


Gripping Interfaces and Features

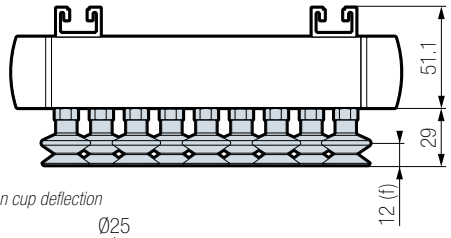
MVG SERIES WITH SUCTION CUP GRIPPING INTERFACE

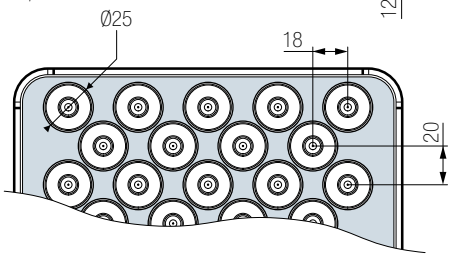
"mini" type suction cup interface



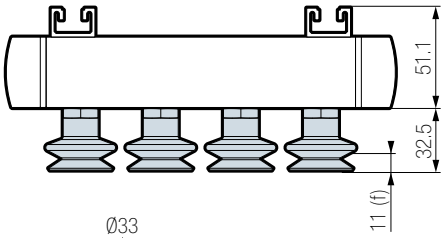


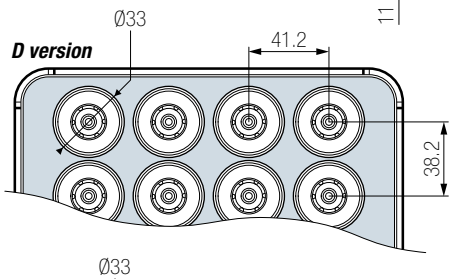
"medium" type suction cup interface

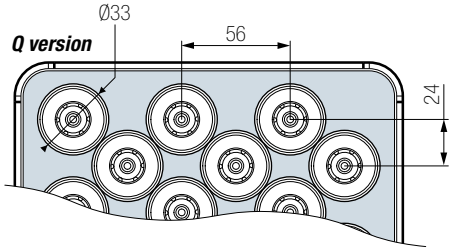




"maxi" type suction cup interface

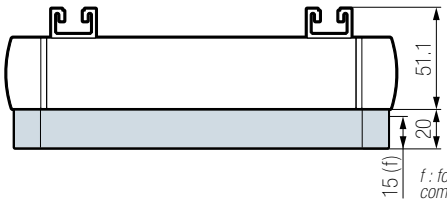


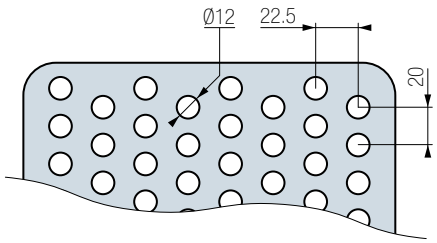




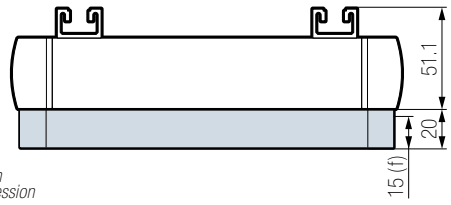
MVG SERIES WITH FOAM GRIPPING INTERFACE

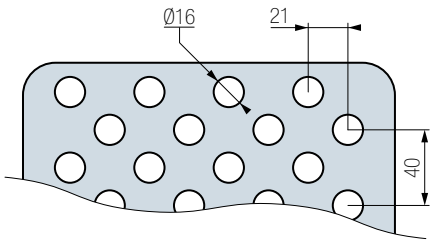
"mini" type foam interface





"maxi" type foam interface



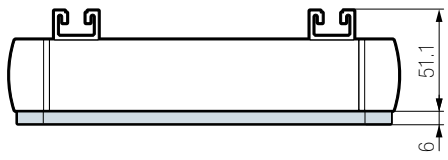


MVG SERIES WITH "COVAL-FLEX" GRIPPING INTERFACE

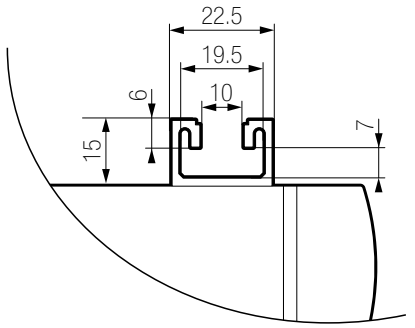
3 mm thick "COVAL-flex" interface

COVAL-flex

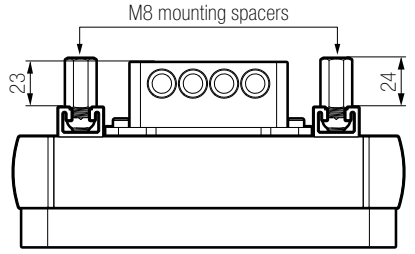
6 mm thick "COVAL-flex" interface



MOUNTING RAIL



MVG SERIES WITH CMSMVG PUMP



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MVG Series: Selection

COMPOSED PART NUMBER

MVG	1200	X	1000		D	

LENGTH

Overall length (mm): 150 to 1200 mm	150 ... 1200

WIDTH

150 ... 1000	**Overall width (mm):** 150 to 1000 mm

HOLE/CUP PATTERN LAYOUT

Q	Staggered
D	Straight*

** Only available for "maxi" type gripping interface with suction cup ø mini 26mm.*

EXAMPLES OF COMPOSED PART NUMBERS:

MVG200X200QFSG0

MVG vacuum gripper, 200 x 200 mm, staggered rows, "mini" EPDM type foam gripping interface, without integrated vacuum pump.

MVG400X200DVSA25JIE2SV0

MVG vacuum gripper, 400 x 200 mm, straight rows, "medium" type gripping interface, 1.5 bellows suction cups Ø 25 mm in natural rubber with flow control nozzles, 1 CMSMVG100 vacuum pump, with NF control and NF blow-off, without vacuum level display.

MVG1200X1000DVSA33JKG0NVA

MVG vacuum gripper, 1200 x 1000 mm, straight rows, "maxi" type gripping interface, 1.5 bellows suction cups Ø 33 mm in natural rubber with flow control nozzles, without vacuum pump, with visual display by electronic vacuum switch.

COVAL CUSTOMIZATION

Sometimes, there are instances where the standard MVG configurations available here will not match your application requirements.

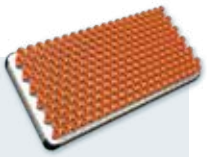
COVAL can provide customized solutions, based on your operating specifications, integrating specific functions (e.g. multi-zoning) or by suggesting a gripping interface based on the COVAL range of suction cups (a wide choice of shapes, diameters and materials) to efficiently meet all your requirements.

for the Application

VSA33JK		E3		S	VA	

GRIPPING INTERFACES

SUCTION CUP GRIPPING INTERFACE



VSP14BF	"mini" type interface, 2.5 bellows suction cups ø 14 mm in silicone 30 Shore with flow control nozzles.
VSA25JI	"medium" type interface, 1.5 bellows suction cups ø 25 mm in natural rubber with flow control nozzles.
VSA33JK	"maxi" type interface 1.5 bellows suction cups ø 33 mm in natural rubber with flow control nozzles.
...	See "COVAL CUSTOMIZATION".

FOAM GRIPPING INTERFACE

FS	Foam "mini" type interface, EPDM.
FB	Foam "maxi" type interface, EPDM.

"COVAL-FLEX" GRIPPING INTERFACES

COVAL-flex

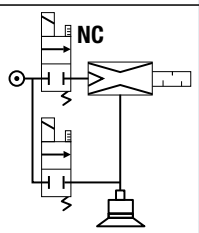
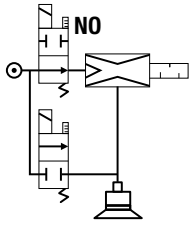
"COVAL-FLEX" gripping interfaces are designed to respond to specific applications.

They will be recommended and specified by our sales department if your application can benefit from their special features.

VACUUM GENERATOR

GO	Without vacuum generator
E1	1 x CMSMVG 50
E2	1 x CMSMVG 100
E3	2 x CMSMVG 100

VACUUM GENERATOR CONTROL

Without control	**N**
NC vacuum control & NC blow-off control 	**S**
NO vacuum control & NC blow-off control 	**V**

VACUUM LEVEL DISPLAY

VO	Without display
VA	Electronic display type vacuum switch 
VF	Vacuum gauge 

GENERAL CHARACTERISTICS

- Compressed air supply for MVG vacuum grippers with generator CMSMVG:
  - 5µ filtered, non-lubricated air relevant to ISO 8573-1 class 4 standard.
  - 1 supply for generator type E1 and E2 (*G1/4"-F pressure connection*).
  - 2 supplies for generator type E3 (*G1/4"-F pressure connection*).
  - Optimal working pressure: 6 bar (maximum pressure 8 bar).
- Blow-off: network supply pressure.
- Protection of the valve: IP65.
- Temperature: 50 to 140°F.
- 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 gripping interface material: EPDM.
- Suction cup gripping interface materials:
  - "mini" type interface: silicone 30 Shore.
  - "medium" or "maxi" type interfaces: natural rubber 50 Shore.

COVAL vacuum managers

CMS Series Multi-Stage

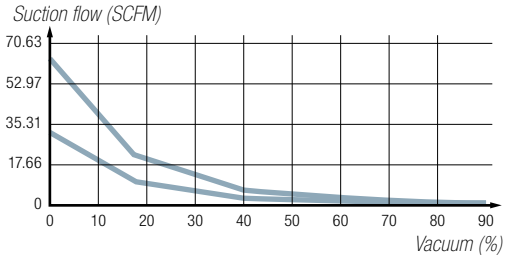
Advantages of CMS series

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

Characteristics

Model	Consumption (SCFM)	Flow rate (SCFM)	Max vacuum (%)	Weight (Kg)	Supply pressure (bar)	Optimal pressure (bar)	Sound level (dBA)
CMS90X50…	6.71	31.78	85	1	5-7	6	65
CMS90X100…	13.42	63.57	85	1	5-7	6	65

Performances



Material

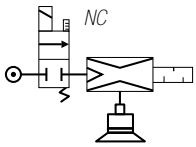
- Base body: PA 6 glass fiber loaded.
- Valve body: PA 6 glass fiber loaded.
- Silencer: aluminium with felt inner element.
- Screw: galvanized steel.
- Inside parts: brass, aluminium.
- Seals: NBR.
- Membrane: NBR.

Control Versions

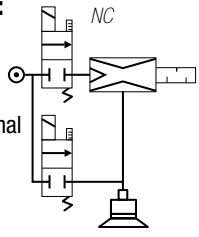
*With its multi-stage ejectors, **CMS** series, **COVAL** proposes an adapted response to all applications which need high suction flow; like emptying of high volume tanks or handling of porous objects.*

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

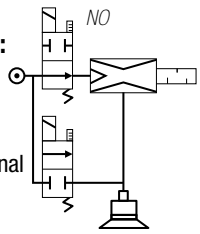
■ **Option R**
NC vacuum control, without blow-off:
CMS90X_ _**R**V_
- 1 control signal.
- NC vacuum control valve.



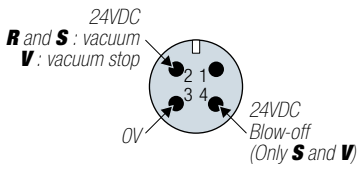
■ **Option S**
NC vacuum control, with controlled blow-off:
CMS90X_ _**S**V_
- 2 control signals.
- NC vacuum control valve.
- Blow-off controlled by external signal (NC control valve).



■ **Option V**
NO vacuum control, with controlled blow-off:
CMS90X_ _**V**V_
- 2 control signals.
- NO vacuum control valve.
- Blow-off controlled by external signal (NC 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

Vacuum Pump

To order:

CMS	90	X	100		R		V	F

VACUUM LEVEL	
90 %	**90**

FLOW RATE	
50	31.78 SCFM
100	63.57 SCFM

CONTROL	
N	without control
R	NC vacuum control
S	NC vacuum control & NC blow-off control
V	NO vacuum control & NC blow-off control

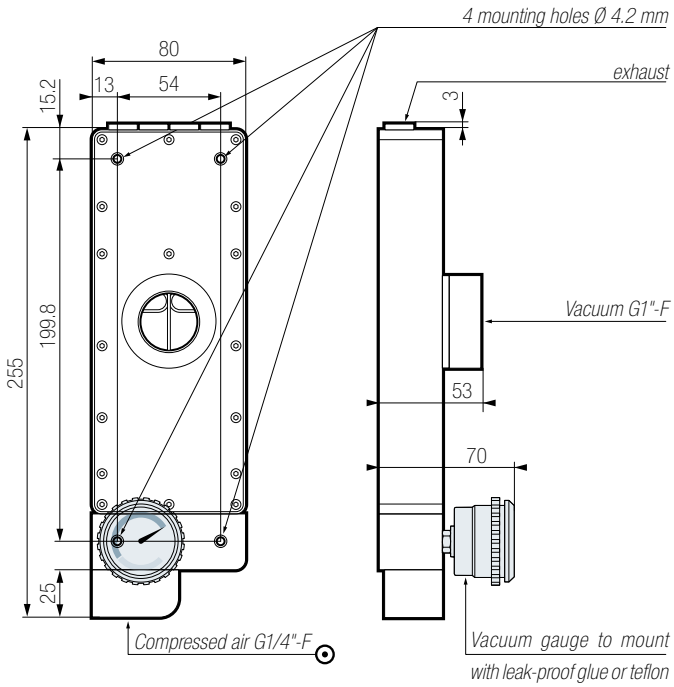
VACUUM GAUGE	
V0	without
VF	Vacuum gauge

EXAMPLE:
CMS90X 100 R VF

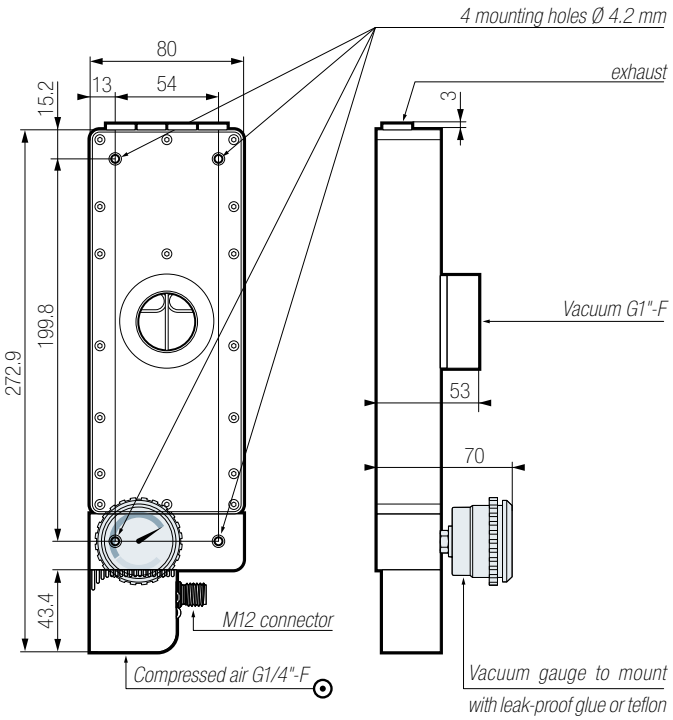
(Multi-stage vacuum pump, 90% max. vacuum, flow rate 1800 Nl/mn, with NC vacuum control valve and vacuum gauge with needle).

Dimensions

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



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



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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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