

EN

OPERATING INSTRUCTIONS

This manual is intended for users of the **CMS M** series multi-stage Mini Vacuum Pumps.

It contains all the information you need to integrate the vacuum pumps, as well as the instructions for use and maintenance.

The operating instructions were originally drafted in French (original version).

They must be kept for any future use.

Subject to technical changes, mistakes or printing errors.

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**PRIOR TO COMMISSIONING THIS PRODUCT,
PLEASE CAREFULLY READ THIS MANUAL AND FOLLOW THE INSTRUCTIONS.**



Retrouvez tous les documents en différentes langues sur le site COVAL : <https://doc.coval.com/CMSM>



All documents are available in multiple languages on the COVAL website: <https://doc.coval.com/CMSM>



Finden Sie alle Dokumente in verschiedenen Sprachen auf der COVAL-Homepage: <https://doc.coval.com/CMSM>



Tutti i documenti nelle differenti lingue sono presenti sul sito COVAL: <https://doc.coval.com/CMSM>



Podrá encontrar todos los documentos en diferentes idiomas en la página web de COVAL: <https://doc.coval.com/CMSM>

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1. IMPORTANT INFORMATION

This document contains important instructions and information regarding the product's various operational phases:

- Transport, storage, commissioning and decommissioning
- Use and maintenance

The operating instructions correspond to the product actually delivered.

This document is part of the product and the following information must be observed:

- Please carefully read this document and observe the instructions to ensure safe installation, optimal operation of the product, and to avoid any malfunction
- Please keep the document within reach of the product so that the staff can easily access it.



- **Failure to observe the instructions specified in this document may lead to injury or even death!**
- **COVAL will not be held liable for any damage or breakdown as a consequence of failure to observe instructions.**

For any additional information, please contact COVAL:

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2. INSTRUCTIONS FOR USE AND SAFETY

2.1. Assembly/Disassembly

Only qualified personnel are authorized to use the components. Such personnel must be trained in the following areas:

- Applicable safety rules and requirements for using components and installing them in devices, machines, and machine lines.
- Appropriate handling of components and their respective products.
- Proper use with the operating materials.
- The latest applicable EC directives, legislations, decrees, and standards, as well as the current technical standards.

The improper use of components with other operating materials than those defined, other voltages, or under other environmental conditions can lead to failure, damage, and injury.

This list is considered an overview and does not claim to be exhaustive. Users can complement it according to their particular needs.

2.2. Safety Instructions

In order to ensure flawless installation and operation, the following rules must also be observed:

- The components must be carefully removed from their packaging.
- The components must be protected against any and all damage.
- During installation and maintenance work, remove the voltage and pressure from the Venturi pump and ensure that unauthorized personnel cannot restart it.
- Any attempt to alter the components is strictly prohibited.
- The area surrounding the components and the location where used must be kept clean.
- Standing under the payload being handled by the vacuum pump and in its pathway is strictly prohibited.
- Only the fittings/connectors provided may be used.
- During installation, only use flexible tubes and tubes that are suitable for the specific operating material (tubes that come loose or electrical connection lines constitute a major safety hazard—including risk of death!).
- Conductive and live cables lines must be insulated, of appropriate size, and properly installed.
- Pneumatic and electric lines must be connected to the component in a stable and safe manner.
- Prevent any physical contact with electric parts (protect electrical contacts).
- Only use the available fastening means described in section 6.5.
- Always observe the latest applicable directives, regulations, and standards as well as the current technical standards for suggested use.

- Wherever necessary, users must take specific measures to meet the requirements of applicable directives, legislations, regulations, and standards as well as the current technical standards.



- Failure to observe the above safety instructions may lead to failure, damage, and injury—even risk of death.
- The components of the device that are no longer in working order must be recycled in an environmentally-friendly manner (refer to section 16)!

2.3. Nameplate

The nameplate is affixed to the side of the vacuum pump so that it is legible at all times. It includes the following information:

- Product part number
- Serial number
- Datamatrix code containing the part number and serial number of the vacuum pump.



3. MAIN FUNCTIONS OF CMS M VACUUM PUMPS

The **CMS M Series** multi-stage mini vacuum pumps, with their robust and ultra-compact design, are suitable for applications requiring high suction rates such as gripping porous parts, emptying tanks, or random gripping when integrated into vacuum grippers.

CMS M mini vacuum pumps have the following characteristics:

- Vacuum generated by a Venturi effect (maximum negative pressure: -80 kPa, i.e. 80% vacuum)
- 2 powerful suction flow rates: - CMSM90X15__ → 300 NI/min (10.59 SCFM)
- CMSM90X30__ → 550 NI/min (19.42 SCFM)
- With or without vacuum and blow-off control
- Vacuum control: NC or NO
- Blow-off: standard, controlled
- Digital inputs/outputs mode (SIO)

PRESCRIBED USE

CMS M mini vacuum pumps are designed to generate vacuum for gripping and handling parts using suction cups. Authorized gases: only non-hazardous gases such as air and nitrogen.



Once the device is installed, make sure that the device remains clear of any moving parts.


CMS M mini vacuum pumps are not suitable for the following purposes:

- Transporting liquids or granules
- Filling compressed air tanks, driving pressure elements (valves, cylinders, etc.)
- Vacuuming dangerous materials
- Vacuuming any aggressive gases or products
- Handling people or animals
- Usage in environments subject to explosion hazard
- Usage in medical applications


COVAL is not liable for any damage resulting from improper use of the vacuum pump.

4. OVERVIEW OF CONFIGURATIONS

4.1. CMS M without control

	CMSM90X	15	N	VO	G2	E
	SUCTION FLOW RATE					EXHAUST OPTION
	300 NI/min (10.59 SCFM) (1 profile 2 stage)	15				K Through-type silencer
	550 NI/min (19.42 SCFM) (2 profiles 2 stage)	30				E Exhaust collector

4.2. CMS M controlled

	CMSM90X	30	S		VO	C14P	G2	K
	SUCTION FLOW RATE							EXHAUST OPTION
	300 NI/min (10.59 SCFM) (1 profile 2 stage)	15	S	Mini vacuum pump with NC vacuum control and NC blow-off				K Through-type silencer
	550 NI/min (19.42 SCFM) (2 profiles 2 stage)	30	V	Mini vacuum pump with NO vacuum control and NC blow-off				E Exhaust collector

Sample part number consisting of a multi-stage mini vacuum pump:

CMSM90X15NVOG2E

Mini multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 300 NI/min (10.59 SCFM), with exhaust collector.



CMSM90X30SVOC14PG2K

Mini multi-stage vacuum pump, max. vacuum 80%, suction flow rate of 550 NI/min (19.52 SCFM), controlled by one NC vacuum control and one NC blow-off, one M12 4-pin connector, with through-type silencer.



5. LAYOUT

5.1. CMS HD "tailor-made" solution

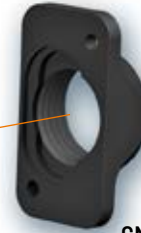
CMSM__NVO_

Pressure connection
end plate



CMSM90X15_ / CMSM90X30_

Body with multi-stage
Venturi profiles



CMSM____E
Exhaust collector



CMSM____K
Through-type silencer

Vacuum switch connection
G1/8"-F with plug



CMSM__SVO_ / VVO_

- Control valve block for vacuum and blow-off:
 - Vacuum control: NC or NO
 - One M12 4-pin male connector
- Status LED for the control functions:
 - Green LED = vacuum control.
 - Orange LED = blow-off control.

5.2. A Complete Range

For each application, a suitable CMS M:

CMSM__NVO_

- Without control.



CMSM__SVO_ / VVO_

- With vacuum and blow-off control.
- One M12 4-pin male connector.
- Inputs / Outputs Digital mode.
- Visual indicators of vacuum and blow-off controls.

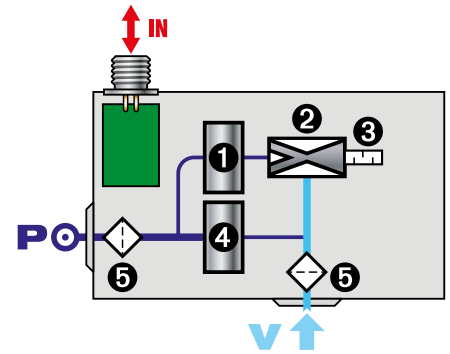


6. TECHNICAL DATA

6.1. Integrated Functions

CMS M multi-stage mini vacuum pumps include all the vacuum functions required for an easy, efficient, and economical use of compressed air and suitable for any application:

- ❶ "Vacuum" solenoid valve
- ❷ Multi-stage Venturi pump
- ❸ Through-type silencer
- ❹ "Blow-off" solenoid valve
- ❺ Filter screens

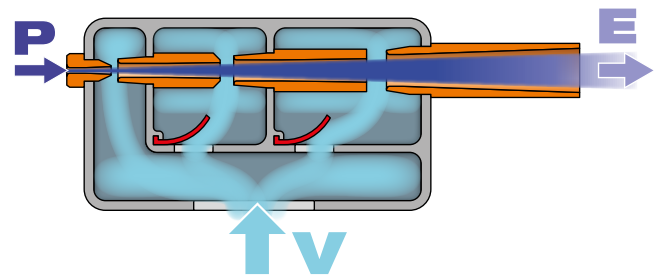


6.2. Primary Functions of Multi-stage Technology

Multi-stage technology consists of maximizing the energy input of the compressed air by cascading several stages of Venturi profiles and by combining their respective flows.

Intermediate valves allow the progressive isolation of each stage to obtain a maximum vacuum level.

This technology makes it possible to generate a high suction flow rate at a low vacuum level.

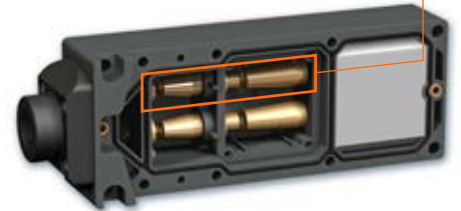


6.3. Performance characteristics

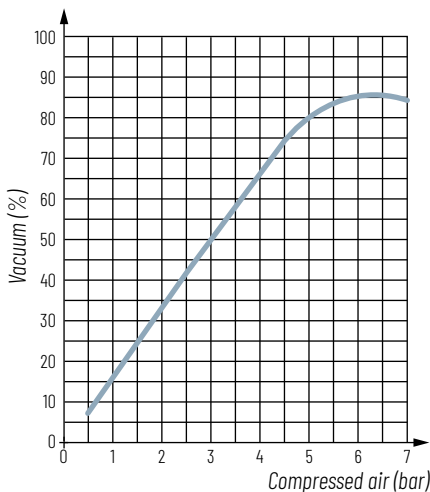
Model	Time to create vacuum (seconds) for a volume of 1 liter				Max. vacuum (%)	Air drawn in (NI/min) (SCFM)	Air consumed (NI/min) (SCFM)	Air pressure level* (bar)
	45 %	55 %	65 %	75 %				
CMSM90X15	0.21	0.35	0.60	1.14	80	300 (10.59)	150 (5.30)	5
CMSM90X30	0.11	0.18	0.30	0.56	80	550 (19.42)	280 (9.89)	5

* 5.5 bar for controlled versions, CMSM...S / CMSM...V

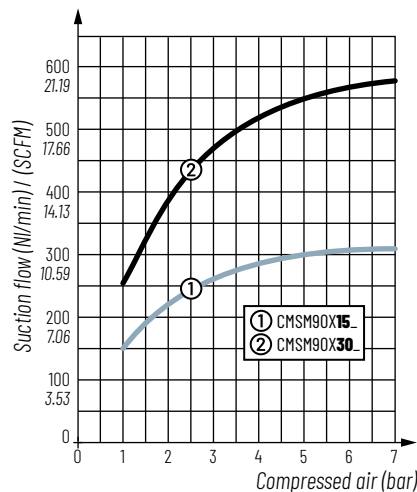
- CMSM90X15...: 1 profile 2 stage
- CMSM90X30...: 2 profiles 2 stage



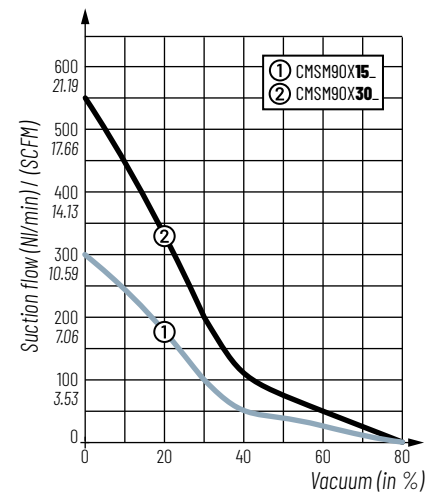
VACUUM/COMPRESSED AIR



SUCTION FLOW/COMPRESSED AIR



SUCTION FLOW/VACUUM



The values represent the average characteristics of our products.

6.4. General Characteristics

- Supply: non-lubricated air, filtered to 5 microns, according to standard ISO 8573-1:2010 [3:4:4].
- Operating pressure: from 2 to 7 bar.
- Optimal dynamic pressure:
 - CMSM___NVO_ (without control): 5 bar.
 - CMSM___S_ / CMSM___V_ (controlled): 5.5 bar.
- Pressure connection: G1/4"-F with 200 µm filter screen.
- Vacuum connection: G1/2"-F with removable 350 µm filter screen.
- Connection for version with exhaust collector: G1/2"-F.
- Vacuum switch connection: G1/8"-F.
- Max. vacuum: 80%.
- Air suction flow rate: 300 to 550 NI/min (10.59 to 19.42 SCFM).
- Air consumption: 150 to 280 NI/min (5.30 to 9.89 SCFM).
- Noise level with through-type silencer :
 - CMSM90X15___K: 61 dBA.
 - CMSM90X30___K: 65 dBA.
- Degree of protection: IP40.
- Max. operating frequency: 2 Hz.
- Endurance: 30 million cycles.

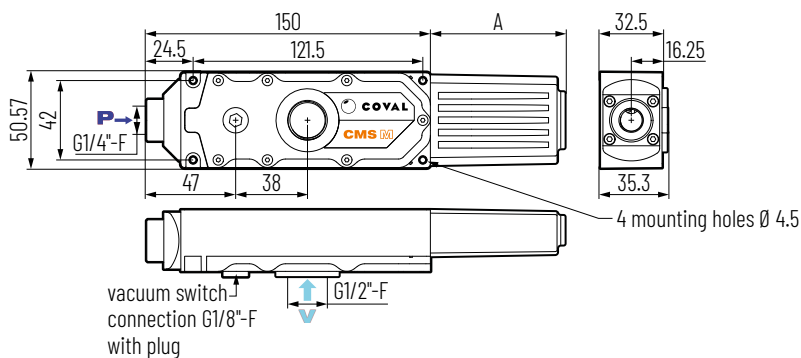
- Operating temperature: from 0 to 50°C (from 32 to 122°F).
- Weight:- CMSM without control: - 275 g.
- CMSM controlled: - 330 g.
- Materials:
 - Main body: PA GF, brass, NBR, PU.
 - Control valve body: PA 6 GF.
 - Pressure connection end plate (NVO version): aluminum.
 - Vacuum connection end plate: PETP.
 - Exhaust collector (CMSM___E version): aluminum.
 - Silencer: body PA FG, felt.
 - Internal parts of the pump: brass, aluminum.
 - Internal parts of the valve block: brass, aluminum, steel, NBR, PU, FKM.
 - Screws: zinc plated steel.
 - Seals and diaphragm: NBR, PU.

Integrated electronics (CMSM_S / V version)

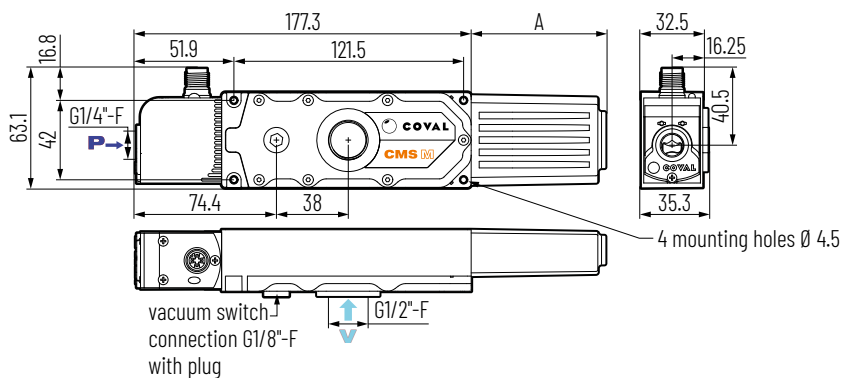
- 24 V DC power supply (regulated ±10%).
- Consumption: 60 mA max. (without load).
- Inputs/outputs protected against reversed wiring and polarity.

6.5. Dimensions and Installation

CMS M without control

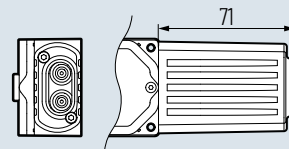


CMS M controlled

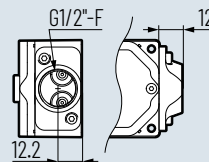


Exhaust options

CMSM___K version
Through-type silencer



CMSM___E version
Exhaust collector



Exhaust type	A
Through-type silencer	71
Exhaust collector	12

Note: all dimensions are in mm.

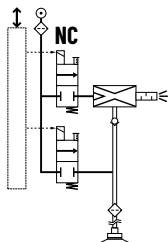
7. FINDING YOUR MODULE

In order to meet all your needs, the CMS M range includes vacuum pumps with NC or NO solenoid valve vacuum control. For efficient use of your vacuum pump with this operating manual, please identify your model by its part number.

Model CMSM__S: Vacuum pump with **NC** vacuum control and **NC** blow-off.

In the event of power failure, vacuum is no longer generated. In the event of compressed air failure, the vacuum is no longer maintained.

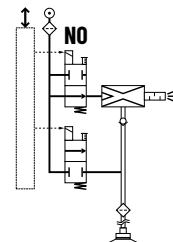
- NC blow-off and vacuum control: solenoid valves.



Model CMSM__V: Vacuum pump with **NO** vacuum control and **NC** blow-off

In the event of power failure, vacuum is still generated: object is held in place → fail-safe. In the event of compressed air failure, the vacuum is no longer maintained.

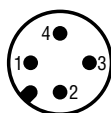
- NO vacuum control solenoid valve.
- NC blow-off control solenoid valve.



8. ELECTRICAL CONNECTIONS

CMS M multi-stage mini vacuum pumps must be used with power supply units that provide a Protective Extra Low Voltage (PELV) and with an isolation of the supply voltage according to EN 60204.

One M12 4-pin male connector.



- | | |
|---|--|
| 1 | / |
| 2 | 24 V DC suction command ⁽¹⁾ |
| 3 | 0 V - GND |
| 4 | 24 V DC blow-off command |

⁽¹⁾ 24 V DC suction command, depending on version:
- **S:** 24 V DC vacuum control.
- **V:** 24 V DC vacuum off command.

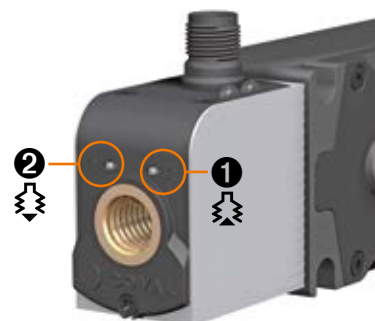
9. MANUAL CONTROLS

The multi-stage vacuum mini-pumps (CMSM_**SVO/VVO**_) are equipped with manual controls to operate vacuum and blow-off.

① vacuum generator control depending on versions:

- CMSM_**SVO**_: vacuum control
- CMSM_**VVO**_: Non-functional.

② blow-off control.



10. CONNECTIONS



COMPRESSED AIR OR VACUUM NETWORKS:

- Wear safety goggles
- Make sure all fittings and tubes are tightened securely
- Air line ends must be fastened to avoid any risk of being pulled off in the event of accidental breakage

10.1. Pressure supply connection

- non-lubricated air, filtered to 5 microns, according to standard ISO 8573-1:2010 [3:4:4]
- Optimal dynamic pressure: - 5 bar for version without control (CMSM_**NVO**)
- 5.5 bar for versions with control (CMSM_**S_**/ CMSM_**V_**)
- 200 µm filter screen integrated in the vacuum connection to protect the pump against particles.

→ Compressed air connection through a G1/4"-F port.

Version CMS M without control
(CMSM___**NVO**)



Version CMS M with control
(CMSM___**S_**/ CMSM___**V_**)



10.2. Vacuum circuit connection

→ Connection through a G1/2"-F port.



NOTE: MODULE PROTECTION

- 350 µm filter screen integrated in the vacuum connection to protect the pump against particles.
- Possible additional filter on vacuum circuit: In the rare cases of fine dust in a wet environment, the use of an appropriate filter will prevent any internal clogging: → See COVAL catalog: "Filters for vacuum circuits".



For short response times and minimum consumption, try reducing the volume to evacuate. To this end, as the module is installed as close as possible to the suction cups, ensure the length of the tube connecting the suction cups to the module is as short as possible.

Device	Min. internal tube dia.		
	Compressed air inlet	Suction inlet	Exhaust collector
CMSM90X15	6 mm dia.- max. length 5 m	15 mm dia.	20 mm dia.
	8 mm dia.- max. length 15 m	max. length 9 m.	max. length 4 m.
CMSM90X30	6 mm dia. - max. length 3 m	15 mm dia.	20 mm dia.
	8 mm dia. - max. length 10 m	max. length 5 m.	max. length 4 m.

- Flexible tubes must be as short as possible in order to minimize response times.
- Make sure there is no pollution in the device connections and tubes.
- Flexible tubes must be connected without bends and without crushing them.



IF THESE CONDITIONS ARE NOT OBSERVED, YOU RISK THE FOLLOWING ISSUES:

- If the chosen internal diameter on the compressed air inlet is too small, the compressed air supply will be insufficient to achieve optimal performance. The generator will be unable to achieve the specified maximum vacuum rate.
- If the chosen internal diameter on the vacuum inlet is too small, the airflow is slowed down due to this restriction, which has a negative effect on suction power and on suction or exhaust time.

11. EQUIPMENT OPTIONS FOR EXHAUST

Various configuration options are available for the CMS M exhaust:

Through-type silencer

CMSM___K version

- Reduction of the noise level
- Non-clogging



Exhaust Collector

CMSM___E version

- G1/2" female connection
- ↻ 20 N m



12. MAINTENANCE

12.1. Troubleshooting

Failure	Possible cause	Remedy
The vacuum pump does not work.	No supply voltage or power supply defective.	Check the electrical connection and the pin assignment on the M12 connector
	No compressed air supply	Check the compressed air supply
The vacuum level is not correct.	A filter is clogged in the facility.	Clean or replace the filter screen of the Vacuum connection. If the facility includes an additional vacuum filter, clean or replace the filter cartridge.
	Vacuum check valve clogged.	Clean or replace the vacuum check valve.
	Leakage in the vacuum network	Check the fittings and tubes.
	Suction cup leakage	Check the suction cup.
The vacuum build-up is too slow.	Pressure too low	Increase the pressure (refer to technical data).
	Inner diameter of tubes too small	See recommendations for tube diameters
	Vacuum level too low	Check the supply pressure and/or the porosity of the load.
Cannot hold the payload in place.	Suction cup too small or insufficient number of suction cups	Choose a larger suction cup and/or increase the number of suction cups.

Establish the frequency of maintenance activities based on the cycle rates, the environment, and the type of load. To carry out maintenance work on CMS M vacuum pumps, the compressed air supply must be shut off.

12.2. Maintenance Procedures

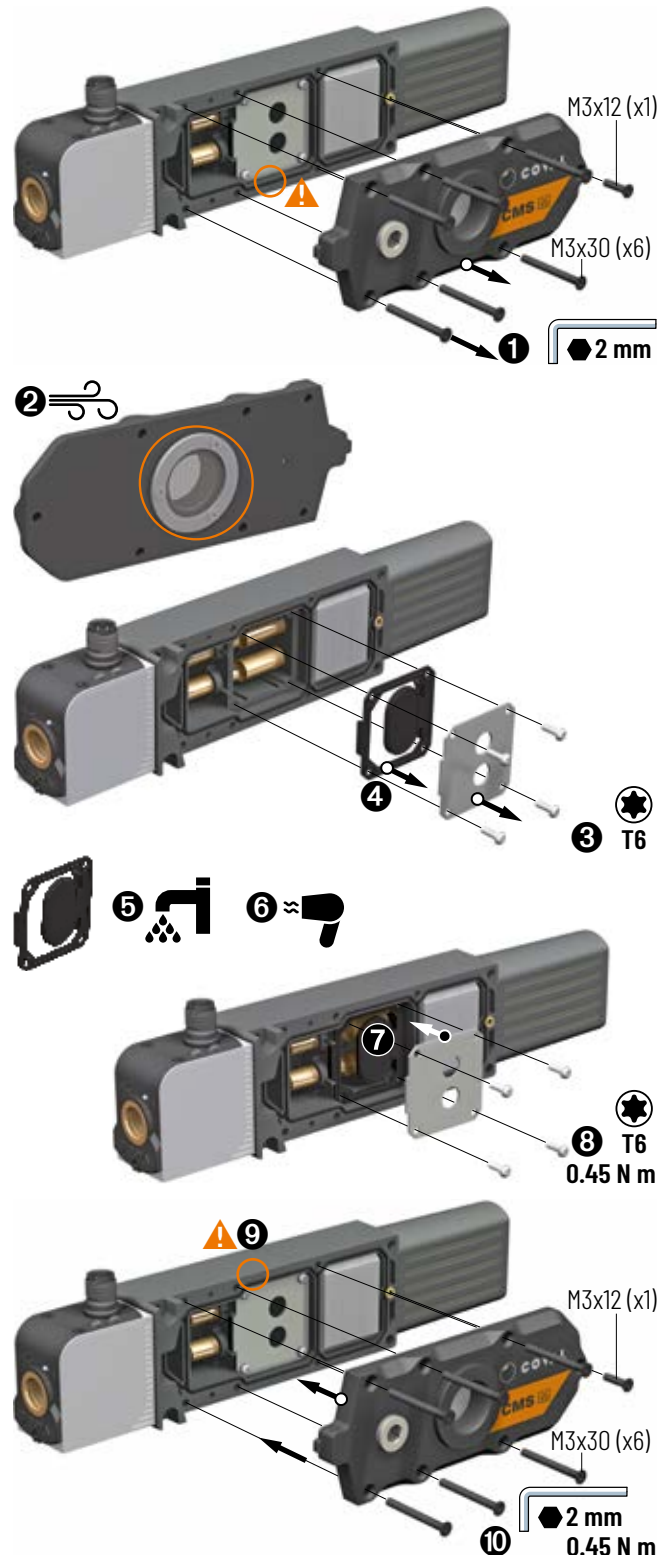


Prior to working on the pump, make sure the compressed air network is depressurized and that the electrical connector(s) has (have) been removed.

12.2.1. Cleaning the Vacuum Filter and the Vacuum Check Valve

⚠ Do not remove the rear aluminum end plate.

- **1** Remove the 7 FHC M3 screws from the end plate, using a 2 mm hexagon bit socket, and then remove the front end plate.
 - ⚠ The seal may be glued to the flange. Check that it is positioned in its housing.
- **2** Clean the vacuum filter with a blow gun (compressed air).
- **3** Unscrew the 4 ZNB SK02.5x8 screws using a TORX T6 screwdriver, then remove the flange.
- **4** Remove the vacuum check valve.
- **5** Clean the vacuum check valve with water and soap (no solvents).
- **6** Dry the vacuum check valve.
- **7** Place the vacuum check valve in its groove.
- **8** Position the flange and screw in the 4 ZNB SK02.5x8 screws using a TORX T6 screwdriver (tightening torque 0.45 N m).
- **9** Check that the seal is properly seated in its housing.
- **10** Tighten the 7 FHC screws to the front end plate using a 2 mm hexagon bit socket (tightening torque 0.45 N m).

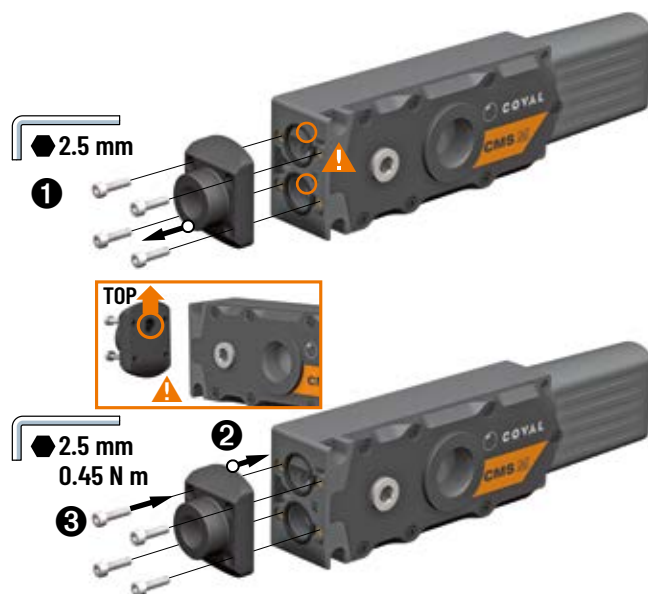


NOTE: Replacing the “vacuum” check valve and the vacuum filter. → Spare parts references: see sect. 13.

12.2.2. Replacing the Pressure Connection End Plate for CMSM90X...NVO

Spare part references: refer to sect. 13.

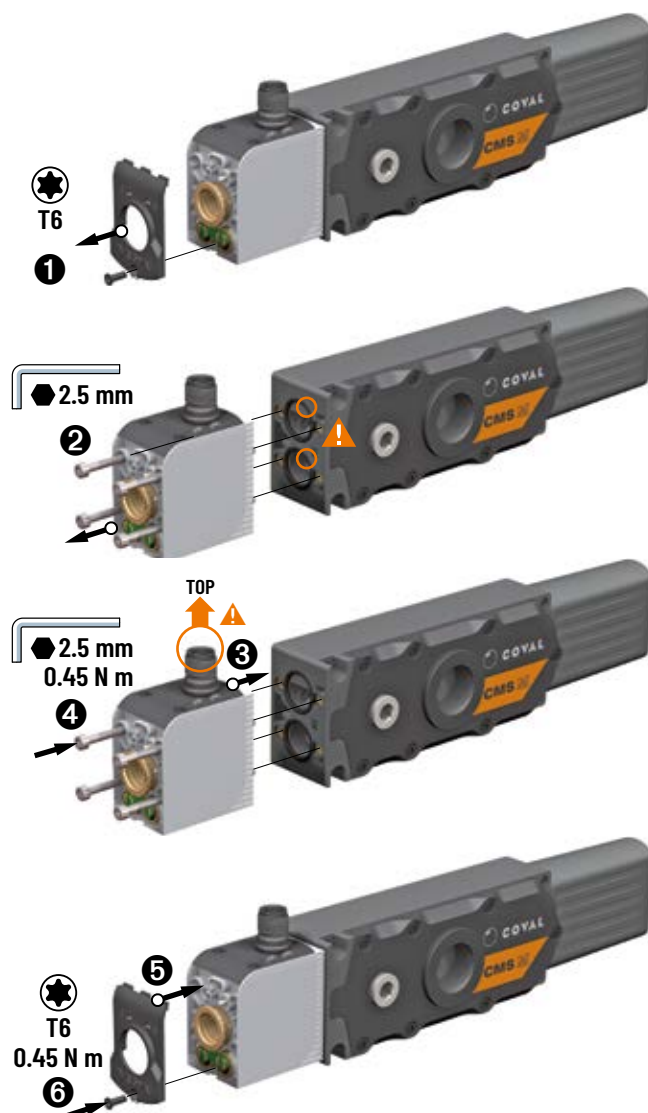
- **1** Remove the 4 M3x12 CHC screws using a 2.5 mm hexagon bit socket to remove the pressure connection end plate.
 - ⚠ Caution: Make sure that the 2 gaskets are properly placed in their groove.
 - If necessary, replace the 2 gaskets.
- **2** Replace the pressure connection end plate and set it in place.
 - ⚠ Pay attention to the orientation of the flange.
- **3** Tighten the 4 M3x12 CHC screws using 2.5 mm hexagon bit socket (tightening torque 0.45 N m).



12.2.3. Replacing the Valve Block for CMSM90X...SVO / VVO

Spare part references: refer to sect. 13.

- **1** Unscrew the TFX M2.5x8 screw from the flange using a TORX T6 screwdriver, then remove the flange.
- **2** Remove the 4 M3x40 CHC screws using a 2.5 mm hexagon bit socket to remove the valve block.
 - ⚠ Caution: Make sure that the 2 gaskets are properly placed in their groove.
 - If necessary, replace the 2 gaskets.
- **3** Replace the valve block and set the new one in place.
 - ⚠ Pay attention to the orientation of the valve block.
- **4** Tighten the 4 M3x40 CHC screws using 2.5 mm hexagon bit socket (tightening torque 0.45 N m).
- **5** Position the flange in its housing.
- **6** Tighten the TFX M2.5x8 screw using a TORX T6 screwdriver (tightening torque 0.45 N m).

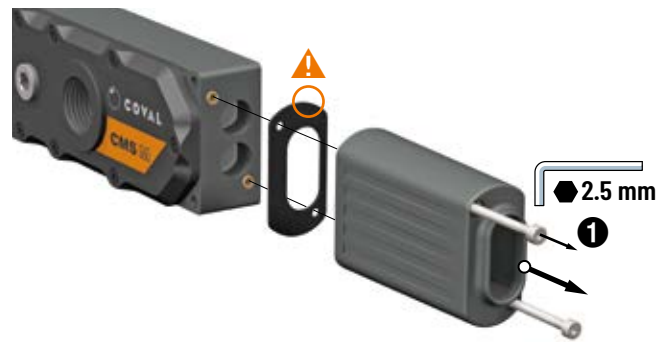


12.2.4. Replacing the Exhaust Options

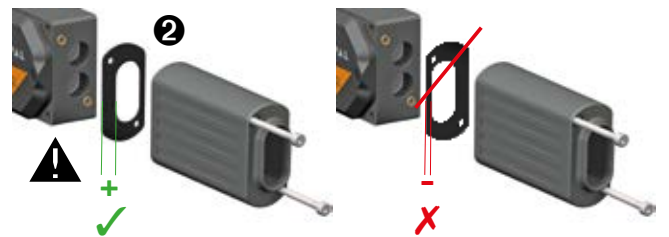
Spare part references: refer to sect. 13.

Through-type silencer (CMSM___K version)

- **1** Remove the 2 M3x70 CHC screws using a 2.5 mm hexagon bit socket to remove the silencer.
⚠ Caution: The gasket may be stuck to the silencer.



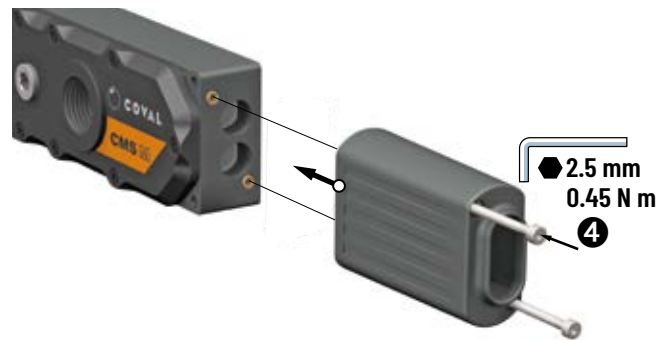
- **2** Set the gasket in place.
⚠ Pay attention to the orientation of the gasket.



- **3** Replace the silencer and set it in place.
⚠ Pay attention to the orientation of the silencer.

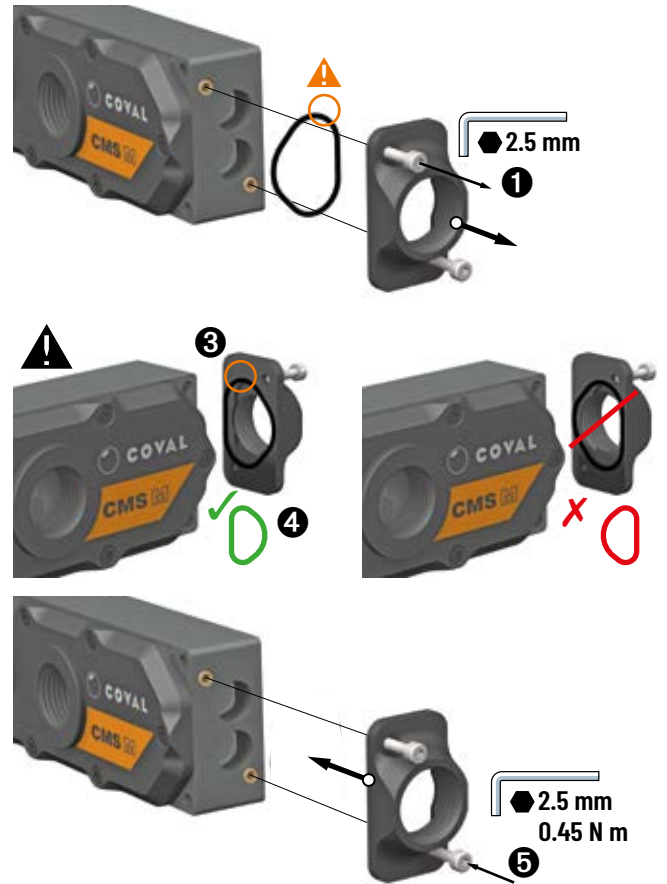


- **4** Tighten the 2 M3x70 CHC screws using a 2.5 mm hexagon bit socket (tightening torque 0.45 N m).

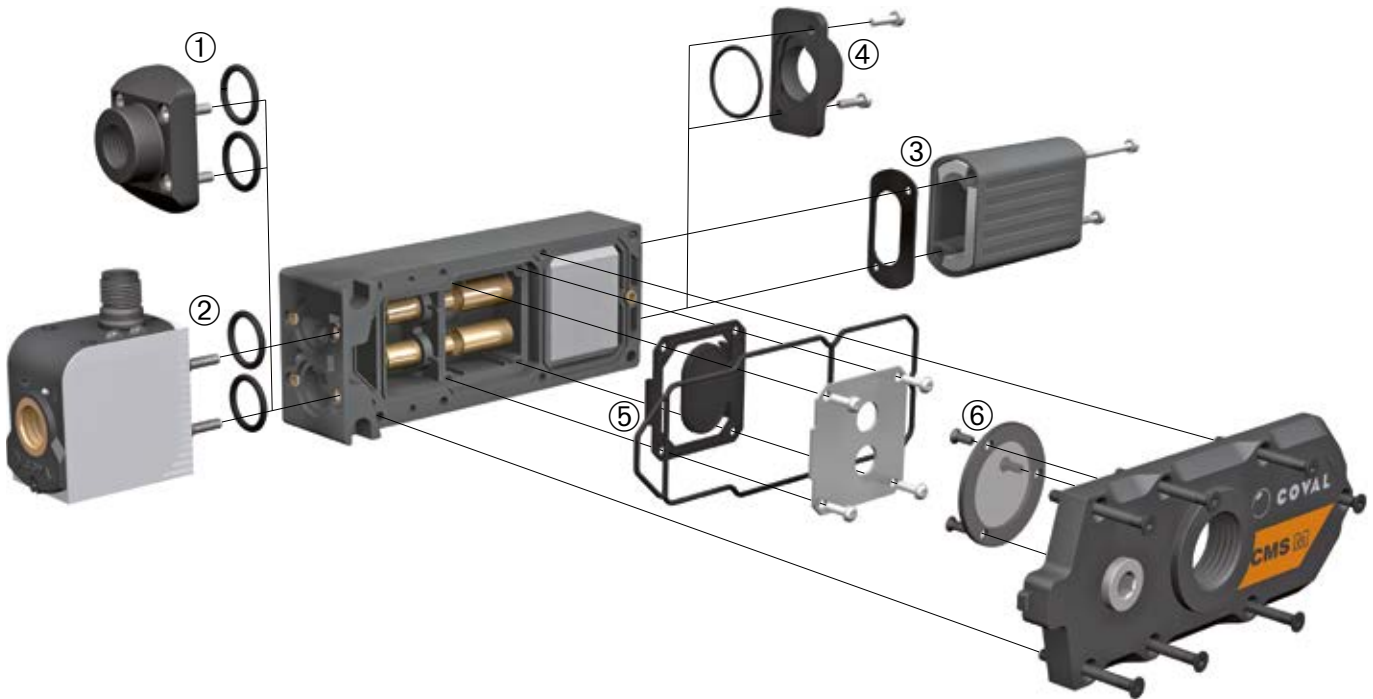


Exhaust Collector (CMSM___E version)

- **1** Remove the 2 M3x12 CHC screws using a 2.5 mm hexagon bit socket to remove the exhaust collector.
⚠ Caution: The gasket may be stuck to the exhaust collector.
- **2** Replace the exhaust collector.
- **3** Position the seal in its housing.
- **4** Position the exhaust collector.
⚠ Pay attention to the orientation of the exhaust collector.
- **5** Tighten the 2 M3x12 CHC screws using a 2.5 mm hexagon bit socket (tightening torque 0.45 N m).



13. SPARE PARTS



① Pressure connection end plate for CMS M without control (CMSM__NVO)

Designation	Item code
Compressed air connection end plate: • Interface with filter x 1 • O-ring 14X2 NBR x 2 • Zinc-plated CHC screw M3X12 ZN x 4	80009443



② Valve block for CMS M controlled (CMSM__SVO/VVO)

For model	Designation	Item code
CMSM90X__SVO__	• Valve block • O-ring 14X2 NBR x 2 • Zinc-plated CHC screw M3X40 ZN x 4	80009451
CMSM90X__VVO__	• Valve block • O-ring 14X2 NBR x 2 • Zinc-plated CHC screw M3X40 ZN x 4	80009452



Exhaust options for CMS M

③ THROUGH-TYPE SILENCER KIT CMS M K VERSION

Designation	Item code
• Through-type silencer x 1 • Flat gasket x1 • Zinc-plated CHC screw M3X70 ZN x 2	80009441



④ EXHAUST COLLECTOR KIT CMS M E VERSION

Designation	Item code
• Exhaust collector x 1 • O-ring 22x1.5 NBR x 1 • Zinc-plated CHC screw M3X12 ZN x 2	80009442



Maintenance kits

⑤ VACUUM CHECK VALVE KIT CMS M

Designation	Item code
• molded gasket x 1 • vacuum check valve x 1	80009444



⑥ VACUUM FILTER KIT CMS M

Designation	Item code
• Vacuum filter 350 µm x 1 • Filter washer x 1 • Screw for plastic TFX 2.5X6 ZN (45°) black nickel x 3.	80009445



14. GLOSSARY

- **I/O**: Input/Output
- **SIO**: Standard input/output
- **DO**: Digital output

15. WARRANTY

We provide a warranty for this product and for any COVAL spare parts in accordance with our general terms of sale (GTS).

The exclusive use of COVAL spare parts is a condition required to ensure the product's flawless operation and we will not be held liable for any damage resulting from the use of spare parts or accessories that are not made by COVAL.

Wearing parts are excluded from the warranty.

16. RECYCLING



Waste from electrical and electronic equipment (WEEE) is a category of waste consisting of equipment at the end of its life cycle that uses electricity or electromagnetic fields to operate and designed to be used at a voltage that does not exceed 1000 volts for alternating current and 1500 volts for direct current.

CMS M mini vacuum pumps with control, CMSM_**SVO/VVO**_, are products that fall under this category of waste.

Waste from electrical and electronic equipment (WEEE) requires separately collection and recycling according to the European directive 2012/19/EU and to French legislation: decree no. 2014-928 from 19 August 2014.

COVAL is a member of ECOSYSTEM for the collection, decontamination and recycling of professional WEEE. If you own any COVAL WEEE products, contact ECOSYSTEM who will collect and treat the products. (Collection only applies to France)

<https://www.ecosystem.eco/>

17. EC DECLARATION

COVAL, the manufacturer, confirms that the product "CMS M multi-stage mini vacuum pump" described in this manual meets the following applicable EC directives:

- 2014/30/EU Electromagnetic Compatibility (EMC)
- 2011/65/EU Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment

The following harmonized standards have been applied:

- IEC 61000-6-2:2016 Electromagnetic Compatibility (EMC) – Immunity standard for industrial environments
- IEC 61000-6-4:2006/A1:2010 Electromagnetic Compatibility (EMC) – Emission standard for industrial environments
- EN 61000-4-2:2009 Electromagnetic Compatibility (EMC) – Part 4-2: Testing and measurement techniques – Electrostatic discharge immunity test

18. CERTIFICATES/TESTS

EMC	IEC 61000-6-2 (2016) Electromagnetic Compatibility (EMC). Generic standards - Immunity standard for industrial environments	NF EN 61000-4-2 (2009) Electrostatic discharges (ESD)	
		NF EN 61000-4-3 (2006) Radiated, radio-frequency, electromagnetic fields	
		NF EN 61000-4-4 (2013) Electrical fast transients (bursts)	
		NF EN 61000-4-6 (2014) Conducted disturbances, induced by radio-frequency fields	
	IEC 61000-6-4 (2007) + A1(2010) Electromagnetic Compatibility (EMC). Generic standards - Emission standard for industrial environments	NF EN 61000-4-8 (2010) Magnetic fields	
		NF EN 55011 (06/2016) NF EN 55032 (12/2015) Conducted emissions	
		NF EN 55011 (06/2016) NF EN 55032 (12/2015) Radiated emissions	
Degrees of protection	NF EN 60529 (2014)		IP40
	NF EN 60068-2-75 (2015)		IK 06
Temperature variations	IEC 60068-2-14 (2009)		0 °C +50 °C (32°F to 122°F)
Humidity	IEC 60068-2-30 (2005)		10 to 85%
Vibrations	NF EN 60068-2-6 (2008)		5 g
Shocks	NF EN 60068-2-6 (2008)		15 g



COVAL
vacuum managers

A TECHNOLOGICAL PARTNER ON A GLOBAL SCALE

Located in the South of France, COVAL SAS designs, produces, and markets high-performance vacuum components and systems for industrial applications in all sectors worldwide.

An ISO 9001: V2015 certified company, COVAL innovates globally in vacuum handling. Our optimized components integrate intelligent and reliable functionalities, adapt to your industrial context, and safely improve your productivity.

With a strong spirit of innovation and technological advancements, the COVAL team is now recognized as an expert in developing reliable, economical, and productive custom solutions.

COVAL's references are found in major industrial sectors such as packaging, food processing, automotive, plastics, aerospace, and robotics, where vacuum handling is crucial for efficiency and productivity.

COVAL markets its products and services worldwide through its subsidiaries and authorized distributor network. Always attentive to its customers, COVAL supports the implementation of its solutions with a continuous and attentive relationship.



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