



COVAL

vacuum managers

CVGL

Compact and Light Vacuum Grippers



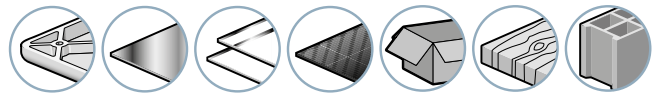


With the CVGL series, COVAL introduces a universal solution to the vacuum gripper: flexible, simple and economical.

Handling parts of various sizes, shapes and weights is no longer a complex, costly and time-consuming task.

With a single CVGL module, easily integrated into the process, the user can simply and safely perform random gripping of assorted parts.

Industry-specific applications



Advantages

The CVGL series is composed of standard subassemblies which allow us to offer a "tailor-made" solution, meeting the specific application requirements of integrators and end users:

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

A Complete System

Simply configure your CVGL vacuum gripper :

- 1 light and robust aluminium profile
- 1 universal mounting system
- 3 standard lengths (424, 624, 824mm)
- 3 suction levels
- 3 gripping interface technologies
- 3 standard hole/cup patterns
- 3 flow control technologies
- 2 control versions (vacuum and blow-off)
- 2 solutions for vacuum display
- + The Vacuum Manager experience of COVAL

= YOUR CVGL SOLUTION



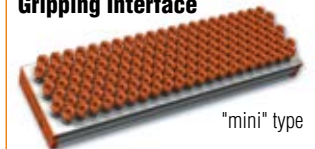
FOAM Gripping Interface



"COVAL-flex" Gripping Interface



SUCTION CUPS Gripping Interface



Applications

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

- Packaging
- Plastics
- Metal
- Glass
- Concrete/stone
- Composites
- Wood...

The adaptability and the flexibility of COVAL CVGL Series vacuum grippers respond to numerous robotic applications.



CVGL

Compact and Light Vacuum Grippers

General Information



Modular Grippers



Ultra-light

Reduced payload weight

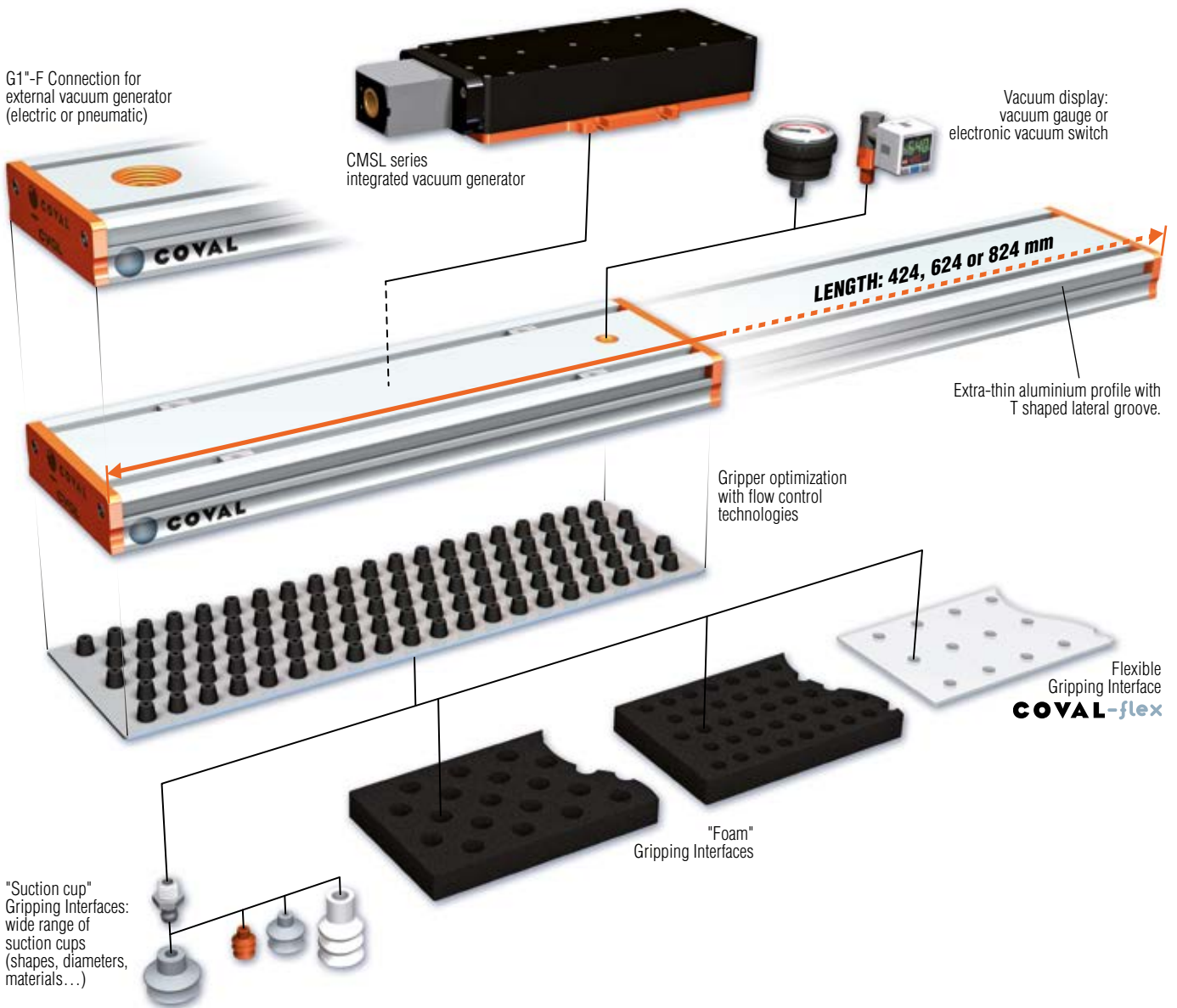


External or integrated vacuum generation



3 standard lengths

424, 624 and 824 mm



3 flow control technologies



Configurable gripping interface depending on the products to be handled



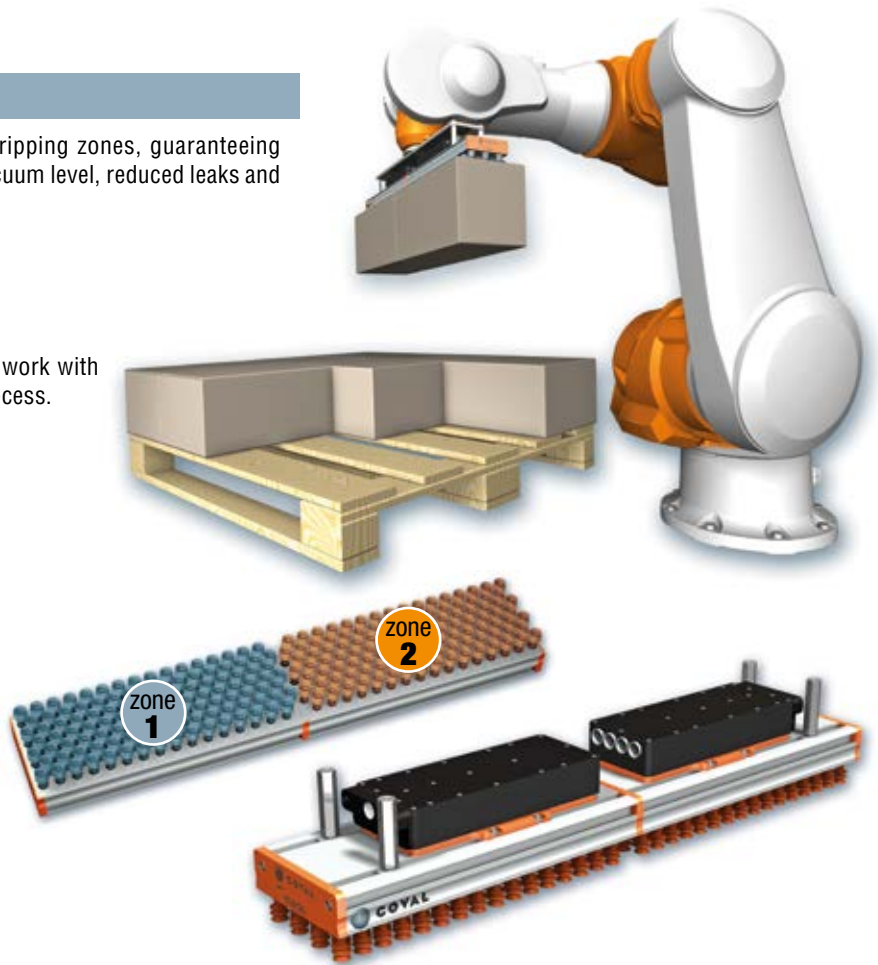
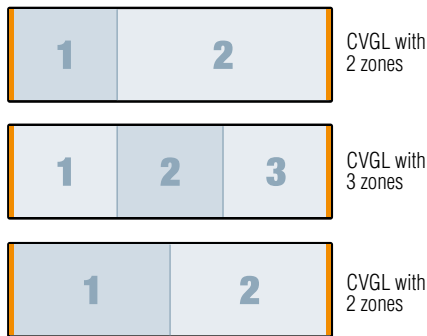
Multi-zone

CVGL 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.

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

Examples of configuration:



Ultra-light and compact design

The main design objective of the new CVGL vacuum gripper was to minimize space and weight, while maintaining a highly modular configuration, meeting the needs of robotic applications.

Thanks to COVAL's new aluminium profile, the CVGL vacuum grippers fully meet this objective. The ultra-thin profile allows for easy integration on robots.

This new profile integrates the vacuum connections on the upper part, which provides greater compactness, as well as a T-slot on the side for mounting additional accessories (sensors,...).

The technologies and materials used in the design of the CVGL vacuum gripper considerably reduce the on-board weight. This makes the CVGL the benchmark in its field, allowing smaller robots to be used, increasing accelerations and thus optimizing the installation in order to achieve savings.

Mass (in kg) depending on options

| GRIPPING INTERFACE | Length | Vacuum gripper without vacuum generator (G0) | Vacuum gripper with 1 CMSL50 vacuum generator (E1) | Vacuum gripper with 1 CMSL100 vacuum generator (E2) | Vacuum gripper with 2 CMSL100 vacuum generators (E3) |
|---|--------|--|--|---|--|
| Foam Interface Mini F2S / Maxi F2B type with flow control nozzles (H version) | 424 | 1.8 | 2.4 | 2.4 | – |
| | 624 | 2.6 | – | 3.1 | – |
| | 824 | 3.4 | – | 3.9 | 4.5 |
| Foam Interface Mini F2S / Maxi F2B type with airtight or check valves (E and V versions) | 424 | 2.0 | 2.6 | 2.6 | – |
| | 624 | 2.8 | – | 3.3 | – |
| | 824 | 3.7 | – | 4.2 | 4.8 |
| Suction cup Interface Mini, Medium or Maxi type with flow control nozzles (H version) | 424 | 2.2 | 2.8 | 2.8 | – |
| | 624 | 3.2 | – | 3.6 | – |
| | 824 | 4.1 | – | 4.7 | 5.3 |

Average values shown

E1/E2 : indicated weights are for SVA version (blow-off solenoid control valve + vacuum display)



Choice of Gripping Interface

With CVGL, 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 CVGL 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.

"FOAM" Interface

- Handling of rigid products.
- Gripping textured or uneven surfaces.
- Flow control nozzles, airtight or check valves.
- 2 standard hole diameters (ø12, 16mm).
- 2 standard hole patterns.
- 3 standard lengths (424, 624 and 824mm)... or custom length.

"SUCTION CUP" Interface

- Handling of flexible products.
- Wide range of options.
- Flow control nozzles (different diameters).
- 4 types of standard suction cups (Ø 14, Ø 25, Ø 30 and Ø 33 mm).
- 3 standard cup patterns.
- 3 standard lengths (424, 624 and 824mm) ... or custom length.

"COVAL-flex" Interface

- Handling of aluminum cans, canned food, glass containers...
- Flexible interface, extremely tear-resistant
- Hole pattern dependent upon application requirements, completely customizable



COVAL-flex

Standard Hole/Cup Patterns

In order to optimize the performance of the CVGL series for different applications, the vacuum grippers are available in different gripping patterns, hole diameters, and cup sizes.

"MINI" type

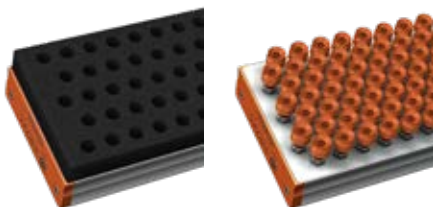
- Reduced hole spacing, allowing small, flexible pieces to be gripped.
- The multitude of gripping points guarantee a strong grip, even with random positioning of products.
- Dimensions, refer to page 11.

"MEDIUM" type

- An intermediate distribution of gripping points between the "mini" and "maxi" type.
- Ideal for handling dense loads with reduced gripping surface.
- Dimensions, refer to page 11.

"MAXI" type

- Large gripping point surfaces, allowing heavy loads to be gripped.
- Ideal for gripping parts with rigid gripping surfaces.
- Dimensions, refer to page 11.



Vacuum Gripping Force

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

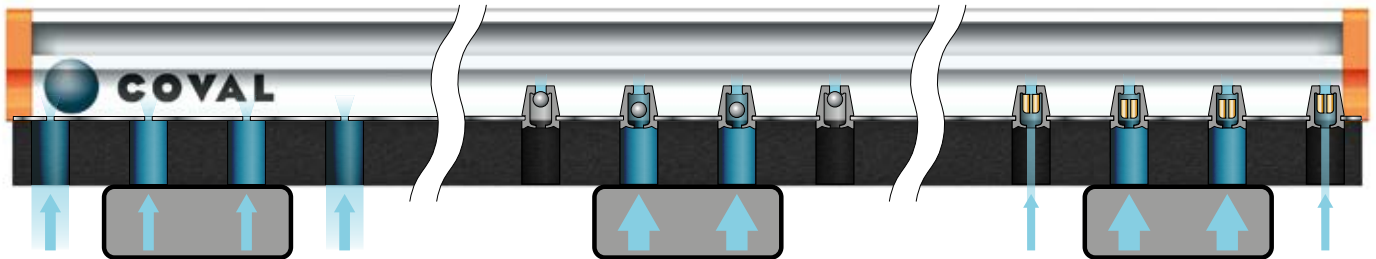
| Part number | Total length of the vacuum gripper (mm) | Force at 85% vacuum (N)* | Force at 45% vacuum (N)* |
|-----------------|---|--------------------------|--------------------------|
| CVGL 424_ _ _ _ | 424 | 1100 | 600 |
| CVGL 624_ _ _ _ | 624 | 1650 | 900 |
| CVGL 824_ _ _ _ | 824 | 2200 |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



Flow Control Technologies

COVAL offers 3 flow control technologies to optimize your vacuum gripper and perfectly respond to the constraints of your application.

COVAL teams will assist you in the choice and the configuration of your CVGL vacuum gripper.



Flow control nozzles

- Limits the leakage rate of uncovered zones.
- Economic solution.
- Customizable calibration.
- Horizontal and vertical handling.

Airtight valves (COVAL patent)

- Isolates uncovered zones.
- Provides energy savings.
- Meets specific needs.
- Instant gripping.
- Quick release to blow-off.
- Horizontal handling.

Check valves (COVAL patent)

- Limits the leakage rate of uncovered zones.
- Instant gripping.
- High versatility of applications.
- Quick release to blow-off.
- Horizontal handling.

Vacuum Generation

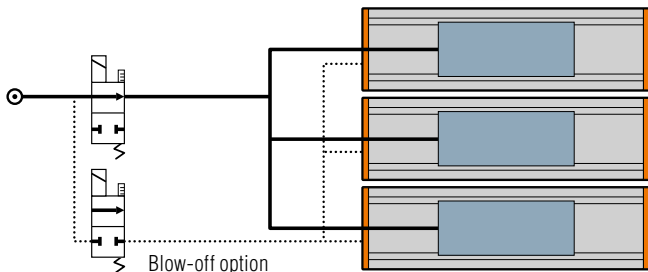
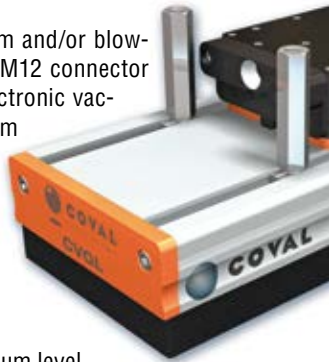
Integrated vacuum generator, CMSL Series

Integration of a multi-stage vacuum generator on the CVGL 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



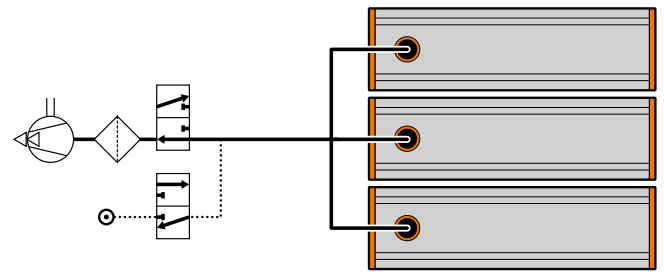
External vacuum generator

The CVGL vacuum grippers may also be used with an independent vacuum generator. Depending on the application, an external generator may be necessary (a blower, an electrical vacuum pump or a pneumatic generator, CMS Series). The CVGL series vacuum gripper G0 version is equipped with a G1"-F flange allowing 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



Technical data of the CMSL series integrated vacuum generators

| Integrated vacuum generator | Model | Consumption (NI/min) | Flow rate (NI/min) | Max. vacuum (%) | Sound level (dBA) |
|-----------------------------|-----------|----------------------|--------------------|-----------------|-------------------|
| CMSL 50 | CVGL...E1 | 190 | 900 | 85 | 65 |
| CMSL 100 | CVGL...E2 | 380 | 1800 | 85 | 65 |
| 2xCMSL 100 | CVGL...E3 | 760 | 3600 | 85 | 65 |

Generator configurations by vacuum gripper length

| Vacuum generator | CVGL 424 | CVGL 624 | CVGL 824 |
|------------------|----------|----------|----------|
| G0 | ■ | ■ | ■ |
| E1 | ■ | - | - |
| E2 | ■ | ■ | ■ |
| E3 | - | - | ■ |

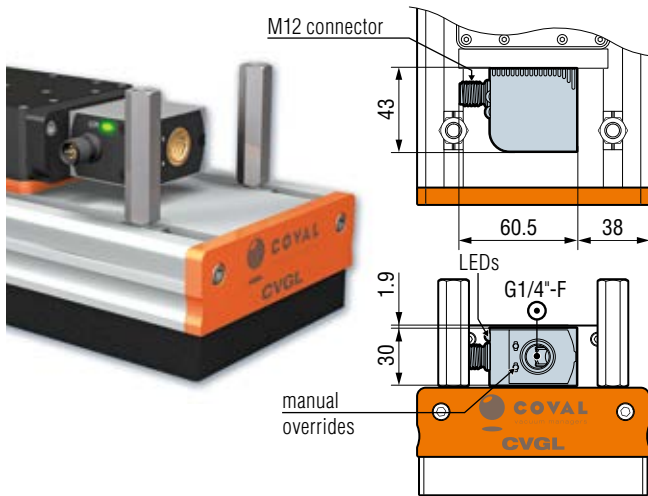


Vacuum Generator Control

When necessary, the CVGL series vacuum grippers with integrated vacuum generator (versions E1 and E2) can be equipped with a vacuum and/or blow-off control valve to optimize product release. This also enables cleaning of the vacuum network, flow control nozzles, check valves or airtight valves.

A vacuum switch or analog gauge is available as an option for those requiring a visual display of the vacuum level in the system (see below).

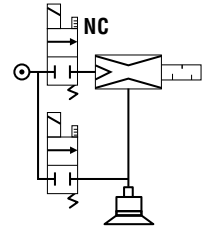
IMPLEMENTATION



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

CVGL _____ XE_SV_

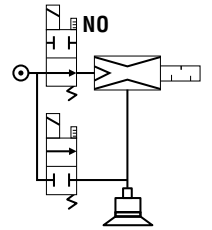
- 2 control signals.
- NC vacuum control valve.
- Blow-off controlled by external signal (NC control valve).



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

CVGL _____ XE_VV_

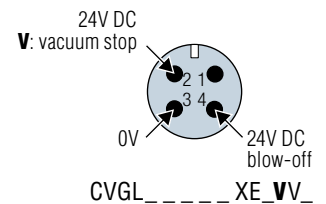
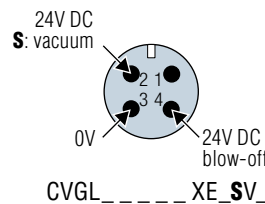
- 2 control signals.
- NO vacuum control valve.
- Blow-off controlled by external signal (NC control valve).



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 CONNECTION



Vacuum Level Display

When required, CVGL 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):

CVGL _____ X_VA

- Pressure rating range: 0 ~ -101.3 kPa.
- Pressure setting range: 10 ~ -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: ≤ 40mA (without load).
- Repeatability (switch output): ≤ ±0.2% F.S. ±1 digit.
- Electrical connection: M8 (4-pin).
- Protection: IP40.
- Ambient temperature range: 0 – 50° C (operation).
- Material (enclosure): PA 6.6 20%GF.

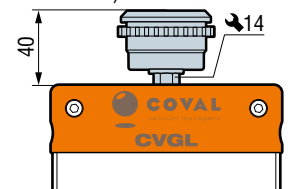
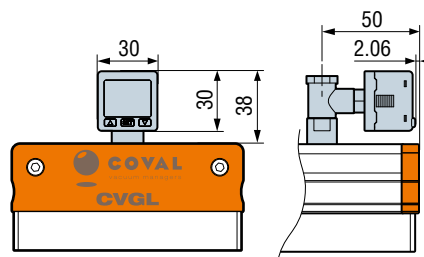


■ Option VF - vacuum gauge

(VAF11140):

CVGL _____ X_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



CVGL

Compact and Light Vacuum Grippers

Examples of Composed Part Numbers



CVGL424DVSA33JKXHXE2SVA

CVGL vacuum gripper length 424mm, "straight" cup pattern layout, "maxi" type gripping interface, 1.5 bellows suction cups Ø33mm in natural rubber with flow control nozzles, with 1 integrated vacuum generator CMSL 100, vacuum generator control and NC blow-off, vacuum level display with electronic display type vacuum switch.



CVGL424QVSP14BFXHXE2NVF

CVGL vacuum gripper length 424mm, "staggered" cup pattern layout, "mini" type gripping interface, 2.5 bellows suction cups Ø33mm in silicon 30 Shore with flow control nozzles, with 1 integrated vacuum generator CMSL 100, without vacuum generator control and vacuum level display with vacuum gauge type vacuum switch.



CVGL624QMVS30EKXHXGONVA

CVGL vacuum gripper length 624mm, "staggered" cup pattern layout, "maxi" type gripping interface, 2.5 bellows suction cups Ø30mm in silicon 30 Shore with flow control nozzles, without vacuum generator, and vacuum level display with electronic display type vacuum switch.

CVGL824QF2SXHXGONVF

CVGL vacuum gripper length 824mm, "staggered" cup pattern layout, foam "mini" type gripping interface, without filter, with flow control nozzles, without vacuum generator, with vacuum level display with vacuum gauge type vacuum switch.



Modular vacuum grippers MVG Series

For applications requiring customized dimensions, COVAL has developed a modular vacuum gripper, **MVG Series**.

Thanks to their modularity, the MVG vacuum grippers offer the optimal handling solution of various sizes, shapes and weights.

- Customized formats from 150x150mm to 1200x1000mm.
- Configurable gripping interface (foam, suction cups or COVAL-flex).
- Multi-zone.
- Staggered grip / release points.
- Integrated or external vacuum generator.
- Adaptable to all industry sectors.





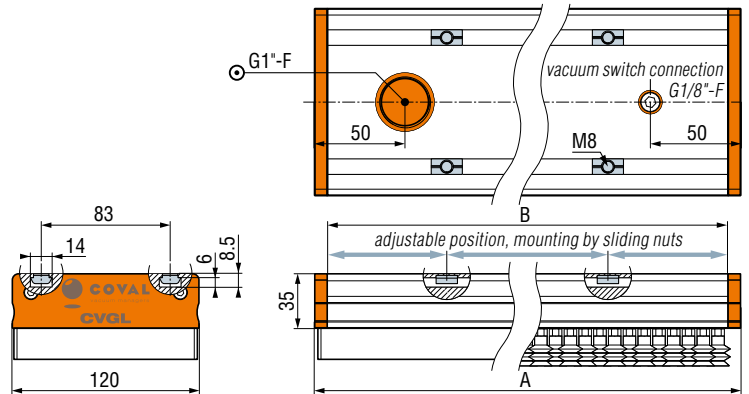
G0 Versions

(with external vacuum generator).

The Coval CVGL series vacuum grippers, G0 version (with external vacuum generator), can be mounted on all types of automated or robotic systems.

They can be easily installed (via M8 screws) with the included rectangular nuts, sliding in the grooves of the aluminium profile. These nuts are equipped with a spring plate to hold them in position when unscrewing.

- CVGL 424 and 624 : 4 x M8 rectangular nuts.
- CVGL 824 : 6 x M8 rectangular nuts.

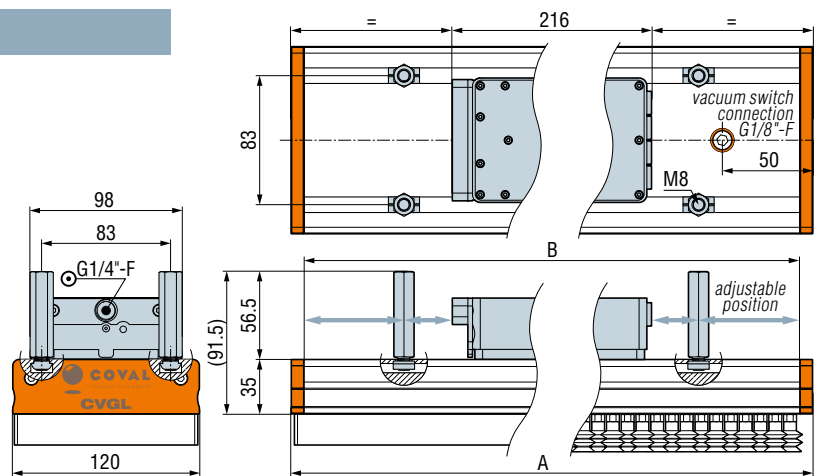


E1 or E2 Versions

(1 integrated vacuum generator, CMSL series).

The Coval CVGL series vacuum grippers, E1 and E2 versions, are mounted on all types of automated systems via M8 spacers pre-installed on sliding nuts.

- CVGL 424 and 624 : 4 x M8 spacers.
- CVGL 824 : 8 x M8 spacers.

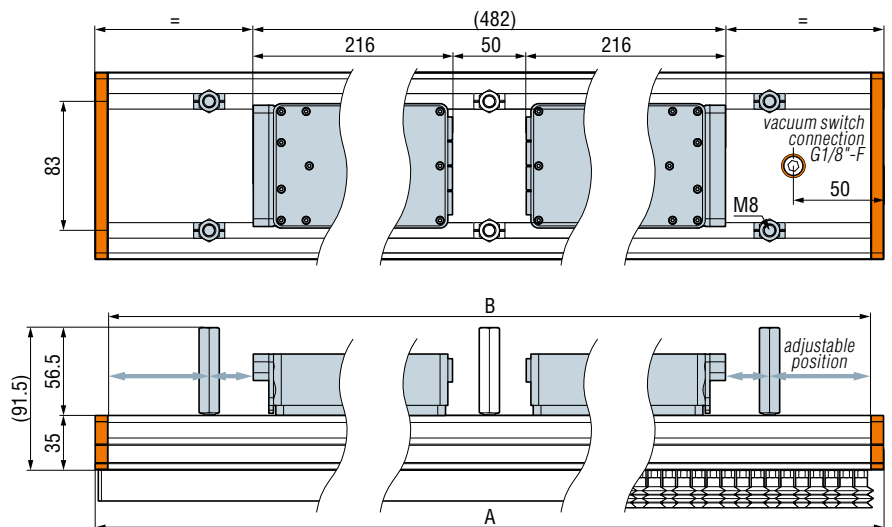
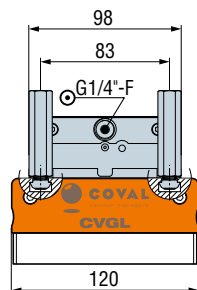


E3 Versions

(2 integrated vacuum generators, CMSL series).

The CVGL vacuum grippers, E3 version, utilizes adjustable M8 spacers.

- CVGL 824 : 6 x M8 spacers.



Dimensions

| | CVGL424 | CVGL624 | CVGL824 |
|----------|---------|---------|---------|
| A | 424 | 624 | 824 |
| B | 408 | 608 | 808 |

in mm, any versions

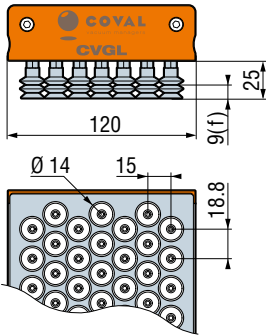


On our website www.coval.com you will find 3D drawings of all our products in many formats adapted to standard CAD software.

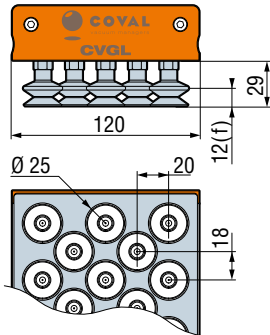


CVGL Series with Suction Cup Gripping Interface

"MINI" type suction cup gripping interface



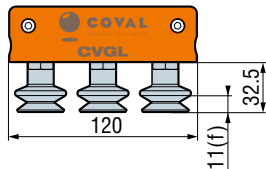
"MEDIUM" type suction cup gripping interface



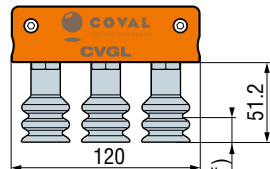
f: suction cup deflection

"MAXI" type suction cup gripping interface, STRAIGHT PATTERN

model VSA33

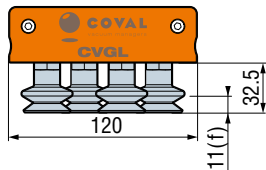


model MVS30

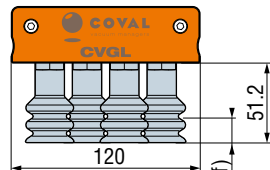


"MAXI" type suction cup gripping interface, STAGGERED PATTERN

model VSA33



model MVS30

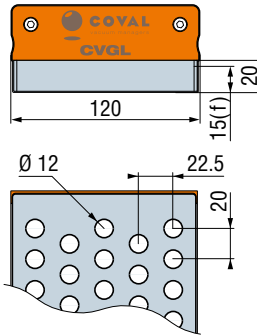


NUMBER OF SUCTION CUPS PER GRIPPING INTERFACE

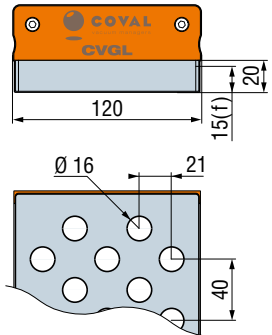
| | CVGL424 | CVGL624 | CVGL824 |
|---|---------|---------|---------|
| "Mini" type suction cup Ø 14 mm (Ø 16 mm max.) | 150 | 220 | 297 |
| "Medium" type suction cup Ø 25 mm (Ø 18 to 25 mm) | 55 | 83 | 113 |
| "Maxi" type, STRAIGHT pattern Ø30 or Ø33 mm suction cups (Ø36 mm max.) | 33 | 48 | 63 |
| "Maxi" type, STAGGERED pattern Ø30 or Ø33 mm suction cups (Ø36 mm max.) | 28 | 42 | 58 |

CVGL Series with Foam Gripping Interface

"MINI" type foam gripping interface



"MAXI" type foam gripping interface



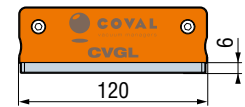
f: foam compression

NUMBER OF GRIPPING POINTS PER INTERFACE

| | CVGL424 | CVGL624 | CVGL824 |
|---------------------------------------|---------|---------|---------|
| "mini" type gripping interface Ø12 mm | 98 | 148 | 198 |
| "maxi" type gripping interface Ø16 mm | 50 | 75 | 100 |

CVGL Series with "COVAL-flex" Gripping Interface

COVAL-flex



General Characteristics

- Compressed air supply for CVGL vacuum grippers with generator CMSL:
 - 5µ filtered, non-lubricated air relevant to standard ISO 8573-1:2010 [4.5:4].
 - 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: IP 65.
- Temperature: 10 to 60°C.
- Material of the gripper: aluminium, PA 6.6 15% GF, brass, stainless steel, neoprene.
- Material of the valve: PA 6.6 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" type interfaces: natural rubber 50 Shore.
 - "maxi" type interfaces: natural rubber 50 Shore or white silicone 35 Shore.



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.

For all enquiries from Australia, Africa and Asia kindly contact COVAL head office in France.



COVAL S.A.S.
Head Office



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COVAL ITALIA



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