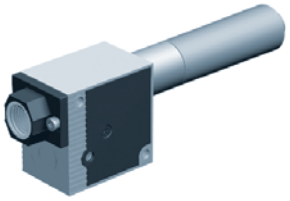
Modular Vacuum Pumps

Chapter 7

GVP

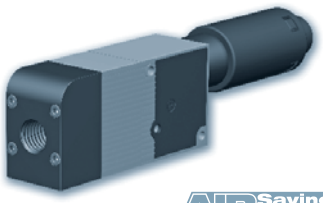


Modular Vacuum Pumps

- Nozzle Ø: 1.2 ; 1.5 ; 2 ; 2.5 ; 3 mm
- Suction flow rate: 1.59 to 15.9 SCFM
- Optimum supply pressure: 4 bar
- Integrated silencer
- Modular design with interchangeable options
- Compact
- Optimized performance for handling all types of objects
- Gripping time two times faster than multi-stage technology
- Silent operation
- No clogging
- Adaptable to all industries

P 7/3

GEMP

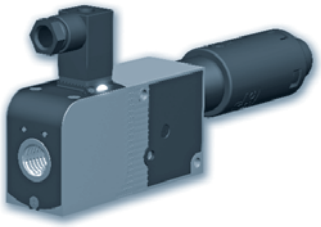


Simple Vacuum Pumps with ASR (Air Saving Regulator)

- Nozzle Ø 1.2 ; 1.5 ; 2 ; 2.5 ; 3 mm
- 2 levels of vacuum: 60% and 85%
- Suction flow rate between 2.54 to 13.6 SCFM
- Integrated supply pressure regulation (ASR)
- Integrated silencer
- Very compact and light-weight
- Ideal for all applications requiring an outside pressure regulator
- Exceptional energy savings thanks to automatic pressure regulation at 4 bar
- Optimized performance for handling all types of objects
- Silent operation
- No clogging

P 7/5

GVPS

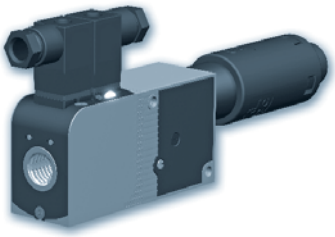


Vacuum Pumps with Electric Vacuum Control

- Nozzle Ø: 1.2 ; 1.5 ; 2 ; 2.5 ; 3 mm
- Suction flow rate: 1.59 to 15.9 SCFM
- Optimum supply pressure: 4 bar
- Integrated electric vacuum control
- Integrated silencer
- Modular design with interchangeable options
- Compact
- Optimized performance for handling all types of objects
- Silent operation
- No clogging
- Adaptable to all industries

P 7/7

GVPD



Vacuum Pumps with Blow-off and Electric Vacuum Control

- Nozzle Ø: 1.2 ; 1.5 ; 2 ; 2.5 ; 3 mm
- Suction flow rate: 1.59 to 15.9 SCFM
- Optimum supply pressure: 4 bar
- Integrated vacuum control and blow-off
- Integrated silencer
- Adjustable blow-off flow
- Modular design with interchangeable options
- Compact
- Optimized performance for handling all types of objects
- Silent operation
- No clogging
- Adaptable to all industries

P 7/9

GVP
Modular Vacuum Pumps

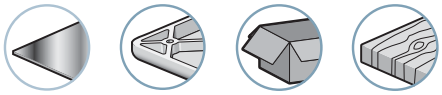
The GVP series vacuum pumps are the simplest in the modular range. They exist in 5 levels of power (suction rate) and 3 different levels of maximum vacuum:

- Version X (50% vacuum for very porous products).
- Version T (75% vacuum for porous products).
- Version N (85% vacuum for air-tight products).

For the same nozzle diameter, the suction flow rate increases proportionally to the decrease in the maximum vacuum level.

In addition to suction pads, they can also be used for dosing liquid, spraying and tank depressurization.

Industry-specific applications



Characteristics

Model	Ø Nozzle (mm)	Air consumed (SCFM)	Max. vacuum (%)			Air drawn in (SCFM)			At air pressure (bar)
			X	T	N	X	T	N	
GVP 12	1.2	2.37	40	75	85	5.30	2.22	1.59	4
GVP 15	1.5	3.53	50	75	85	6.36	3.35	2.47	4
GVP 20	2	6.36	50	75	85	8.83	5.65	4.41	4
GVP 25	2.5	9.53	50	75	85	12.71	8.48	7.06	4
GVP 30	3	14.13	50	75	85	15.90	11.65	9.36	4

As standard, versions N and T are delivered with silencer S and version X with silencer K. Only exception, the GVP 30 is fitted with silencer K.

Advantages

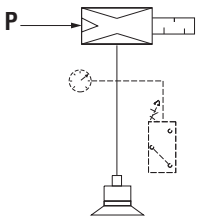
- Adaptable to all industries
- Optimized performance for handling all types of objects
- Modular design with interchangeable options
- Light and compact
- Silent operation
- No clogging thanks to the through type silencer

Evacuation Time in Seconds per Liter

% vacuum	10 %			20 %			30 %			40 %			50 %			60 %			70 %			80 %			85 %		
versions	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N
GVP12	0.05	0.10	0.14	0.11	0.22	0.30	0.22	0.37	0.49	0.62	0.55	0.71	-	0.78	0.97	-	1.16	1.33	-	1.92	1.81	-	-	2.66	-	-	3.42
GVP15	0.04	0.07	0.09	0.09	0.15	0.20	0.15	0.24	0.32	0.27	0.36	0.46	-	0.52	0.63	-	0.77	0.85	-	1.27	1.16	-	-	1.71	-	-	2.20
GVP20	0.03	0.04	0.06	0.06	0.09	0.12	0.11	0.14	0.19	0.19	0.22	0.28	-	0.31	0.38	-	0.46	0.52	-	0.76	0.71	-	-	1.04	-	-	2.13
GVP25	0.02	0.03	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.14	0.14	0.16	-	0.21	0.22	-	0.30	0.30	-	0.50	0.41	-	-	0.60	-	-	0.77
GVP30	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.10	0.12	-	0.15	0.17	-	0.22	0.23	-	0.37	0.31	-	-	0.45	-	-	0.58

Specifications

Supply	Non-lubricated filtered air, pressure 2 to 6 bar
Optimum pressure	4 bar
Weight	100 to 265g
Material	POM - 2017A – Cu Zn
Temperature	32 to 176 °F



For all orders, please specify:
Model + Nozzle Ø + % vacuum + Silencer + C.A. fitting
e.g.: GVP30NK14

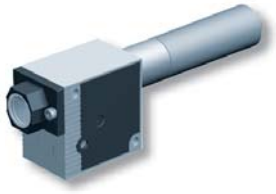
1: Model	2: Nozzle diameter		3: % vacuum		4: Silencer		5: C.A. fitting	
GVP	12	1.2 mm	X	50 % vacuum	-	Without silencer	14	G1/4" Female
	15	1.5 mm	T	75 % vacuum	S (1)	Diffuser		
	20	2 mm	N	85 % vacuum	K	Through-type		
	25	2.5 mm						
	30	3 mm						

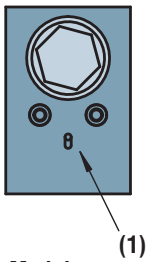
(1) no silencer for nozzle Ø 30.

GVP

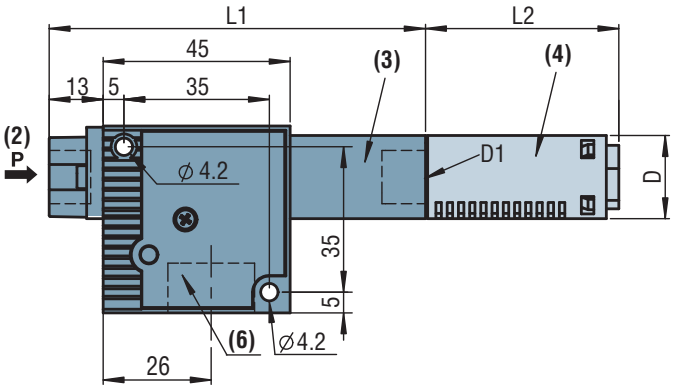
Modular Vacuum Pumps

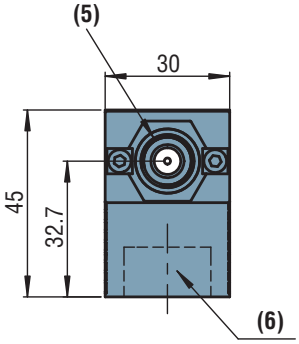
Dimensions





Models





	L1		L2			D		D1	
	X	N/T	S(N/T)	K(N/T)	K(X)	X	N/T	X	N/T
GVP12	76	81	46	68	121	30	20	G1/2 "-F	G1/4 "-F
GVP15	76	91	46	68	121	30	20	G1/2 "-F	G1/4 "-F
GVP20	76	76	62	121	121	30	30	G1/2 "-F	G1/2 "-F
GVP25	76	76	62	121	121	30	30	G1/2 "-F	G1/2 "-F
GVP30	148	148	-	121	121	30	30	G 1/2 "-F	G1/2 "-F

(**1**) Vacuum switch option mounting zone
(**2**) 4 bar compressed air supply
(**3**) Exhaust
(**4**) Silencer model S or K
(**5**) G1/4"-F
(**6**) Vacuum G1/2"-F

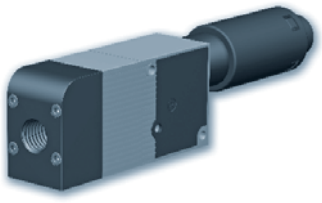
Options
- Vacuum switches see page 7/11 and 7/12
- Other options see pages 7/12 and 7/13
- Silencer see page 10/2.

Curves
See page 7/14

Note: all dimensions are in mm

GEMP

Simple Vacuum Pump with ASR

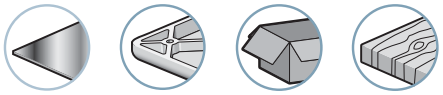


AIR Saving Regulator

The GEMP series vacuum pumps are the simplest in the energy-saving range. They automatically regulate the supply pressure to an optimal 4 bar thanks to an integrated pressure regulator (ASR). Energy savings are achieved regardless of the pressure in the compressed air network and without penalizing other applications which require more than 4 bar.

GEMP pumps therefore reduce both energy consumption and the noise level.

Industry-specific applications



Characteristics

Models	Ø Nozzle (mm)	Air consumed (SCFM)	Maximum vacuum (%)	Air drawn in (SCFM)	At air pressure (bar)
GEMP60x12	1.2	2.30	60	2.54	4
GEMP60x15	1.5	3.43	60	3.88	4
GEMP60x20	2.0	6.32	60	6.67	4
GEMP60x25	2.5	9.18	60	9.71	4
GEMP60x30	3.0	13.60	60	13.60	4
GEMP90x12	1.2	2.30	85	1.77	4
GEMP90x15	1.5	3.43	85	2.65	4
GEMP90x20	2.0	6.32	85	4.41	4
GEMP90x25	2.5	9.18	85	7.06	4
GEMP90x30	3.0	13.60	85	8.65	4

Advantages

- Modular design with interchangeable options
- Compact and light
- Exceptional energy savings
- Optimized performance for all types of applications
- Silent operation
- No clogging

Evacuation Time in Seconds per Liter

% vacuum	10	20	30	40	50	60	70	80	85
GEMP60x12	0.09	0.2	0.35	0.55	0.9	-	-	-	-
GEMP60x15	0.06	0.14	0.23	0.36	0.59	-	-	-	-
GEMP60x20	0.04	0.08	0.13	0.21	0.34	-	-	-	-
GEMP60x25	0.03	0.05	0.09	0.14	0.24	-	-	-	-
GEMP60x30	0.01	0.04	0.07	0.10	0.17	-	-	-	-
GEMP90x12	0.13	0.27	0.44	0.64	0.88	1.19	1.62	2.37	3.12
GEMP90x15	0.09	0.18	0.29	0.42	0.58	0.79	1.08	1.59	2.08
GEMP90x20	0.05	0.11	0.18	0.25	0.35	0.46	0.65	0.95	1.25
GEMP90x25	0.03	0.07	0.11	0.16	0.22	0.3	0.41	0.59	0.78
GEMP90x30	0.03	0.06	0.09	0.13	0.18	0.24	0.33	0.48	0.64

Specifications

Supply	Non-lubricated filtered air, 2 to 8 bar
Optimum pressure	4 bar
Weight	100 to 265g
Material	POM - 2017A – Cu Zn – PA6 15 % FV
Operating temperature	32 to 176 °F

Vacuum Switch Characteristics

See pages 7/11 and 7/12.

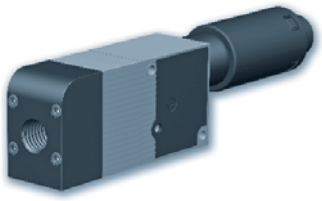
For all orders, please specify:
Model + % vacuum + X + Ø Nozzle + Vacuum switch.
e.g.: GEMP90X12VA

1: Model	2: % vacuum		X	4: Nozzle diameter		5: Vacuum switch	
GEMP	60	max. 60% vacuum. (porous objects)	X	12	1.2 mm	VA	electronic display
				15	1.5 mm	VB	electronic
	90	max. 85% vacuum (air-tight objects)		20	2 mm	VC	with electrical contact
				25	2.5 mm	VO	without vacuum switch
				30	3 mm		

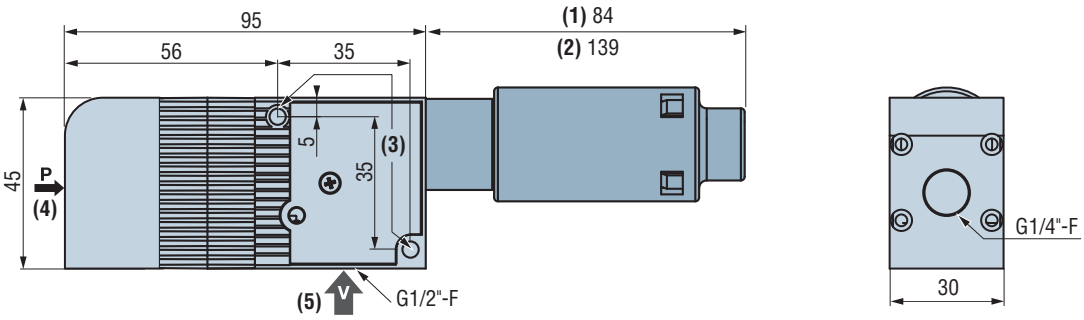
GEMP

Simple Vacuum Pump with ASR

Dimensions and Performance Curves

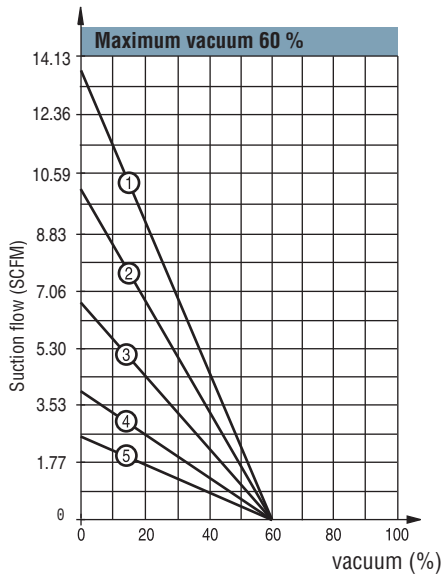


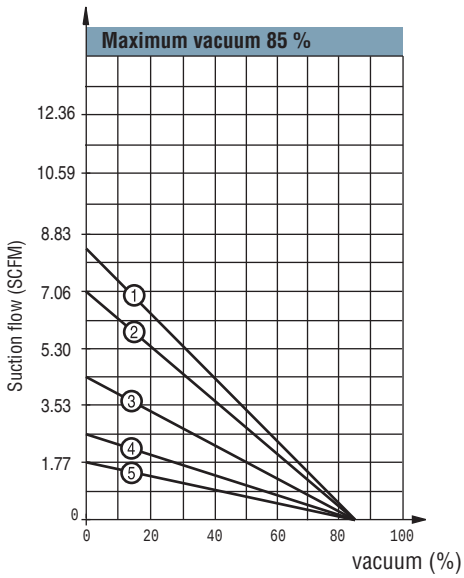
Dimensions



(**1**) silencer for nozzles Ø 1.2 or 1.5 mm (GEMP--X12--, GEMP--X15--)
(**2**) silencer for nozzles Ø 2 - 2.5 or 3 mm (GEMP--X20--, GEMP--X25--, GEMP--X30--)
(**3**) fittings Ø 4.2 mm
(**4**) G1/4"-F pressure fitting: pressure at 4 bar
(**5**) G1/2"-F vacuum fitting

Performance Curves





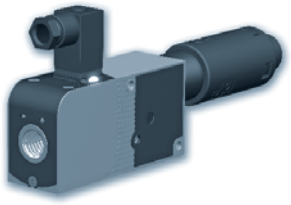
1 - GEMP60X30
2 - GEMP60X25
3 - GEMP60X20
4 - GEMP60X15
5 - GEMP60X12

1 - GEMP90X30
2 - GEMP90X25
3 - GEMP90X20
4 - GEMP90X15
5 - GEMP90X12

Option
■ Vacuum switches see pages 7/11 and 7/12.

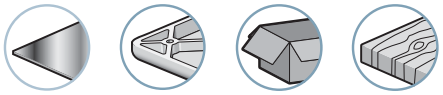
Note: all dimensions are in mm

GVPS
Vacuum Pumps with Electric Vacuum Control



GVPS series vacuum pumps control vacuum generation using an integrated valve. This installation simplifies wiring and reduces vacuum pump response times. The valve is electrically controlled (24 V DC).

Industry-specific applications



Characteristics

Model	Ø Nozzle (mm)	Air consumed (SCFM)	Max. vacuum (%)			Air drawn in (SCFM)			At air pressure (bar)
			X	T	N	X	T	N	
GVPS 12	1.2	2.37	40	75	85	5.30	2.22	1.59	4
GVPS 15	1.5	3.53	50	75	85	6.36	3.35	2.47	4
GVPS 20	2	6.36	50	75	85	8.83	5.65	4.41	4
GVPS 25	2.5	9.53	50	75	85	12.71	8.48	7.06	4
GVPS 30	3	14.13	50	75	85	15.90	11.65	9.36	4

As standard, versions N and T are delivered with silencer S and version X with silencer K. Only exception, the GVPS 30 is fitted with silencer K.

Advantages

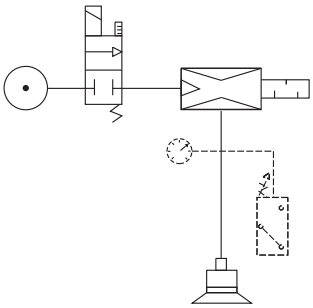
- Integrated electric vacuum control
- Adaptable to all industries
- Optimized performance for handling all types of objects
- Reduced wiring and easy-to-use
- Modular design with interchangeable options
- Light and compact
- No clogging thanks to the through type silencer
- Silent operation

Evacuation Time in Seconds per Liter

% vacuum	10			20			30			40			50			60			70			80			85		
versions	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N
GVPS 12	0.05	0.10	0.14	0.11	0.22	0.30	0.22	0.37	0.49	0.62	0.55	0.71	-	0.78	0.97	-	1.16	1.33	-	1.92	1.81	-	-	2.66	-	-	3.42
GVPS 15	0.04	0.07	0.09	0.09	0.15	0.20	0.15	0.24	0.32	0.27	0.36	0.46	-	0.52	0.63	-	0.77	0.85	-	1.27	1.16	-	-	1.71	-	-	2.20
GVPS 20	0.03	0.04	0.06	0.06	0.09	0.12	0.11	0.14	0.19	0.19	0.22	0.28	-	0.31	0.38	-	0.46	0.52	-	0.76	0.71	-	-	1.04	-	-	2.13
GVPS 25	0.02	0.03	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.14	0.14	0.16	-	0.21	0.22	-	0.30	0.30	-	0.50	0.41	-	-	0.60	-	-	0.77
GVPS 30	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.10	0.12	-	0.15	0.17	-	0.22	0.23	-	0.37	0.31	-	-	0.45	-	-	0.58

Specifications

Supply	Non-lubricated filtered air, 2 to 6 bar
Optimum press	4 bar
Voltage	24 V DC
Power	0.7 W
Materials	POM - 2017A – Cu Zn – PA6 15 % FV
Temperature	32 to 140 °F
Number of valve operations	10 million
Operating frequency	Maximum 2 Hz
Function	NC (NO on request)

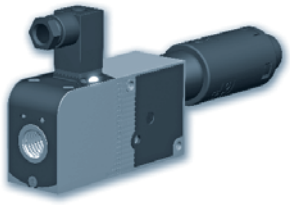


For all orders, please specify:
Model + Nozzle Ø + % Vide + Silencer + Fitting + Control
e.g.: GVPS30NK14E1

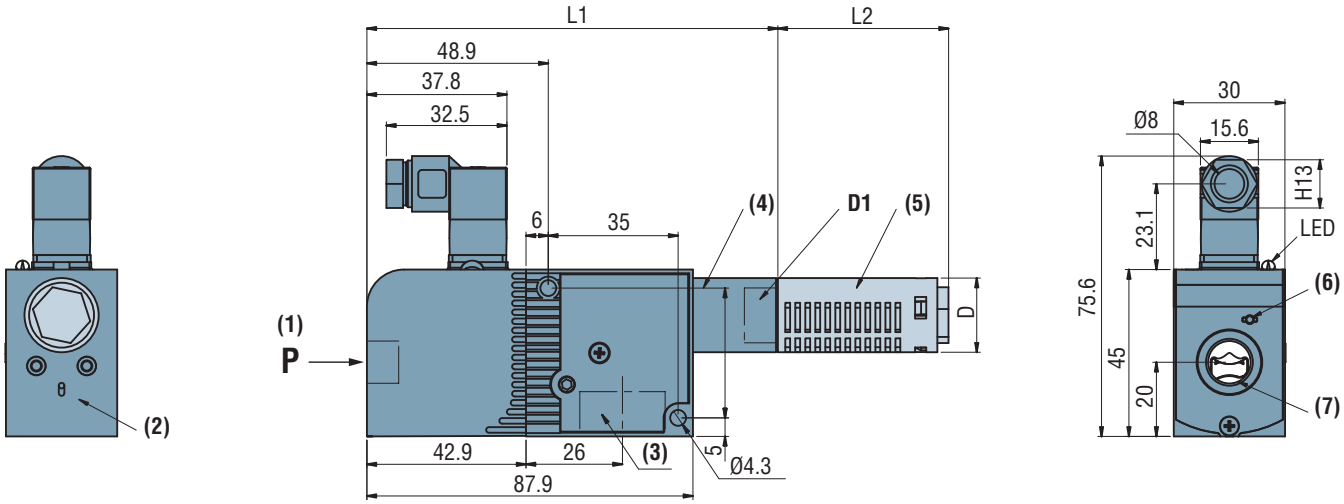
1: Model	2: Nozzle diameter		3: % vacuum		4: Silencer		5: C.A. fitting		6: Controls	
GVPS	12	1.2 mm	X	50 % vacuum	-	Without silencer	14	G1/4" Female	E1	24 VCC NC
	15	1.5 mm	T	75 % vacuum	S (1)	Diffuser			E...	Other voltages (2)
	20	2 mm	N	85 % vacuum	K	Through-type				
	25	2.5 mm								
	30	3 mm								

(1) No silencer (S) for nozzle Ø 30. (2) On request

GVPS
Vacuum Pumps with Electric Vacuum Control



Dimensions



Models	L1		L2			D		D1	
	X	N/T	S(N/T)	K(N/T)	K(X)	X	N/T	X	N/T
GVPS12	106	111	46	68	121	30	20	G1/2"-F	G1/4"-F
GVPS15	106	121	46	68	121	30	20	G1/2"-F	G1/4"-F
GVPS20	106	106	62	121	121	30	30	G1/2"-F	G1/2"-F
GVPS25	106	106	62	121	121	30	30	G1/2"-F	G1/2"-F
GVPS30	178	178	-	121	121	30	30	G1/2"-F	G1/2"-F

(**1**) 4 bar compressed air supply
(**2**) Vacuum switch option mounting zone
(**3**) Vacuum G1/2"-F
(**4**) Exhaust
(**5**) Silencer model S or K
(**6**) Manual controls
(**7**) G1/4"-F

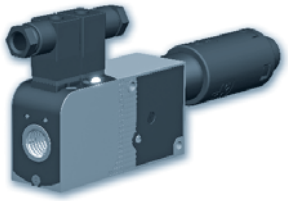
Options
- Vacuum switches see pages 7/11 and 7/12
- Other options see pages 7/12 and 7/13
- Silencer see page 10/2.

Curves
See page 7/14

Note: all dimensions are in mm

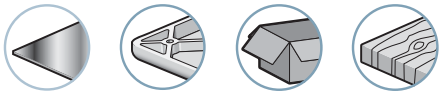
GVPD

Vacuum Pumps with Blow-off and Electric Vacuum Control



GVPD series vacuum pumps control vacuum generation and blow-off (adjustable flow). Controlling the force and duration of blow-off accelerates gripping/release rates, cleans objects before gripping and improves releasing process for large diameter suction pads.

Industry-specific applications



Characteristics

Model	Ø Nozzle (mm)	Air consumed (SCFM)	Max. vacuum (%)			Air drawn in (SCFM)			At air pressure (bar)
			X	T	N	X	T	N	
GVPD 12	1.2	2.37	40	75	85	5.30	2.22	1.59	4
GVPD 15	1.5	3.53	50	75	85	6.36	3.35	2.47	4
GVPD 20	2	6.36	50	75	85	8.83	5.65	4.41	4
GVPD 25	2.5	9.53	50	75	85	12.71	8.48	7.06	4
GVPD 30	3	14.13	50	75	85	15.90	11.65	9.36	4

As standard, versions N and T are delivered with silencer S and version X with silencer K. Only exception, the GVPD 30 is fitted with silencer K.

Advantages

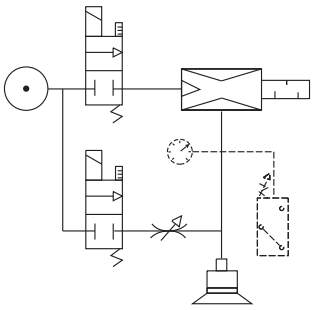
- Integrated electric vacuum and blow-off control
- Adaptable to all industries
- Optimized performance for handling all types of objects
- Reduced wiring and easy-to-use
- Modular design with interchangeable options
- Light and compact
- No clogging thanks to the through type silencer
- Silent operation

Evacuation Time in Seconds per Liter

% vacuum	10			20			30			40			50			60			70			80			85		
versions	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N	X	T	N
GVPD 12	0.05	0.10	0.14	0.11	0.22	0.30	0.22	0.37	0.49	0.62	0.55	0.71	-	0.78	0.97	-	1.16	1.33	-	1.92	1.81	-	-	2.66	-	-	3.42
GVPD 15	0.04	0.07	0.09	0.09	0.15	0.20	0.15	0.24	0.32	0.27	0.36	0.46	-	0.52	0.63	-	0.77	0.85	-	1.27	1.16	-	-	1.71	-	-	2.20
GVPD 20	0.03	0.04	0.06	0.06	0.09	0.12	0.11	0.14	0.19	0.19	0.22	0.28	-	0.31	0.38	-	0.46	0.52	-	0.76	0.71	-	-	1.04	-	-	2.13
GVPD 25	0.02	0.03	0.03	0.04	0.06	0.07	0.08	0.10	0.11	0.14	0.14	0.16	-	0.21	0.22	-	0.30	0.30	-	0.50	0.41	-	-	0.60	-	-	0.77
GVPD 30	0.01	0.02	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.11	0.10	0.12	-	0.15	0.17	-	0.22	0.23	-	0.37	0.31	-	-	0.45	-	-	0.58

Specifications

Supply	Non-lubricated filtered air, 2 to 6 bar
Optimum press	4 bar
Voltage	24 V DC
Power	0.7 W
Materials	POM - 2017A – Cu Zn – PA6 15 % FV
Temperature	32 to 140 °F
Number of valve operations	10 million
Operating frequency	Maximum 2 Hz
Function	NC (NO on request)



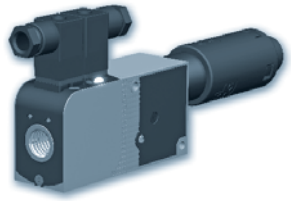
For all orders, please specify:
Model + Nozzle Ø + % Vide + Silencer + Fitting + Control
e.g.: GVPD25NK14E1

1: Model	2: Nozzle diameter		3: % vacuum		4: Silencer		5: C.A. fitting		6: Controls	
GVPD	12	1.2 mm	X	50 % vacuum	-	Without silencer	14	G1/4" Female	E1	24 VDC N.F.
	15	1.5 mm	T	75 % vacuum	S (1)	Diffuser			E...	Other voltages (2)
	20	2 mm	N	85 % vacuum	K	Through-type				
	25	2.5 mm								
	30	3 mm								

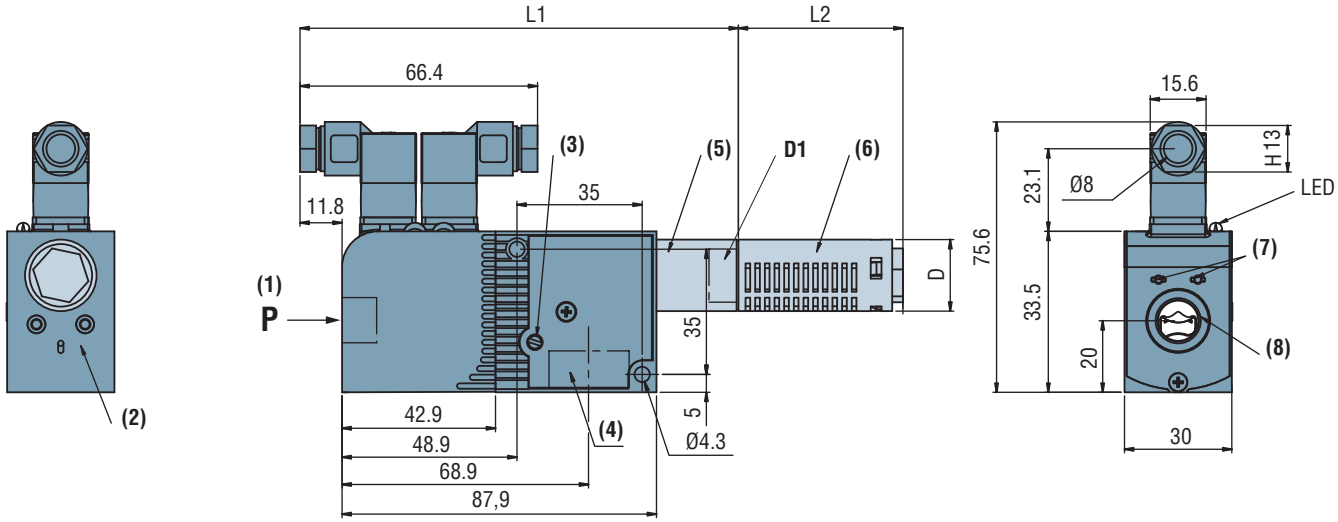
(1) No silencer (S) for nozzle Ø 30. (2) On request

GVPD

Vacuum Pumps with Blow-off and Electric Vacuum Control



Dimensions



Models	L1		L2			D		D1	
	X	N/T	S(N/T)	K(N/T)	K(X)	X	N/T	X	N/T
GVPD12	118	123	46	68	121	30	20	G1/2"-F	G1/4"-F
GVPD15	118	133	46	68	121	30	20	G1/2"-F	G1/4"-F
GVPD20	118	118	62	121	121	30	30	G1/2"-F	G1/2"-F
GVPD25	118	118	62	121	121	30	30	G1/2"-F	G1/2"-F
GVPS30	190	190	-	121	121	30	30	G1/2"-F	G1/2"-F

(**1**) 4 bar compressed air supply
(**2**) Vacuum switch option mounting zone
(**3**) Blow-off adjustment
(**4**) Vacuum G1/2"-F
(**5**) Exhaust
(**6**) Silencer model S or K
(**7**) Manual controls
(**8**) G1/4"-F

Options
- Vacuum switches see pages 7/11 and 7/12
- Other options see pages 7/12 and 7/13
- Silencer see page 10/2.

Curves
See page 7/14

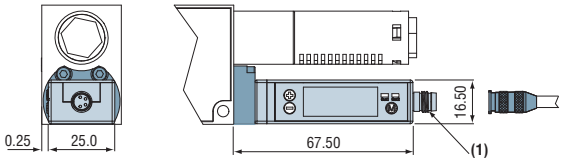
Note: all dimensions are in mm

Customer-mounted
Modular Vacuum Pump Options

Electronic Vacuum Switch with Display

GVO PSA 100 C option

(See exact characteristics page 11/4)



Delivered with M8 cable (2 meters)
(1) M8 connector

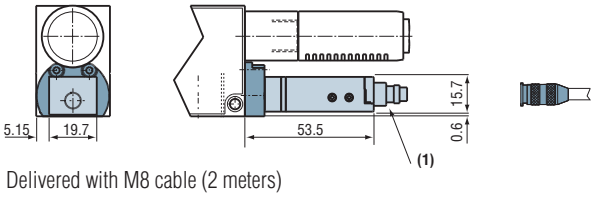
Our top-of-the-range electronic vacuum switch, the PSA 100C has an LED display showing the vacuum value in different units. It also has two separate outputs with independently regulated hysteresis, NO or NC

- PNP as standard
- M8 connector.
- Connection cable, see page 10/9.

Electronic Vacuum Switch

GVO PSP 100 C (M5), PSP 100 L (M5) option

(See characteristics page 11/7)



Delivered with M8 cable (2 meters)
(1) M8 4 pole connector

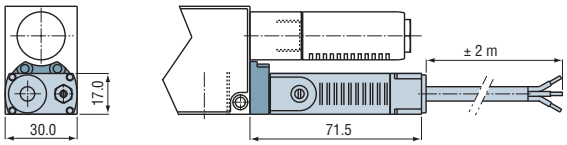
The vacuum data collected is always very reliable even with a large number of suction pads, thanks to the precision of the PSP 100. It has one output with hysteresis adjustment.

- PNP as standard
- M8 connector.
- Connection cable, see page 10/9.

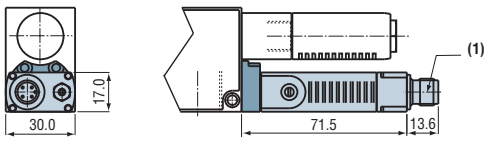
Vacuum Switch with Electrical Signal

GVO PSE 100 E or EC option

(See characteristics page 11/9)



GVO PSE 100 E with cable (length 2 metres)



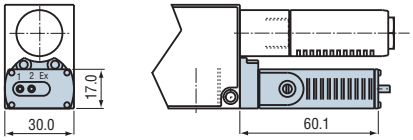
GVO PSE 100 EC with M12 connector (delivered without connection cable)
(1) M12 male connector

The PSE 100 E or EC vacuum switch indicates the level of vacuum in the suction pad circuit. For a small number of suction pads (5 to 10 maximum). This indication is enough to prove an object is gripped. Hysteresis (125mbar) must also be taken into account according to the use of the vacuum switch data.
Check that the vacuum pump supply pressure generates a level of pressure equal to the threshold setting.
For connection cable, see page 10/9.

Customer-mounted
Modular Vacuum Pump Options

Vacuum Switch with Pneumatic Signal

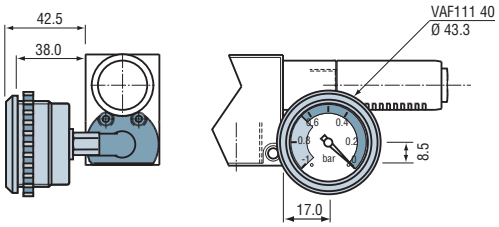
GVO PSE 100 P NO or NC option (see characteristics page 11/10)



For use in fully pneumatic applications or explosive environments. The vacuum switch enables a pressure data message to be given when a vacuum threshold is reached.

Vacuum Gauge

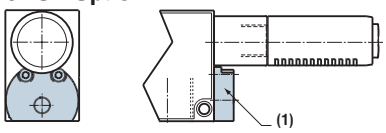
GVO VAF 111 40 option (See characteristics page 11/12)



The vacuum gauge displays the level of vacuum in the suction pad circuit. This option makes it simple to keep the status of the vacuum circuit under constant surveillance.

Plug to Shut off Vacuum Data

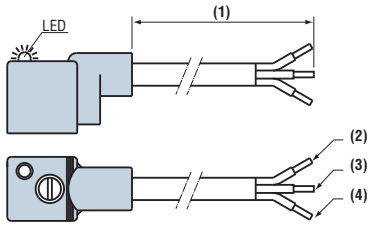
GVOB Option



(1) Plug

This plug option makes it possible to shut off the vacuum signal to avoid affecting operation of the vacuum pump if a GVO option is removed.

GVO CA 24 V option, (110 V or 220 V on request)



(1) L(2 meters) - (2) Brown - (3) Blue - (4) Yellow-Green - (Earth)

With anti-interference on electric valve control: factory-mounted.
Use of an anti-interference is recommended on the valve control when using electrically-controlled pumps. This anti-interference protects the equipment and ensures the valve control is reliable in electrically polluted environments.

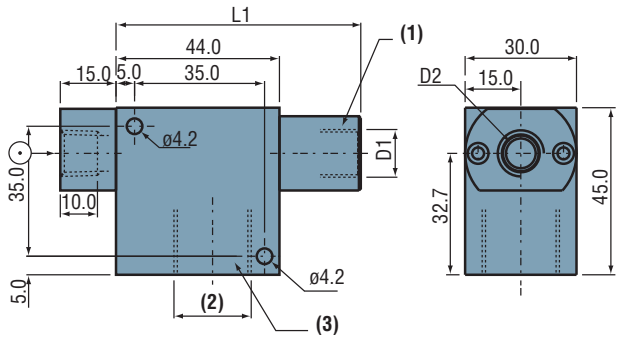
- As standard for 24V DC and CA control
- On request for other models

Factory-mounted
Modular Vacuum Pump Options

GVO AL and GVO AL NPT option (for GVP vacuum pump)

Body and flange G1/4"-F Gas in aluminum (on request).

■ Note: It is no longer possible to mount vacuum gauge options.

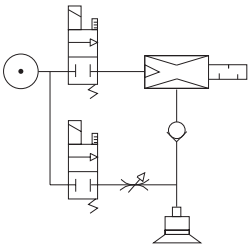


L1 =	L1 GVP (plastic) - 1mm	(**1**)	Exhaust
D1 =	D1 (GVP N, T and X)	(**2**)	G1/2"-F
D2 =	G1/4"-F	(**3**)	Vacuum
	1/4 NPT (on request)		

Check Valve Option - Ref. 02090101 (for GVPD vacuum pump)

Check valve option.

Requires blow-off downstream from the valve for release.

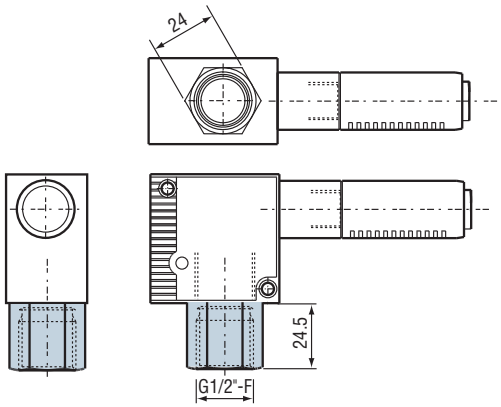


GVO P Option

With G1/2"-F protective extension.

The G1/2"-F extension is recommended for double valve models or with pneumatic vacuum switch to protect components during mounting or installation.

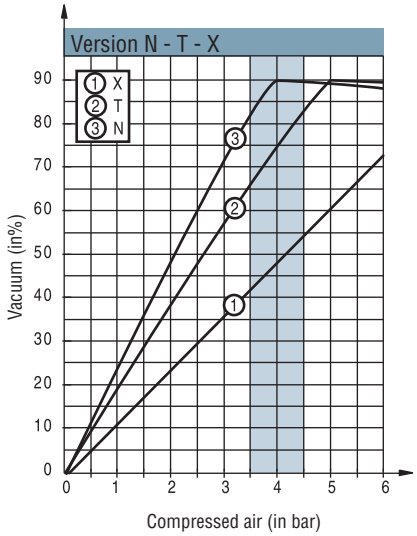
The extension is fitted with a 400 micron stainless steel filtration grid as standard.



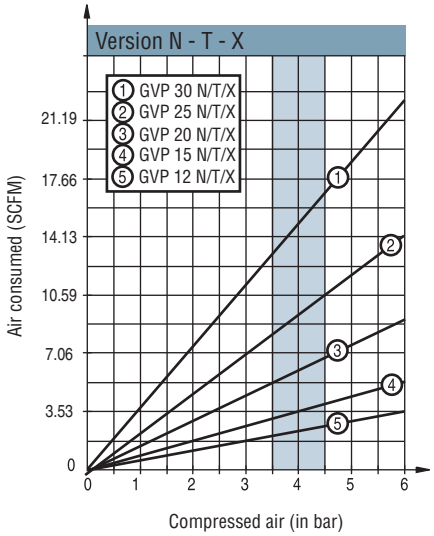
GVP - GVPS - GVPD

Performance Curves for Modular Vacuum Pumps

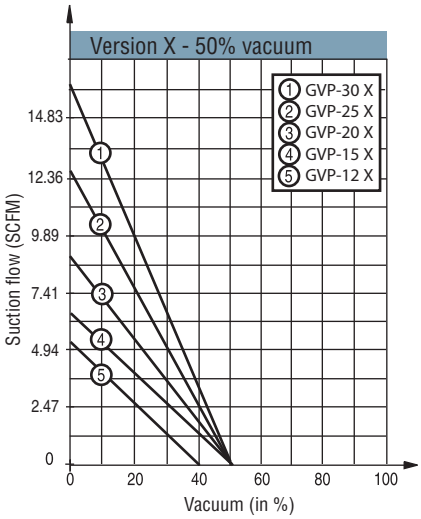
Vacuum Generated - Supply pressure 4 bar

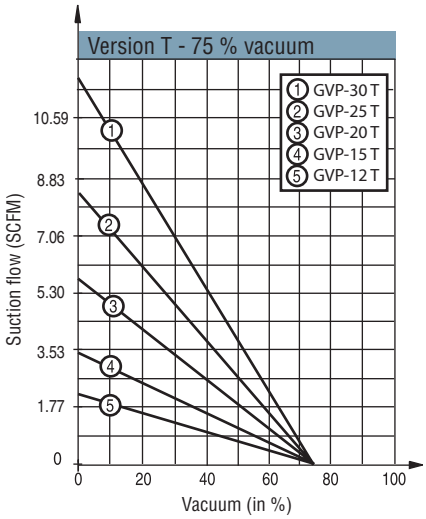


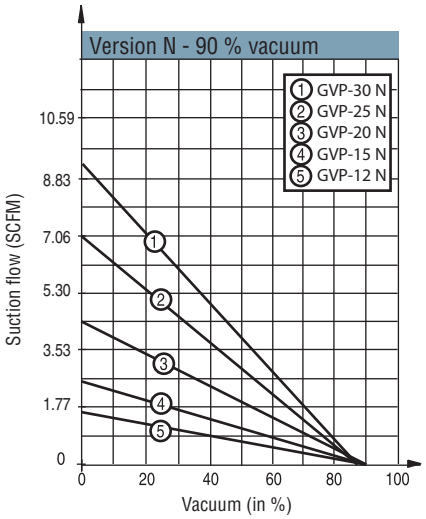
Air Consumed - Supply pressure 4 bar



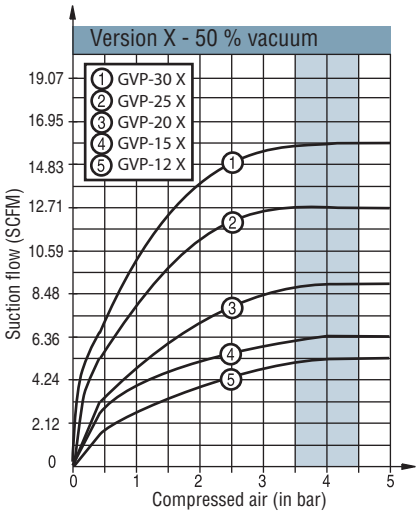
Suction Flow Rate/Vacuum Curves - Supply pressure 4 bar

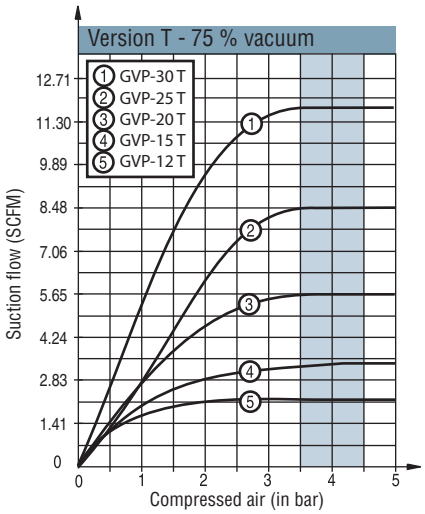


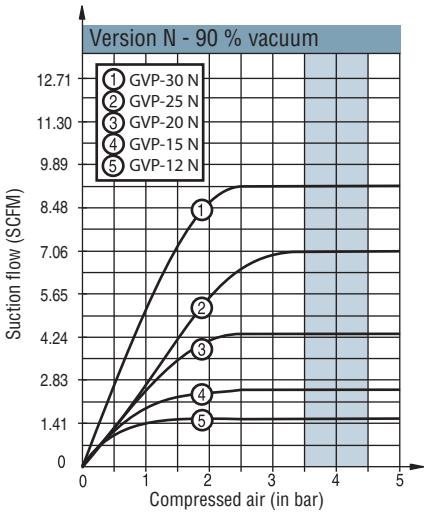




Suction Flow Rate Generated - Supply pressure 4 bar







VR 05, 07, 09

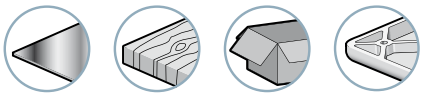
Heavy-duty In-line Ejectors

The main advantage of the VR series in-line ejectors is that they can be mounted directly on the suction cup, which simplifies plumbing.

By integrating the ejector on the suction cup, we obtain a localized vacuum and, therefore, the possibility of obtaining multiple independent grips, even in the absence of objects.

It is also possible to supply vacuum to two or more suction cups using a G1/8" or G1/4" T-shaped fitting.

Industry-specific applications



Advantages

- Wide range
- Adaptable to all industries
- Lightweight and compact
- Reduced gripping time
- Direct installation on suction cups
- Excellent mechanical resistance
- Blow-off option
- Extended range of suction flow rates
- No clogging
- Silent operation

Characteristics

Model	Ø Nozzle	Air consumed (SCFM)	Maximum vacuum (%)	Air drawn in (SCFM)	At air pressure (bar)
VR 05	0.5	0.42	87	0.25	5
VR 07	0.7	0.74	90	0.49	5
VR 09	0.9	1.27	90	0.74	5

Note: All dimensions are in mm

Evacuation Time in Seconds per Liter

% vacuum	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	85 %
VR05	0.92	1.96	3.18	4.63	6.38	8.79	12.17	18.96	27.39
VR07	0.46	0.98	1.58	2.28	3.13	4.27	5.8	8.55	11.01
VR09	0.31	0.65	1.05	1.52	2.09	2.85	3.87	5.7	7.34

Specifications

Supply	Non-lubricated filtered air, pressure 2 to 6 bar
Optimum operating pressure	5 bar
Weight	20 g
Material	2017A - Cu Zn
Temperature	32 to 176 °F.

When ordering, please specify: Model + Nozzle diameter + Vacuum outlet e.g.: VR07M6

1: Model	2: Ø Nozzle		3: Vacuum outlet	
VR	05	Ø 0.5 mm	M6	M6 Female
	07	Ø 0.7 mm	M18	G1/8" Male
	09	Ø 0.9 mm	M14	G1/4" Male
			F18	G1/8" Female
			F14	G1/4" Female

Additional Information

Mounting on spring systems

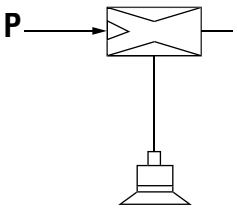
- Spring system, series TS3, available strokes: 10, 30, 50, 70mm, page 4/4.
- TSOP-TSOG series anti-rotation spring system, page 4/6.
- Ball-joint systems, IMU series, page 4/11.

Customized on request

- Alternate material option: stainless steel or plastic, based on specifications.
- Special characteristics such as suction flow rate or vacuum level.
- On request for the F18 model, M5 ancillary vacuum fitting for connection of a vacuum switch.

New function

- Silencer option: (ref. **SILGV10M5F**)
- Vacuum or blow-off switch, on request.



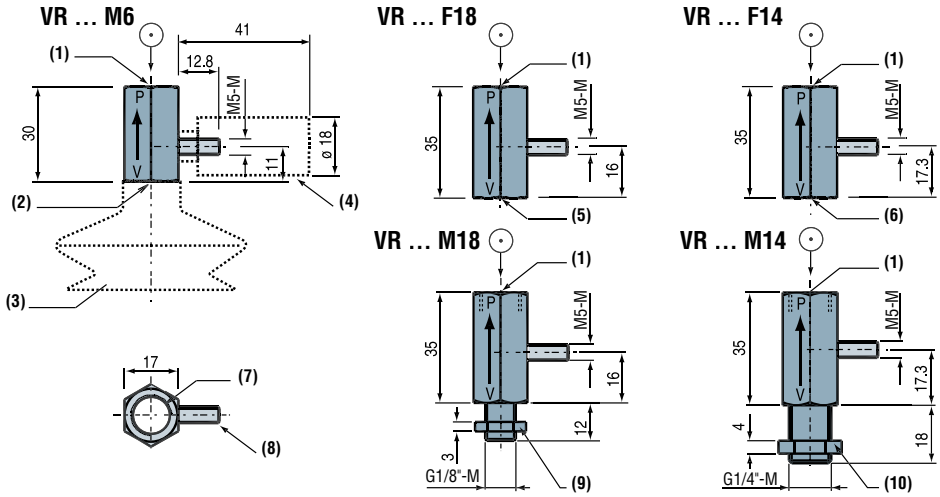
VR 05, 07, 09

Heavy-duty In-line Ejectors

Dimensions and Data Curves

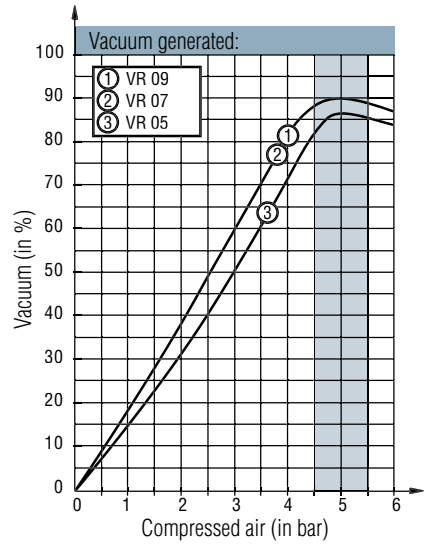
Dimensions

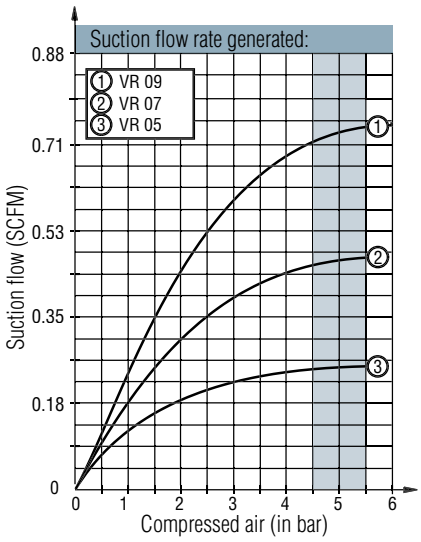
(**1**) G1/4"-F C.A. inlet, depth 10 mm
(**2**) M6-F vacuum outlet, depth 6 mm
(**3**) Example of suction cup
(**4**) Silencer
(**5**) G1/8"-F vacuum outlet, depth 7.5 mm
(**6**) G1/4"-F vacuum outlet, depth 10 mm
(**7**) Compressed air
(**8**) Exhaust
(**9**) Hexagonal nut, 14 across flats
(**10**) Hexagonal nut, 19 across flats

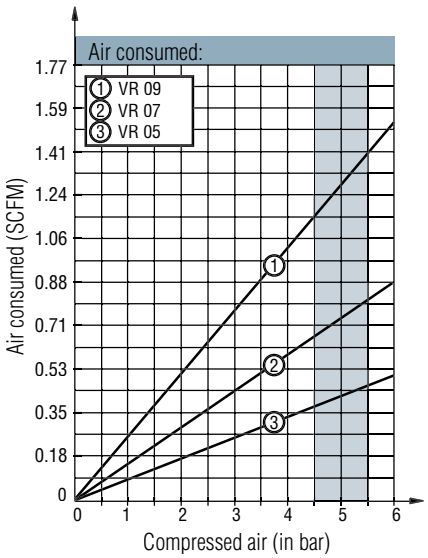


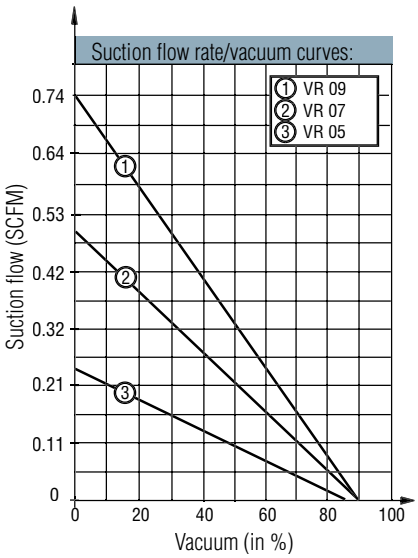
Note: All dimensions are in mm

Data Curves







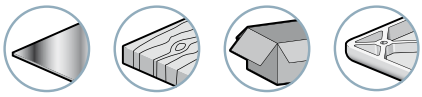


VR 10, 12, 14
Ejector Fittings

Based on the same principle as the VR 05, 07, 09, the main advantage of the VR 10, 12, 14 series is that they can be mounted directly on larger suction cups due their optimum technical characteristics.

The aluminum design guarantees:
- Excellent mechanical resistance
- Lightweight
- Ideal for miscellaneous gripping.

Industry-specific applications



Advantages

- Wide range
- Adaptable to all industries
- Lightweight and compact
- Reduced gripping time
- Direct installation on suction cups
- Excellent mechanical resistance
- Blow-off option
- Extended range of suction flow rates
- No clogging
- Silent operation

Characteristics

Model	Ø nozzle	Air consumed (SCFM)	Maximum vacuum (%)	Air drawn in (SCFM)	At air pressure (bar)
VR 10	1	1.55	90	0.95	5
VR 12	1.2	2.37	90	1.59	5
VR 14	1.4	3.81	90	2.26	5

Note: All dimensions are in mm

Evacuation Time in Seconds per Liter

% vacuum	10 %	20 %	30 %	40 %	50 %	60 %	70 %	80 %	85 %
VR 10	0.24	0.51	0.82	1.18	1.62	2.21	3.01	4.43	5.71
VR 12	0.14	0.3	0.49	0.71	0.97	1.33	1.81	2.66	3.42
VR 14	0.1	0.21	0.34	0.5	0.68	0.93	1.27	1.85	2.44

Specifications

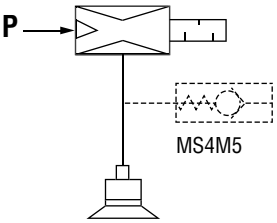
Supply	Non-lubricated filtered air, pressure 2 to 6 bar
Optimum operating pressure	5 bar
Weight	50 g
Material	2017A - Cu Zn
Temperature	32 to 176 °F.

Additional Information

As standard
- New functions: vacuum switch or blow-off switch with or without silencer (SILGV 10).

Optional
- MS2M5 or MS4M5 blow-off valves with no-return valve on vacuum (see page 10/4).

Special
- Coval offers the product best adapted to your needs based on your specifications, and advises you according to your applications (material, shape, special technical characteristics).



When ordering, please specify:
Model + Nozzle diameter + Vacuum outlet + Silencer
e.g.: VR12M14S

1: Model	2: Ø Nozzle		3: Vacuum outlet		4: Silencer	
VR	10	Ø 1 mm	M14	G1/4" Male	S	SILGV 10
	12	Ø 1.2 mm			K	SILK 18 C (1)
	14	Ø 1.4 mm				

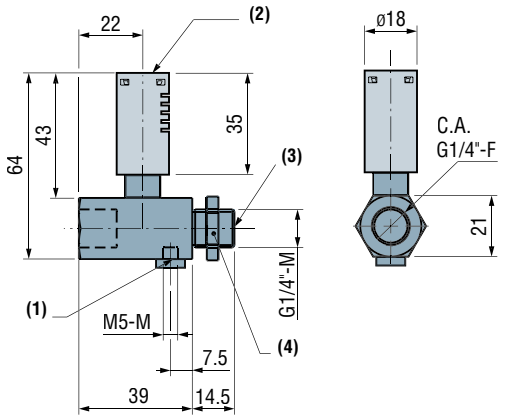
(1) SILK 18 C through-type silencer dimensions, see page 10/3.

VR 10, 12, 14

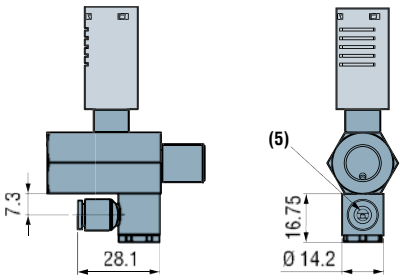
Ejector Fittings

Dimensions and Data Curves

Dimensions

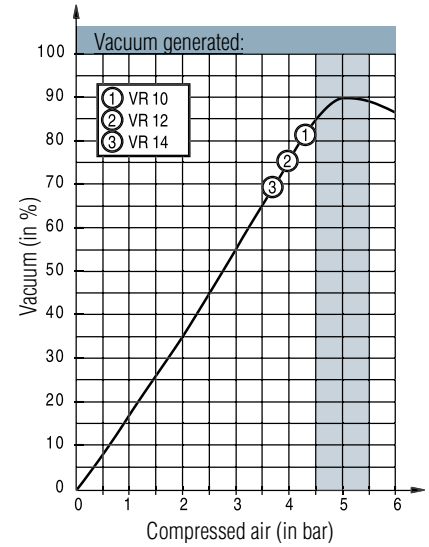


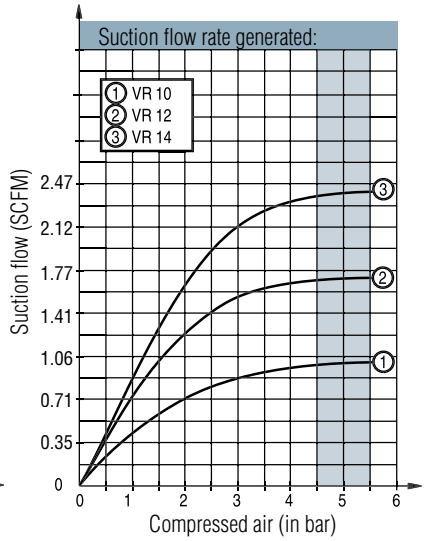
VR + MS4M5 version

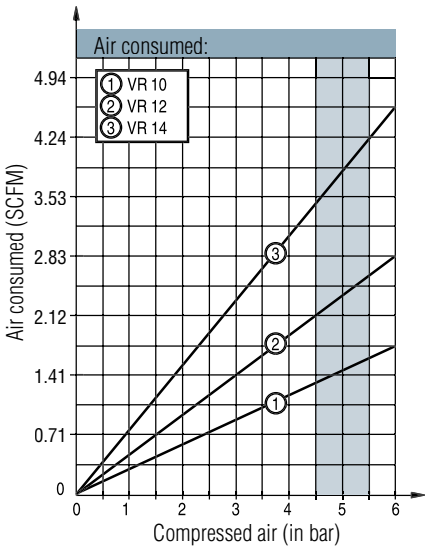


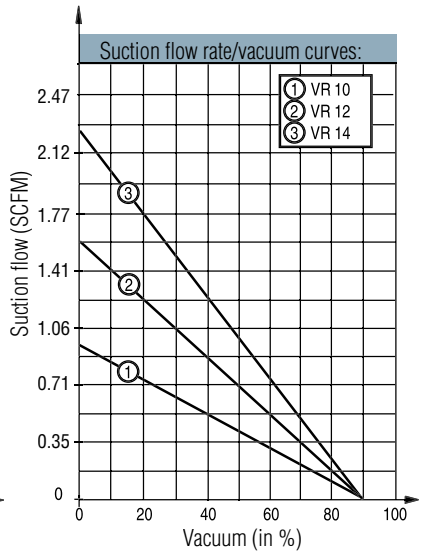
(**1**) Blow-off or vacuum switch
(**2**) Silencer
(**3**) Vacuum
(**4**) Hexagonal nut, 19 across flats
(**5**) Push fitting, external Ø 6

Data Curves









Note: All dimensions are in mm

COVAL

vacuum managers

CMS HD

HEAVY DUTY

Multi-stage Vacuum Pumps

NFC

IO-Link

ADVANCED VACUUM SOLUTIONS

www.coval.com

US1

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

General Information

COVAL's **CMS HD** series of multi-stage Heavy Duty vacuum pumps for industry specific applications are the result of many years of listening to and getting feedback from manufacturers, integrators, and users in the food, packaging, and robotics industries.

The **CMS HD** multi-stage vacuum pumps meet their expectations in terms of power, robustness, ease of configuration and use, communication, and modularity, while remaining compact and light for a simplified integration in a smart factory.

Industry-specific applications

Advantages

- Robust: resistant to the harsh environments of production lines
- High performance: optimized multi-stage Venturi system that guarantees powerful suction flow rates and reduced compressed air consumption.
- Modular: configurable according to needs and easy maintenance.
- Communicating: efficient communication system for all use levels, clear and easy to read HMI, NFC technology for mobile use, and IO-Link communications interface for straightforward networking.

Main Specifications (depending on version)

- 80% vacuum
- 3 powerful suction flow rates:
  - CMSHD90X50__ → 24.54 SCFM
  - CMSHD90X100__ → 33.90 SCFM
  - CMSHD90X150__ → 45.91 SCFM
- With or without vacuum and blow-off control
- Vacuum control: NC, NO
- With or without vacuum switch
- Blow-off controlled or automatic timed
- 1 or 2 M12 connectors
- Digital inputs/outputs mode (SIO) / IO-Link
- 3 exhaust configurations
- Degree of protection: IP65
- PNP / NPN
- Supply pressure monitoring (pressure sensor)
- Supply voltage monitoring
- Vacuum network status analysis and monitoring with a network sizing tool to prevent pressure loss, as well as a clogging detection function
- Remote HMI option features the following:
  - High-visibility color display with clear multi-lingual messages and straightforward settings menu
  - Easy set up made possible by NFC technology and COVAL Vacuum Manager mobile application

A Complete Range

For each application, a suitable CMS HD:

CMSHD__NVO
- without control

CMSHD__SVOC15P / VVOC15P
- with vacuum and blow-off control
- without vacuum switch
- one M12 5-pin connector
- Digital inputs/outputs mode
- visual indicators of vacuum and blow-off controls

CMSHD__SVX_ / VVX_
- with vacuum and blow-off control
- with vacuum switch, and pressure sensor
- M12 connectors available in 3 versions:
  - one 5 or 8-pin connector
  - or two 4-pin connectors
- Digital inputs/outputs (SIO) / IO-Link Mode

Accessory: remote HMI

Part No.: HMIHD1M84P

Compatible with CMSHD___**VX**__

- 1.54" color LCD display
- 4-key keypad
- Can be moved up to 10 m
- NFC

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

General Information

CMS HD, "tailor-made" solution

Different configurations available for the exhaust:

CMSHD____K
Silencer

CMSHD__NVO_
Pressure connection end plate

CMSHD90X50_ / CMSHD90X100_
Simple body

CMSHD__SVO / VVO_
Control valve block for vacuum and blow-off without vacuum switch

CMSHD____F
Diffuser

CMSHD____E
Collector exhaust

CMSHD90X150_
Double body

Note: Exhaust options are delivered mounted in line. They can be mounted by the user at 90° on the front panel of the CMS HD.

CMSHD_SVX / VVX_
Control valve block for vacuum and blow-off with vacuum switch, pressure sensor, compatible with remote HMI

Remote HMI
Part No.: **HMIHD1M84P**

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

General Information

CMS HD with control and vacuum switch

Digital inputs/outputs (SIO) / IO-Link

M12 connectors available in 3 versions:
- one 5 or 8-pin connector
- or two 4-pin connectors

- NC, NO vacuum control
- Blow-off controlled or automatic timed

Onboard installation and diagnostic tools:
- Vacuum network sizing support and clogging detection
- Supply pressure and voltage monitoring

M8 connector for remote HMI

Exhaust

Vacuum

Pressure

Vacuum generation with multi-stage Venturi pump:
- high suction rates
- silent operation

Accessory: remote HMI
Part No.: HMIHD1M84P

Gripping status indicator light (2 colors)

1.54" high-visibility color LCD display with clear multilingual messages and straightforward settings menu

Settings keypad

Clear and efficient HMI:
includes all required inputs for full operation of CMS HD multi-stage vacuum pumps.

NFC

Straightforward setup and diagnostics made possible by NFC technology and COVAL Vacuum Manager mobile application.

CMS HD

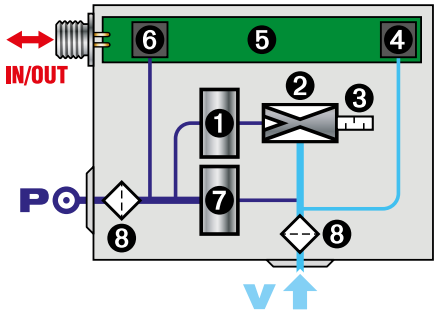
Heavy Duty Multi-stage Vacuum Pumps

Integration and Performance

Integrated Functions

CMS HD multi-stage 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 Electronic vacuum switch
❺ Integrated electronics
❻ Pressure sensor
❼ "Blow-off" solenoid valve
❽ Removable filter screens

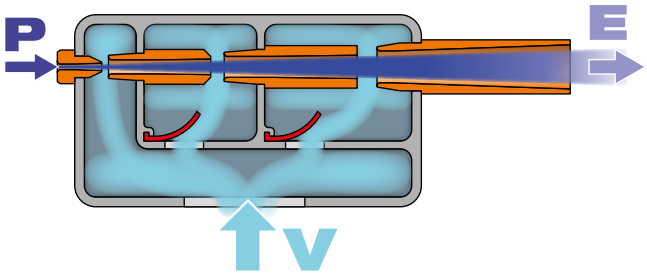


Primary Functions of Multi-stage Technology

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.

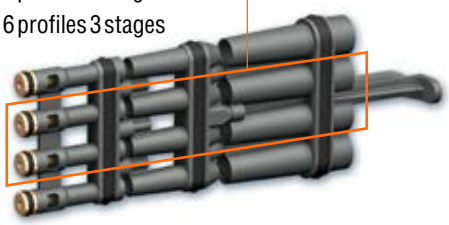


Performance Determined by CMS HD Model

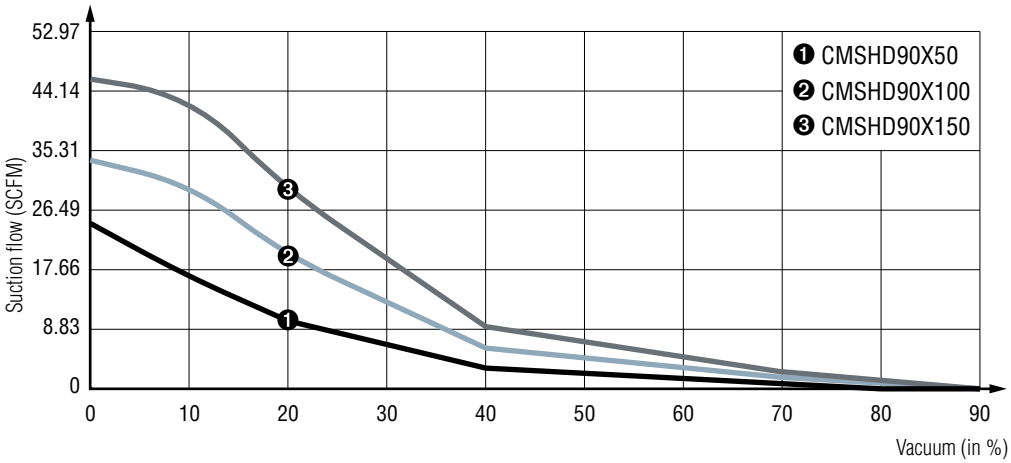
Model	Max. vacuum (%)	Air drawn in (SCFM)	Air consumed (SCFM)	Air pressure level* (bar)
CMSHD90X50	80	24.54	7.77	5.5
CMSHD90X100	80	33.90	14.83	5.5
CMSHD90X150	80	45.91	21.90	5.5

** 6 bar for versions with control, CMSHD__**S**_ / CMSHD__**V***

- CMSHD90X**50**__: 2 profiles 3 stages
- CMSHD90X**100**__: 4 profiles 3 stages
- CMSHD90X**150**__: 6 profiles 3 stages



Suction Flow / Vacuum Curves



CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Straightforward Communication

Easier Integration, Use, and Diagnostics

The **CMSHD__VX** Heavy Duty multi-stage vacuum pump series includes various features that enable setup, use, and diagnostics in all situations and at all levels (operators, process, networked factory), with the aim in mind of keeping the use and management of the pumps as straightforward as possible and thus allowing for their easy integration in your smart factory.

Settings, Diagnostics and Process Data

CONFIGURABLE SETTINGS

- Choice of language: EN, FR, DE, IT or ES
- "Object gripped" thresholds
- Automatic blow-off
- Vacuum measurement unit: kPa, %, mbar, inHg
- Pressure measurement unit: MPa, bar, psi
- Software updates, and more

DIAGNOSTICS

- Cycle counters (vacuum and blow-off control, objects gripped, objects lost, etc.)
- Vacuum network sizing support to prevent pressure loss
- Clogging detection function
- Supply pressure and voltage monitoring
- Software version
- Product part number and serial number

PROCESS INPUT DATA

- Vacuum and blow-off control

PROCESS OUTPUT DATA

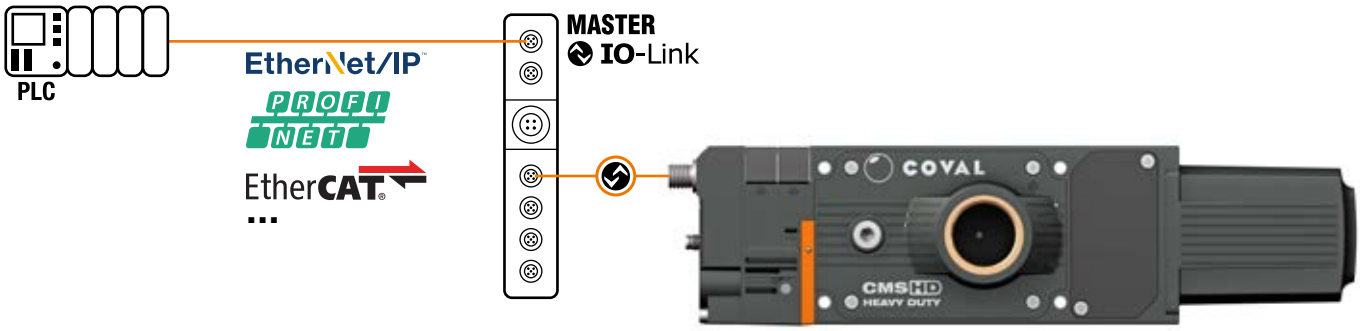
- Instantaneous vacuum level
- Object gripped and object lost information
- Alarms (high/low pressure, high/low voltage)
- Instantaneous pressure

IO-Link

The IO-Link system provides efficient real-time communication between **CMSHD__VX_** multi-stage vacuum pumps and any higher-level protocol (EtherNet/IP, PROFINET, EtherCAT, etc.) required to monitor the production line. It can be used to control pumps, configure settings, and get feedback to ensure maximum productivity.

Advantages:

- Straightforward wiring, installation, and setup
- Availability of diagnostic status data
- Simpler preventive maintenance and vacuum pump replacement without manual setup, and more
- Onboard installation and diagnostic tools



CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Straightforward Communication

Remote HMI (accessory)

To make it easier to use and set up multi-stage piloted vacuum pumps, the CMS HD series has a remote HMI as an accessory.

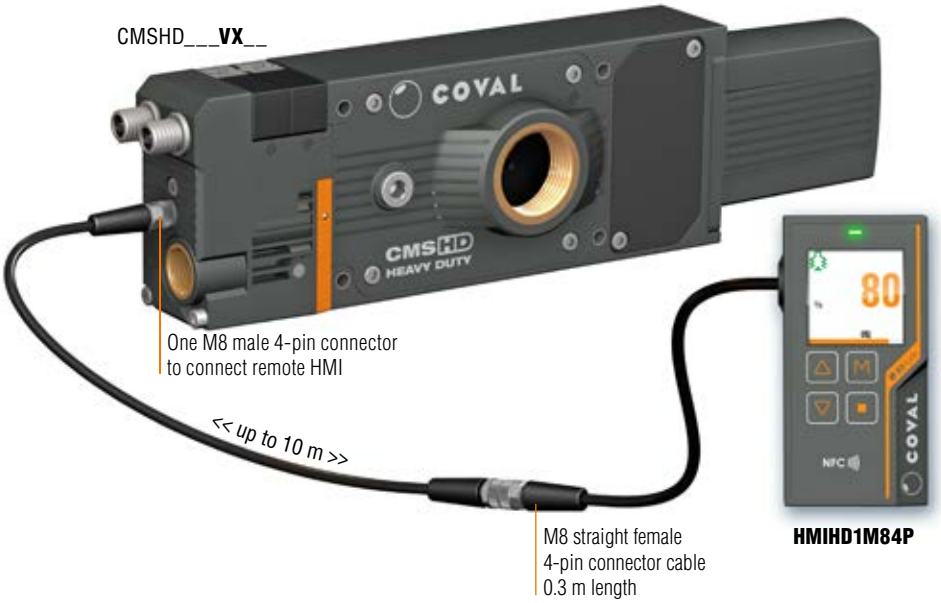
Advantages:

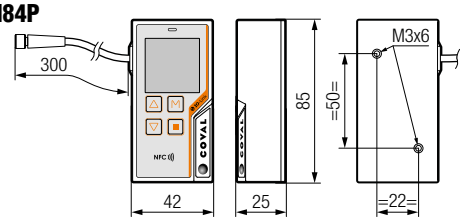
- Place the HMI in an easily accessible and visible area
- Use one HMI for several CMS HD multi-stage vacuum pumps
- Copy settings from one pump to another
- Use the CMS HD multi-stage vacuum pump without any HMI connected

CMS HD multi-stage vacuum pumps compatible with the remote HMI:

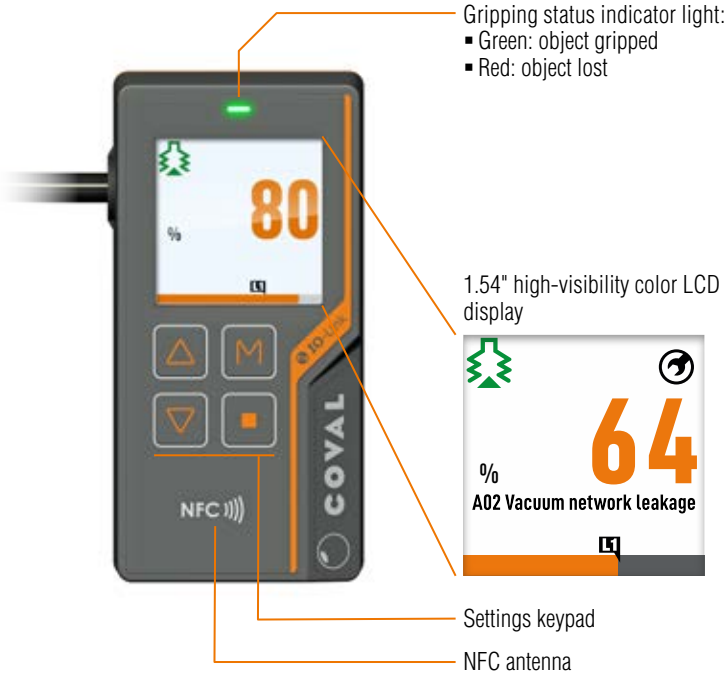
→ CMSHD___**VX**__ versions with M8 connector (electrical connections: see p. 10)

→ **Remote HMI**
Part No.: **HMIHD1M84P**



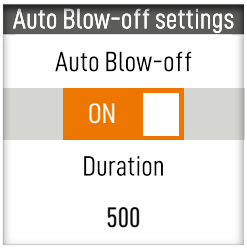


Remote HMI Dialog Front Panel



The remote HMI allows for easy and efficient reading of the pump's operation.
The high-visibility display includes all required inputs for full operation:

- Main information is easy to read
- Multilingual: EN - FR - DE - IT - ES
- Simple and clear event messages
- Intuitive settings and diagnostics menus
- Configurable display orientation: 0 - 90 - 180 - 270°
- Lockable to prevent undesired changes



Multilingual EN FR DE IT ES

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Straightforward Communication

NFC

The NFC wireless technology integrated in remote HMI and in the COVAL Vacuum Manager application makes all setup and diagnostic functions available and modifiable on your mobile devices.

Additional features:

- Read/write settings with the power on or off
- Copy settings from one CMS HD to another
- Backup up to 5 setting configurations
- COVAL support: send a report including the settings and diagnostic data to COVAL for technical support

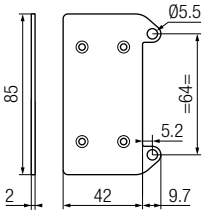
GET IT ON Google Play

Download on the App Store

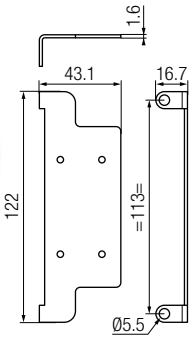
NFC APP: COVAL Vacuum Manager
Available for Android and iOS

Accessories for remote HMI

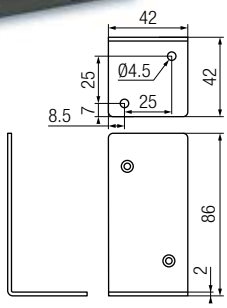
Front mounting plate
+ 2 fastening screws
Part No.: **HMIHD1FIXA**



Side mounting plate
+ 2 fastening screws
Part No.: **HMIHD1FIXC**



90° angled mounting plate
+ 2 fastening screws
Part No.: **HMIHD1FIXB**



Connecting cable
M8 4-pin, female / M8 4-pin, male, compatible with cable chain

- 2 m length: Part No. **CDM8MF4PL2**
- 5 m length: Part No. **CDM8MF4PL5**
- Other lengths available upon request.

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Modularity and Maintenance

Choice of 3 equipment options for the exhaust

Various configuration options are available for the CMS HD exhaust:

Through-type silencer
CMSHD___K version
- reduction of the noise level (-10 dBA compared to a diffuser)
- non-clogging

Diffuser
CMSHD___F version
- ultra-compact

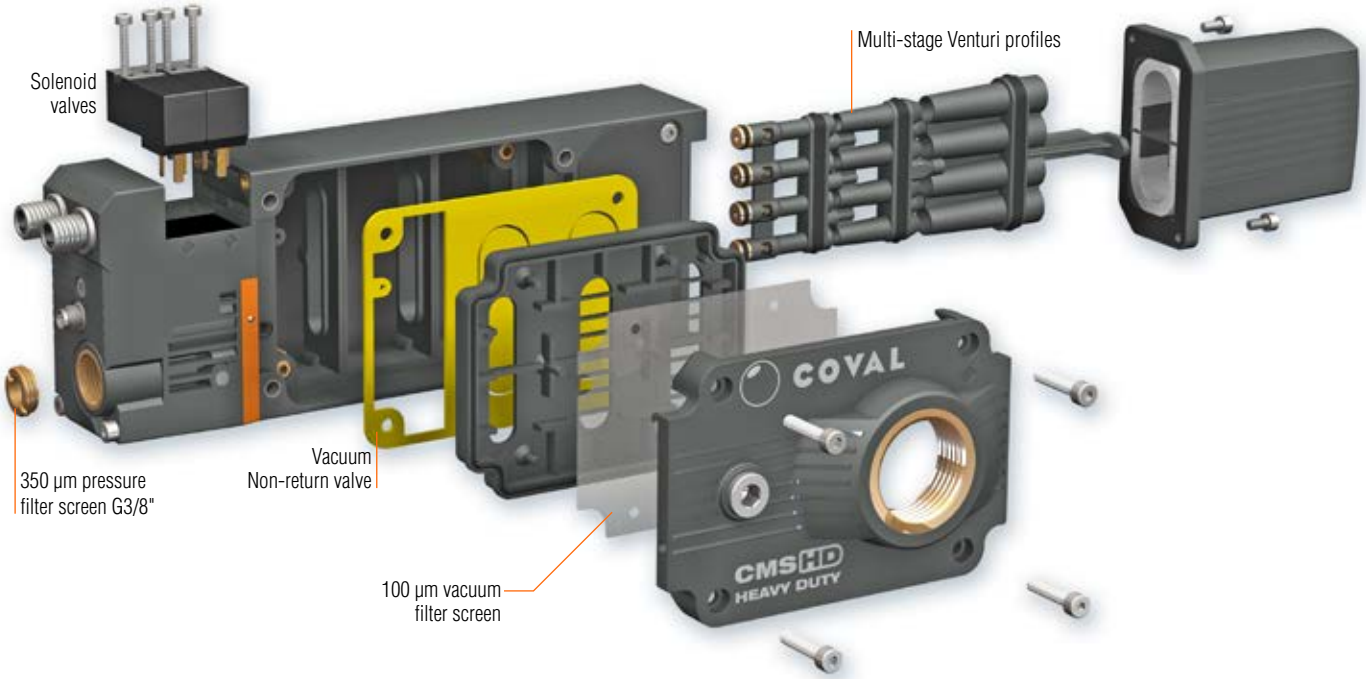
Exhaust collector
CMSHD___E version
- G1" female connection

The exhaust options are delivered in-line but, depending on the environment, they can be positioned by the user on the front panel.

Modularity/Maintenance

The CMS HD multi-stage vacuum pumps have been designed to withstand the demands from all your applications and to guarantee a high level of performance. However, handling certain parts may require replacement or cleaning.

The modular design of the CMS HD multi-stage pumps ensures easy maintenance as the functions are all easily accessible.



CMS HD

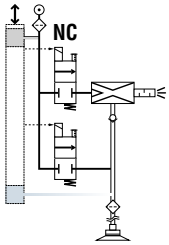
Heavy Duty Multi-stage Vacuum Pumps

Selection guide

Vacuum Control: 2 Solutions

Model CMSHD__S: vacuum pump with **NC** vacuum control and **NC** blow-off control. In the event of power failure, vacuum is no longer generated. In the event of compressed air failure, the vacuum is no longer maintained.

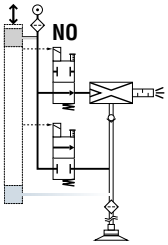
- NC blow-off and vacuum control: solenoid valves
- Choice of blow-off settings (only on CMSHD___**SVX**_ models):
  - controlled by external signal
  - automatic timer from 50 to 9999 ms (advantage: saves one controller output)



Model CMSHD__V: vacuum pump with **NO** vacuum control and **NC** blow-off control. In the event of power failure, vacuum is still generated: part is held in place ➔ fail-safe.

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

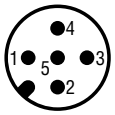
- NO vacuum control solenoid valve
- NC blow-off control solenoid valve
- Blow-off controlled by external signal



Electrical Connections

VOC15P:

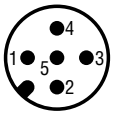
- One M12 5-pin male connector



1	/
2	24 V DC suction command [1]
3	0 V - GND
4	24 V DC blow-off command
5	/

VXC15X:

- One M12 5-pin male connector



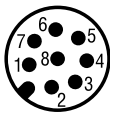
1	24 V DC
2	24 V DC suction command [1]
3	0 V - GND
4	24 V DC object gripped DO1 - C/Q
5	24 V DC blow-off command

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

VXC18X:

- One M12 8-pin male connector



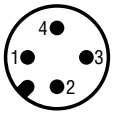
1	24 V DC object gripped DO1
2	24 V DC
3	/
4	24 V DC suction command [1]
5	24 V DC object lost DO2 - C/Q [2]
6	24 V DC blow-off command
7	0 V - GND
8	/

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

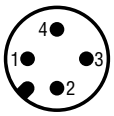
VXC24X:

- Two M12 4-pin male connectors



IN

1	/
2	24 V DC blow-off command
3	0 V - GND
4	24 V DC suction command [1]



OUT

1	24 V DC
2	24 V DC object lost DO2 [2]
3	0 V - GND
4	24 V DC object gripped DO1 - C/Q
5	/

- One M8 4-pin male connector → remote HMI

1	24 V DC
2	RS485 (DATA+)
3	0 V - GND
4	RS485 (DATA-)

: connections for **IO**-Link

[1] 24 V DC suction command, depending on version:
*- **S**: 24 V DC vacuum control*
*- **V**: 24 V DC vacuum off command*

[2] DO2 configurable:
- Object lost (default)
- or Power supply fault (below 21.6 V or above 26.4 V)
- or Pressure fault (below 5 bar or above 8 bar)

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Configuring a Vacuum Pump

CMS HD Without Control

CMSHD90X	100	N	VO	G4	K

SUCTION FLOW RATE	
24.54 SCFM	50
33.90 SCFM	100
45.91 SCFM	150

EXHAUST	
K	Through-type silencer
E	Exhaust collector
F	Diffuser

Sample part number consisting of a multi-stage vacuum pump without control:

CMSHD90X100NVOG4K

Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 33.90 SCFM with Through-type silencer

CMS HD With Control

CMSHD90X	100	S	VX	C15X	G4	K	D

SUCTION FLOW RATE	
24.54 SCFM	50
33.90 SCFM	100
45.91 SCFM	150

GENERATOR CONTROL	
Vacuum pump with **NC** vacuum control and **NC** blow-off control. Choice of blow-off settings (only on CMSHD__**SVX**_ models): ▪ Controlled by external signal ▪ Automatic timer from 50 to 9999 ms (advantage: saves one controller output).	S
Vacuum pump with **NO** vacuum control and **NC** blow-off control. ▪ Blow-off controlled by external signal	V

VACUUM SWITCH / HMI		CONNECTORS
Multi-stage vacuum pump without vacuum switch and HMI	VO	C15P ▪ One M12 5-pin male PNP
▪ Simplified CMS HD with Control ,without settings and dialogs ▪ Digital inputs/outputs mode (SIO)		
Multi-stage vacuum pump with integrated vacuum switch and pressure sensor, without HMI	VX	C15X ▪ One M12 5-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI
▪ Electronic vacuum switch ▪ Digital Output DO1 "object gripped" 24 V DC / NO ▪ Digital input/outputs mode (SIO) / IO-Link ▪ Compatible with remote HMI		 IO-Link
		C18X ▪ One M12 8-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI ▪ Digital Output DO2 configurable 24 V DC / NO
		 IO-Link
		C24X ▪ Two M12 4-pin male configurable as PNP or NPN ▪ One M8 4-pin male for remote HMI ▪ Digital Output DO2 configurable 24 V DC / NO
		 IO-Link

EXHAUST*	
K	Through-type silencer
E	Exhaust collector
F	Diffuser

** Exhaust accessories are delivered mounted in line by default.*

PRESSURE SENSOR	
None on **VO** versions	–
Standard on **VX** versions	D

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

CMSHD90X100SVXC15XG4FD

Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 33.90 SCFM, NC vacuum and blow-off control, one M12 5-pin connector and one M8 4-pin connector, with diffuser

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Examples of Composed Part Numbers

CMSHD90X50NV0G4E
Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 24.54 SCFM with exhaust collector.

CMSHD90X150NV0G4K
Multi-stage vacuum pump without control, max. vacuum 80%, suction flow rate 45.91 SCFM with through-type silencer.

CMSHD90X100SV0C15PG4F
Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 33.90 SCFM, NC vacuum and blow-off control, one M12 5-pin connector, with diffuser.

CMSHD90X100VVXC15XG4ED
+ HMIHD1M84P + HMIHD1FIXA
Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 33.90 SCFM, NO vacuum control and NC blow-off control, one M12 5-pin connector and one M8 4-pin connector, with exhaust collector + remote HMI and front mounting plate.

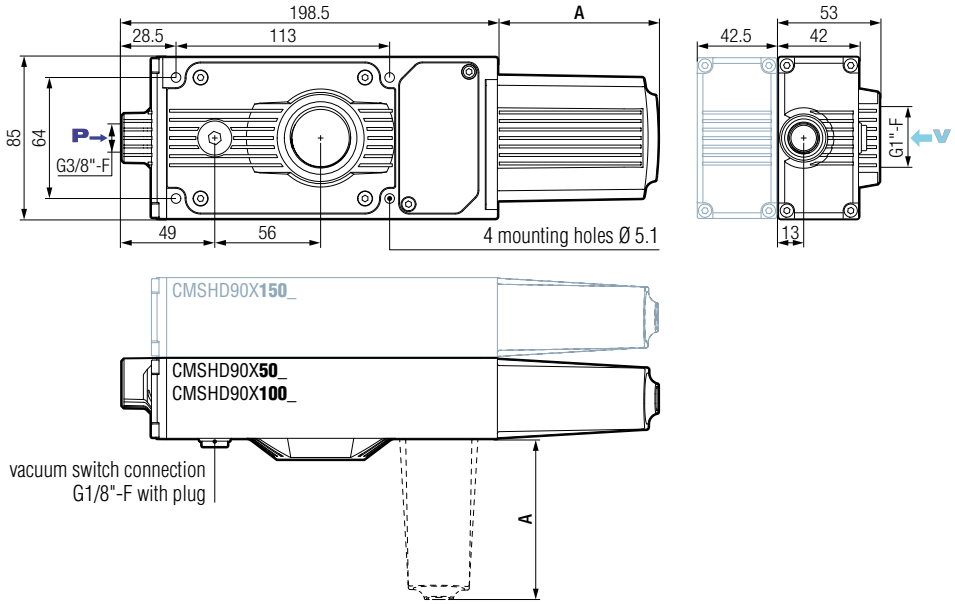
CMSHD90X150SVXC24XG4KD
Multi-stage vacuum pump with control, max. vacuum 80%, suction flow rate 45.91 SCFM, NC vacuum and blow-off control, one M12 5-pin connector and one M8 4-pin connector, with through-type silencer.

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Dimensions

CMS HD Without Control



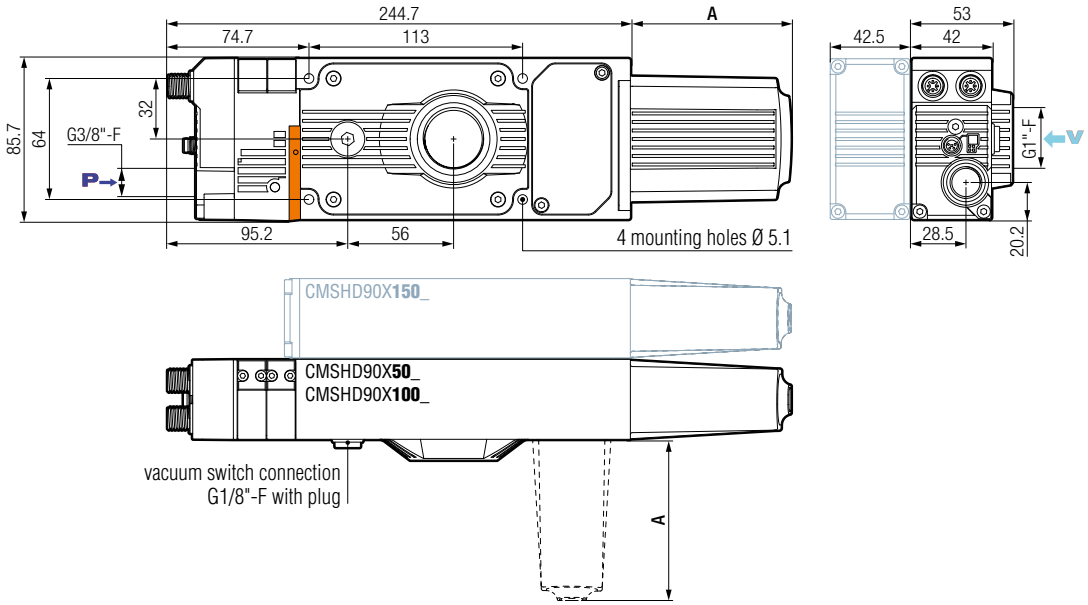
Note: all dimensions are in mm.

3D COVAL Data

You can access 3D files of all our products in formats compatible with the main CAD software on our website

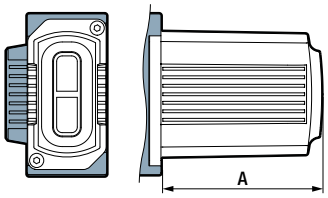
www.coval.com

CMS HD With Control

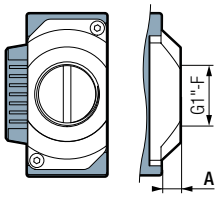


Exhaust Options

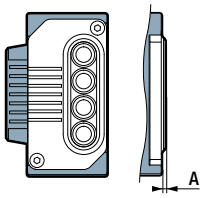
Through-type silencer
CMSHD___**K** version



Exhaust collector
CMSHD___**E** version



Diffuser
CMSHD___**F** version



Exhaust Type	A
Silencer	85
Collector	10
Diffuser	2

CMS HD

Heavy Duty Multi-stage Vacuum Pumps

Technical specifications

- Supply: non-lubricated air, filtered to 5 microns, according to standard ISO 8573-1:2010 [3:4:4]
- Operating pressure: from 2 to 8 bar
- Optimal dynamic pressure:
  - CMSHD_**NVO** (without control): 5.5 bar
  - CMSHD_**S**_/ CMSHD_**V**_ (with control): 6 bar
- Pressure connection: G3/8”-F with removable 350 µm filter screen
- Vacuum connection: G1”-F with removable 100 µm filter screen
- Connection for version with exhaust collector: G1"-F
- Vacuum switch connection G1/8"-F
- Max. vacuum: 80%
- Air suction flow rate: 24.54 to 45.91 SCFM
- Air consumption: 7.77 to 21.90 SCFM
- Noise level:
  - with silencer:
    - CMSHD90X**50**__**K**: 59 dBA
    - CMSHD90X**100**__**K**: 62 dBA
    - CMSHD90X**150**__**K**: 67 dBA
  - with diffuser (CMSHD__**F** version): + 10 dBA to the silencer version
- Degree of protection: IP65
- Max. operating frequency: 4 Hz
- Endurance: 50 million cycles
- Weight:
  - CMSHD without control:
    - CMSHD__**50**/**100**: 645 g
    - CMSHD__**150**: 1330 g
  - CMSHD with control:
    - CMSHD__**50**/**100**: 890 g
    - CMSHD__**150**: 1575 g
- Operating temperature: from 32 to 122° F
- Materials: PA GF, brass, aluminum, steel, NBR, PU, FKM
- M12 and M8 male connectors (depending on version)

Integrated electronics

- 24 V DC power supply (regulated ±10%)
- Vacuum measuring range: 0 to 99%
- Pressure measuring range: 0 to 10 bar
- Vacuum and pressure measurement accuracy: ±1.5% of the range, compensated for temperature
- Inputs/outputs protected against reversed wiring and polarity
- Consumption: 170 mA max. (without load)
- Input/Output switching mode: PNP or PNP/NPN configurable
- Digital inputs/outputs mode (SIO) / IO-Link

DO1/DO2 output signals (only on CMSHD___**VX**__ models)

- Configurable as PNP or NPN
- NO or NC
- Breaking capacity: 330 mA
- DO1: object gripped output (factory setting 40%)
- DO2 configurable (see parameter settings)

Diagnostics

- Instantaneous vacuum level (unit transmitted over IO-Link: mbar)
- Available information: Object gripped, object lost
- Cycle counters (vacuum, blow-off, object gripped, object lost, etc.)
- Vacuum network sizing support to prevent head losses
- Clogging detection function
- Supply pressure monitoring
- Supply voltage monitoring
- Product part number and serial number
- Software version

Indicator on model CMSHD__**VOC15P**___

- Status LED for control functions:
  - green LED: vacuum control
  - orange LED: blow-off control

Information displayed on remote HMI

- LED gripping status indicator on front panel
  - Green: object gripped
  - Red: object lost
- 1.54” high-visibility color LCD display:
  - Displays vacuum level with bar graph and thresholds
  - Warns when service life has been exceeded (> 50 million cycles)
  - Explicit fault messages
  - “Suction cup” icon indicating the status of control functions:
    - Green suction cup: vacuum control
    - Orange suction cup: blow-off control
    - Red suction cup: simultaneous vacuum and blow-off control
  - Configurable display orientation: 0 - 90 - 180 - 270°

Parameter settings available with the remote HMI or IO-Link (only on CMSHD___**VX**__ models)

- Choice of blow-off type:
  - Controlled
  - Automatic timed, adjustable from 50 to 9999 ms
- Object gripped (L1) control thresholds
- Whenever required by the application, specific threshold and hysteresis settings that are different from the initial factory settings can be defined: L1 = 40%, h1 = 10%
- DO2 configurable (24 V DC) (only on CMSHD___**VXC24X**_ and **VXC18X**_ models):
  - Object lost (default)
  - or Power supply fault (below 21.6 V or above 26.4 V)
  - or Pressure fault (below 5 bar or above 8 bar)

+ Additional settings available with the remote HMI

(performed with 4-key membrane keyboard):

- Choice of language: EN, FR, DE, IT, or ES
- Choice of vacuum measurement unit (kPa, %, mbar, inHg)
- Choice of pressure measurement unit (MPa, bar, psi)
- Monostable electrical manual controls

Communication

IO-Link

- Revision: 1.1
- Transmission rate: COM3 - 230.4 kbit/s
- Min. cycle time: 1 ms
- SIO mode: Yes
- Process Data Input (PDI): 6 bytes
- Process Data Output (PDO): 1 byte
- IO device description file (IODD) available for download

NFC

- COVAL VACUUM MANAGER Mobile app available:
  - Android, version 8.1 and higher
  - iOS, version 13 and higher

CMS HD

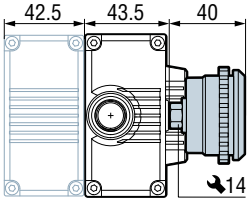
Heavy Duty Multi-stage Vacuum Pumps

Accessories

To visualize the vacuum level

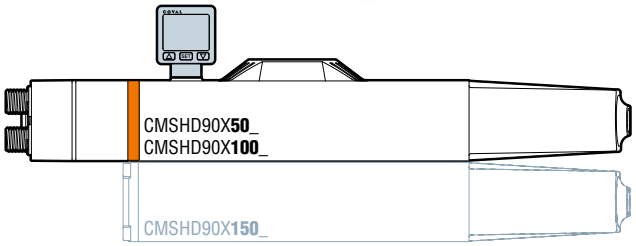
Vacuum gauge Ø 40 mm
Part No. VAF11140

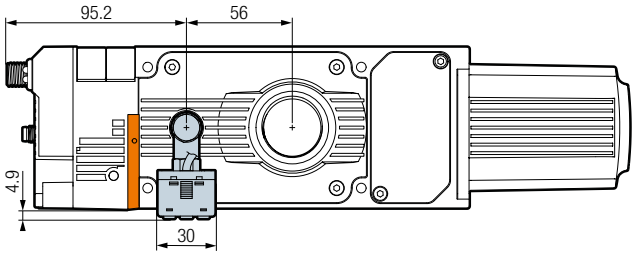
- Damping: by silicone movement (patented).
- Measuring: Bourdon tube in CuSn.
- Precision: cl. 2.5 (+/- 2.5% of max. scale value).
- Frame: black ABS
- Vacuum connection: G1/8"-M

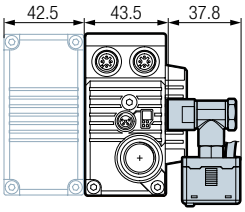


Electronic vacuum switch with 3-color display with adjustable elbow connection
Part No. PSD100CPNPRCOM18G

- One M8 4-pin connector.
- 1 PNP digital output (NO or NC). Max. load current: 125 mA, Max. supply voltage: 24 VDC, Residual voltage: ≤ 1.5 V.
- 1 analog output (Output voltage: 1 to 5 V ≤ ± 2.5% F.S. (within rated pressure range), linearity: ≤ ± 1% F.S. / Output impedance: approx. 1 kΩ)
- 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, InHg, mmHg.
- Power supply voltage: 12 to 24 V DC ±10%.
- Current consumption: ≤ 40mA (without load).
- Repeatability (switch ouptut): ≤ ±0.2% F.S. ±1 digit.
- Protection: IP40.
- Ambient temperature range: 32 to 122°F (operation).
- Adjustable elbow connection 360°: G1/8"-M





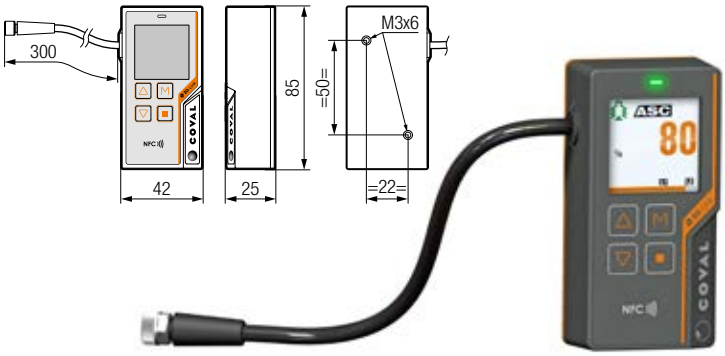


Remote HMI

(for CMSHD___**VX**__ only)
Part No. HMIHD1M84P

- With M8 4-pin female connector, 0.3m length

Accessories for remote HMI (see details on p. 8)
- Front mounting plate: Part No. **HMIHD1FIXA**
- 90° angled mounting plate: Part No. **HMIHD1FIXB**
- Side mounting plate: Part No. **HMIHD1FIXC**
- M8 4-pin, female / M8 4-pin, male, connecting cable:
  - 2 m length: Part No **CDM8MF4PL2**
  - 5 m length: Part No **CDM8MF4PL5**
  - Other lengths available upon request.



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.

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