COVAL

vacuum managers

GVMAX HD

HEAVY DUTY

Communicating Vacuum Pumps



NFC

IO-Link

AIR Saving Control

ADVANCED VACUUM SOLUTIONS

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

General Information

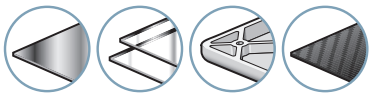


NFC
IO-Link
AIR Saving Control

COVAL's **GVMAX HD** series Heavy Duty communicating vacuum pumps are the result of many years of listening, discussions and feedback from manufacturers, integrators and users from the automotive, aerospace and packaging industries.

Our **GVMAX HD** vacuum pumps meet their expectations in terms of power, robustness, ease-of-configuration and use, communication and modularity, all while remaining compact and light for easy integration in a smart factory.

Industry-specific applications





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Advantages

- Robust: Resistant to the harsh environments of metal stamping and sheet metal production lines
- High performance: Optimized Venturi system that guarantees powerful suction flow rates and reduced evacuation times
- Modular: Easy maintenance; SMART SWAP quick-mounting system
- 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

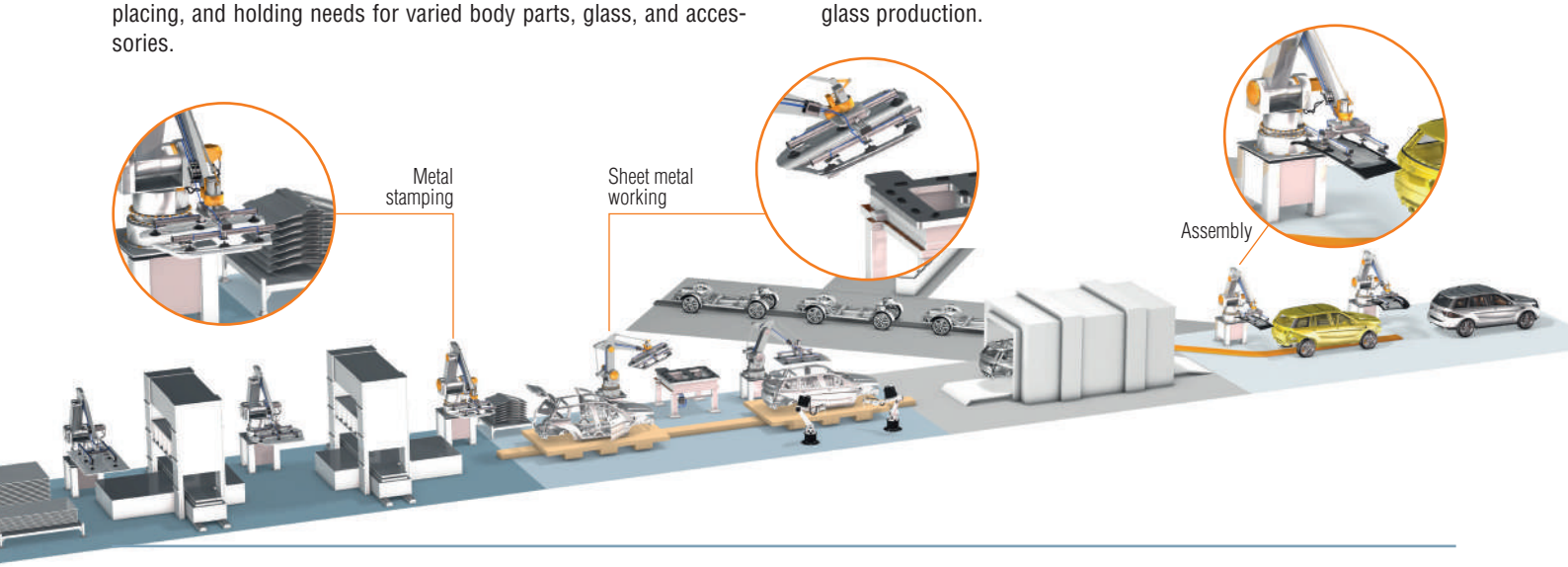
Main Specifications

- 85% vacuum
- Vacuum control: NC, NO or pulse-triggered bistable control
- Powerful suction flow rates:
  - Dia. 2.5 mm nozzle → 185 Nl/min
  - Dia. 3.0 mm nozzle → 230 Nl/min
- Blow-off: Standard or powerful, controlled or automatic timed
- Non-return valve
- 1 or 2 M12 connectors
- Degree of protection: IP65
- Standalone vacuum pumps or in island assemblies
- High-visibility color display with clear multi-lingual messages and straightforward settings menu
- Remote HMI available depending on version
- Easy set up made possible by NFC technology and COVAL Vacuum Manager mobile application
- IO-Link communications interface
- Air Saving Control (ASC) smart vacuum control system guarantees 90% energy savings on average
- Supply pressure monitoring (pressure sensor)
- Vacuum network status analysis and monitoring

Safety, Productivity, and Flexibility at every step of manufacturing

COVAL provides the various players in the automotive industry a global approach to vacuum handling for all their gripping, moving, placing, and holding needs for varied body parts, glass, and accessories.

COVAL solutions, such as vacuum pumps and suction cups, are equipped on robots for stamping presses, welding, assembly, and glass production.



GVMAX HD

Heavy Duty Communicating Vacuum Pumps

General Information

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GVMAX HD Makes Vacuum Management Easy

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

Inputs / Outputs
Digital (SIO) / IO-Link

M12 connectors available in 4 versions:
- One 5 or 8-pin connector
- or two 4 or 5*-pin connectors

**Version for use with remote HMI*

3-color status indicator light

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

Settings keypad

NFC

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

SMART SWAP Quick-mounting system: Allows you to mount the GVMAX HD module onto its pneumatic socket or remove it in the blink of an eye, without needing to disconnect compressed air and vacuum tubes.

Pressure P

Pneumatic socket: Combines the compressed air supply and the vacuum outlet

- NC, NO or pulse-triggered bistable vacuum control
- Blow-off: Standard or powerful, controlled or automatic timed

Vacuum generation with single-stage Venturi pump
- Short evacuation times
- No moving parts
- Dust resistant
- No maintenance required



AIR Saving Control
Air Saving Control (ASC), our smart vacuum control system: Averages 90% energy savings

E Exhaust

V Vacuum

Open clog-free silencer

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Integration and Performance

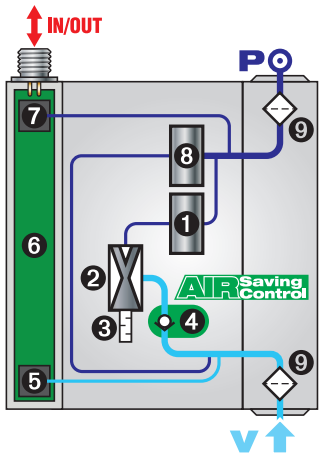
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Integrated Functions

GVMAX HD 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 Single-stage Venturi pump
❸ Open silencer
❹ "Vacuum" non-return valve
❺ Electronic vacuum switch
❻ Integrated electronics
❼ Pressure sensor
❽ "Blow-off" solenoid valve
❾ 350 µm filter screen



+ AIR Saving Control
90% energy savings *(on average, see p. 75)*

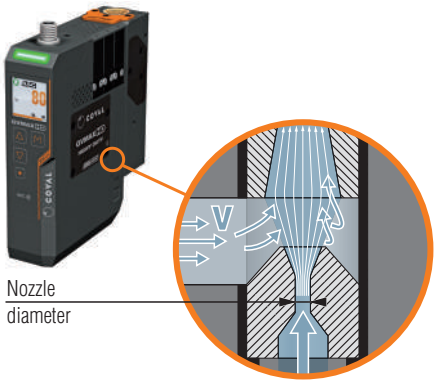
The combined action of the non-return valve ❹ and of the integrated electronics ❻ automatically ensures ASC management.
➔ **Once the vacuum has been established, the pump does not consume any more air to hold the object.**

Performance determined by the Venturi pump's nozzle diameter

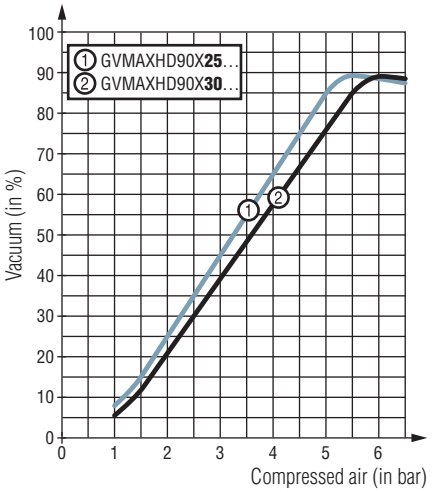
The table specifies the performance levels and evacuation times generated for each nozzle diameter available.

When handling airtight objects, the ASC vacuum control system can help to considerably reduce the consumption of compressed air.

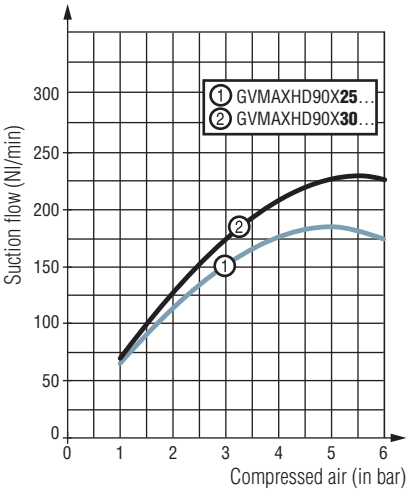
Nozzle dia. \ Vacuum reached	Evacuation time (seconds) of a volume of 1 liter 45 %	55 %	65 %	75 %	Max. vacuum (%)	Air drawn in (Nl/min)	Air consumed (Nl/min)	Air pressure level (bar)
2.5 mm	0.17	0.24	0.35	0.52	**85**	**185**	**294**	**5**
3.0 mm	0.15	0.20	0.27	0.42	**85**	**230**	**380**	**5.5**



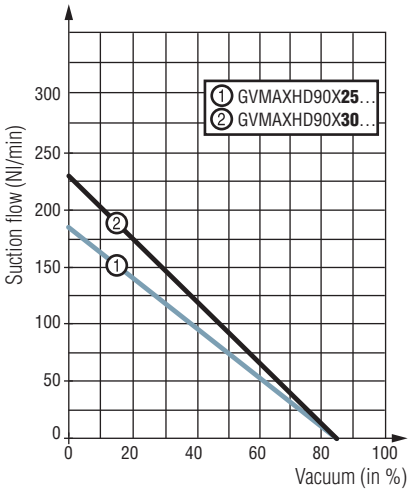
Vacuum Generated/Compressed Air



Suction Flow Rate/Compressed Air



Suction Flow Rate/Vacuum



GVMAX HD

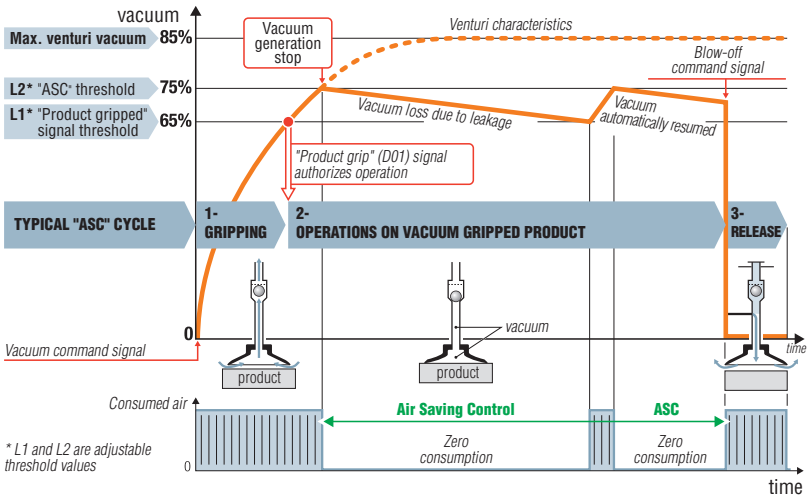
Heavy Duty Communicating Vacuum Pumps

Energy Savings and Smart Adaptation

NFC
IO-Link
AIR Saving Control



AIR Saving Control — Averages 90% energy savings



Air Saving Control (**ASC**) is a smart vacuum control system that stops the consumption of compressed air as soon as the required level of vacuum is reached, thus avoiding any unnecessary consumption and contributing to savings on the equipment's operating costs.

For airtight objects, the GVMAX HD vacuum pumps automatically execute the above "**ASC**" cycle, thus leading to maximal energy savings, according to the following 3 phases:

1- Object is gripped: vacuum generated by the Venturi pump

2- Operations on object held in place by vacuum: at the L2 vacuum threshold (75%), the supply of the Venturi pump is cut off → the consumption becomes zero; the object remains held in place owing to the non-return valve. If micro-leaks make the vacuum drop to threshold L2 less the defined hysteresis value, vacuum generation is briefly switched on again.

3- Object is released: by an external or an automatic timed blow-off command (according to the settings).

1- Gripping + transfer (nozzle dia. 2.5 mm, emptying 0.6 l)

Phase	Duration	Air consumption w/o "ASC"	Air consumption with "ASC"	
Gripping	0.50 s	2.42 Nl	2.42 Nl	Achieved economy
Transfer	2.00 s	9.67 Nl	0	
Release	0.14 s	0.68 Nl	0.68 Nl	
		12.77 Nl	3.10 Nl	→ 76 %

2- Clamping + operations (nozzle dia. 2.5 mm, emptying 1 l)

Phase	Duration	Air consumption w/o "ASC"	Air consumption with "ASC"	
Clamping	0.83 s	4.01 Nl	4.01 Nl	Achieved economy
Operations	60 s	290 Nl	0	
Release	0.14 s	0.68 Nl	0.68 Nl	
		294.69 Nl	4.69 Nl	→ 98 %

➔ Resulting savings

"**ASC**" energy savings are major as shown in the 2 examples below:

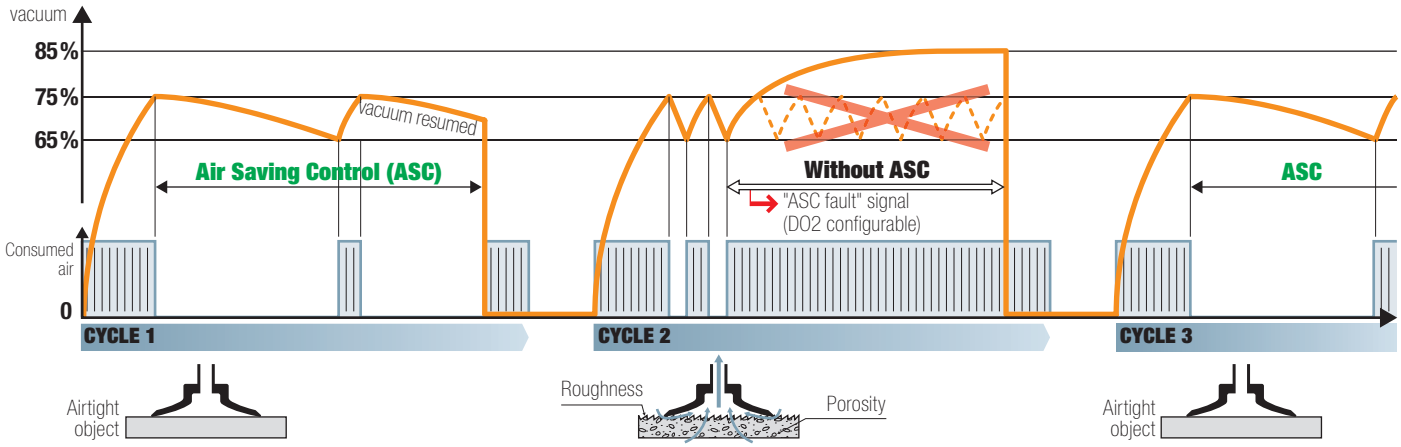
- 76% savings when transferring a object after gripping
- 98% savings when clamping a object during an operation lasting 1 min

The investment generally pays off within just a few months.

ENERGY SAVING APP

Calculate the savings you can generate with our ASC technology using our ENERGY SAVING APP available online.

Smart adaptation



The above illustration shows the GVMAX HD's ability to adapt. "**ASC**" operation is automatic for any object that is adequately airtight (cycle 1). Should a leakage occur (cycle 2), due to a rough or porous object, or due to a leak in the vacuum network, the vacuum pump would automatically detect the unwanted condition, complete the cycle without **ASC** in order to keep production running, and report the situation for possible maintenance. Production keeps running. As soon as everything returns to normal (cycle 3), operation with **ASC** is automatically restored.

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Straightforward Communication

NFC
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AIR Saving Control



Easier Integration, Use, and Diagnostics

The GVMAX HD heavy duty vacuum pump series include 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.

Advantages:

- Straightforward wiring and installation
- Remote configuration, control, and diagnostics
- Installation and diagnostic tools

Settings, Diagnostics, and Process Data

CONFIGURABLE SETTINGS

- Choice of language: EN, FR, DE, IT or ES
- "Object gripped" and ASC control thresholds
- ASC vacuum control system management
- 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 monitoring
- Supply voltage monitoring
- Software version
- Product item number and serial number

PROCESS INPUT DATA

- Vacuum and blow-off control

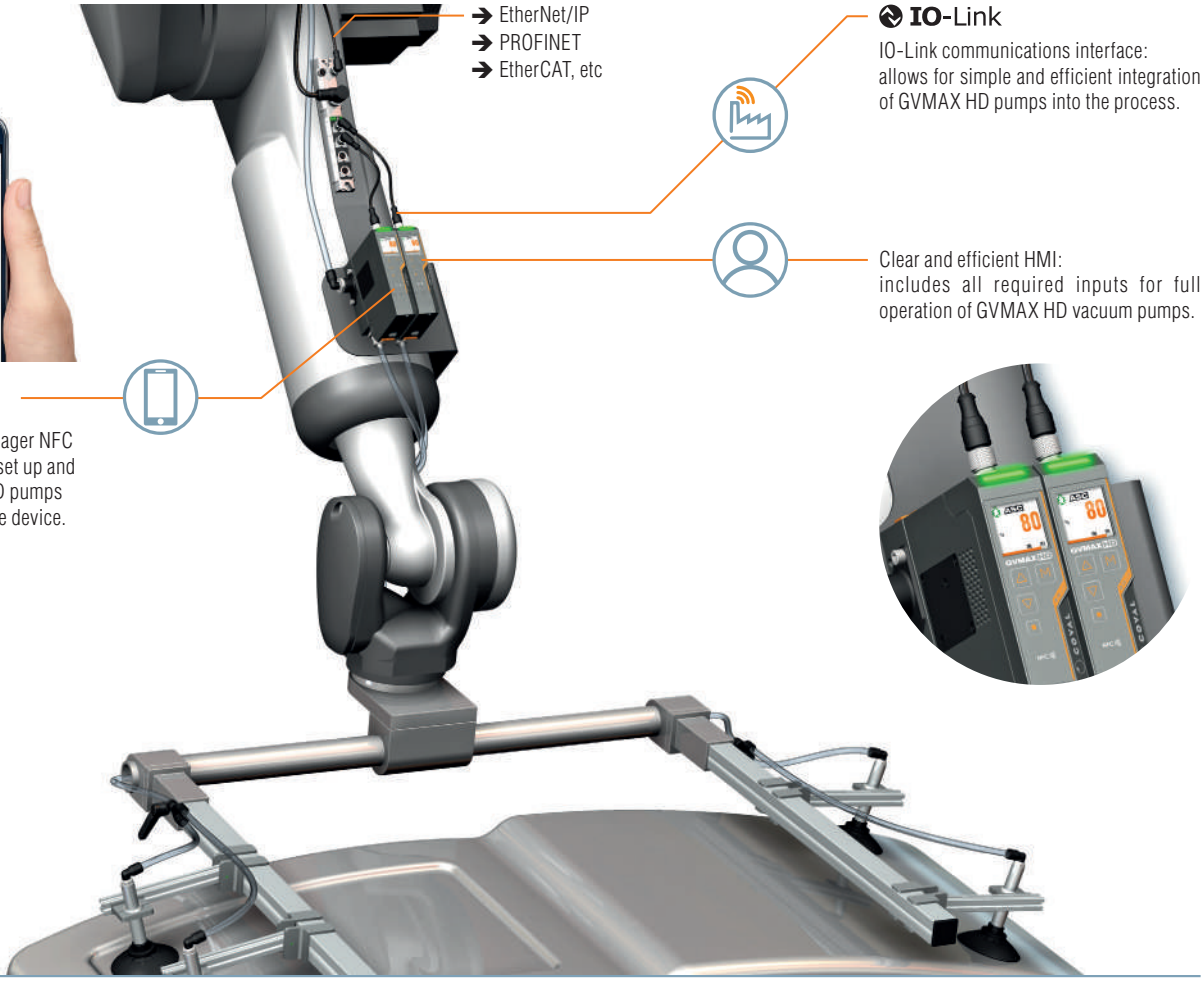
PROCESS OUTPUT DATA

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



NFC

COVAL Vacuum Manager NFC application: used to set up and diagnose GVMAX HD pumps directly from a mobile device.



→ EtherNet/IP
→ PROFINET
→ EtherCAT, etc

IO-Link

IO-Link communications interface: allows for simple and efficient integration of GVMAX HD pumps into the process.

Clear and efficient HMI: includes all required inputs for full operation of GVMAX HD vacuum pumps.

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Straightforward Communication

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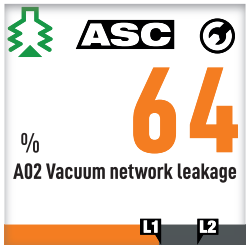


HMI



Gripping status indicator light:
- Green: object gripped
- Yellow: ASC disabled due to vacuum leakage (object held in place)
- Red: object lost

1.54" high-visibility color LCD display



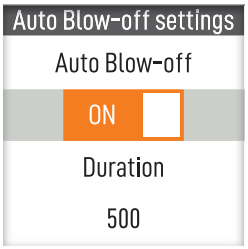
Settings keypad

The GVMAX HD 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

Note: a version with remote HMI is available (see p. 78)





Multilingual

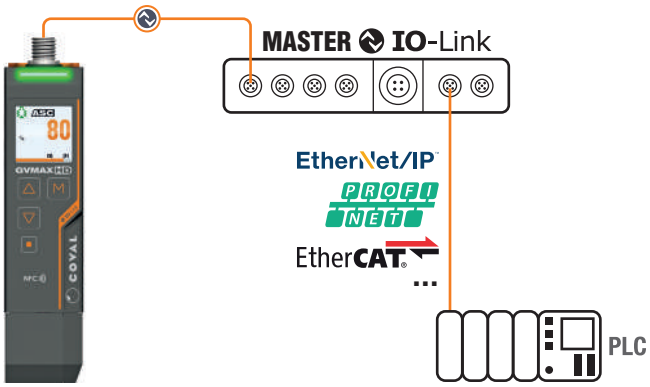
EN FR DE IT ES

IO-Link

The IO-Link system provides efficient real-time communication between GVMAX HD 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



NFC

The NFC wireless technology integrated in GVMAX HD 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 GVMAX 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

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Configuration

NFC
IO-Link
AIR Saving Control



Available Configurations

VA version (standalone)



GVMAX HD module screw-mounted onto its pneumatic socket

Versions with patented **SMART SWAP** system to quickly mount the GVMAX HD module onto its pneumatic socket

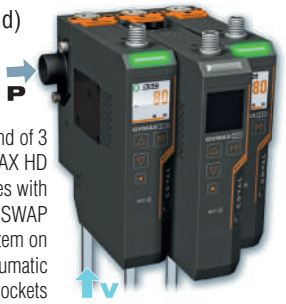
SMART SWAP

RA version (standalone)



GVMAX HD standalone module with SMART SWAP system and pneumatic socket

RB version (island)



Island of 3 GVMAX HD modules with SMART SWAP system on pneumatic sockets

Remote HMI

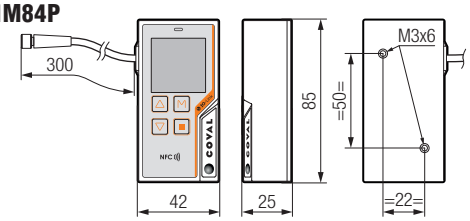
To make it easier to use and set up vacuum pumps in certain use cases, the GVMAX HD range includes a version without a front dialog panel that can be used with a remote HMI.

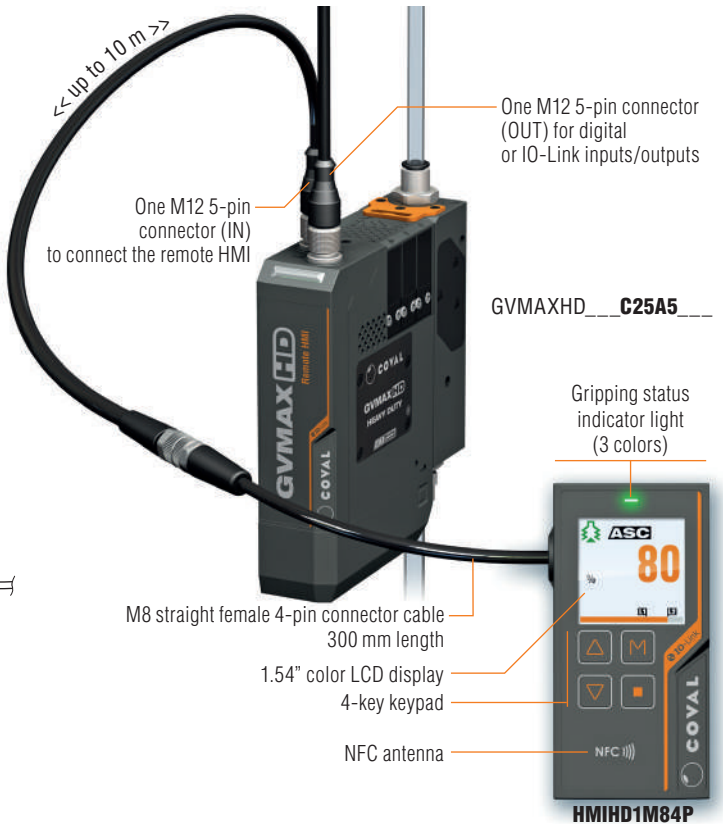
Advantages:

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

➔ **GVMAX HD vacuum pump without HMI**
Part No.: GVMAXHD___**C25A5**___
- Two M12 5-pin connectors
- M12 blanking plug provided for use without HMI

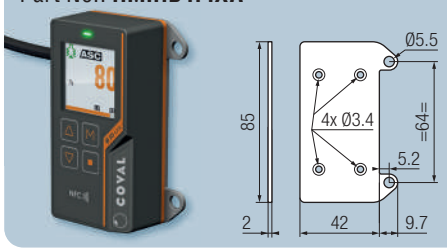
➔ **Remote HMI**
Part No.: **HMIHD1M84P**



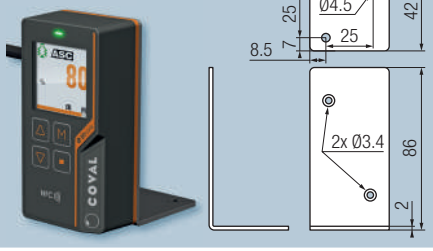


Accessories for remote HMI

Front mounting plate
+ 2 x M3x6 TORX
+ 2 x M5x50 CHC
Part No.: **HMIHD1FIXA**



90° angled mounting plate
+ 2 x M3x6 TORX
Part No.: **HMIHD1FIXB**



Connector cable
M12 4-pin, female / M8 4-pin, male
- 2 m length: Part No. **CDM8MM12F4PL2**
- 5 m length: Part No. **CDM8MM12F4PL5**
- Other lengths available upon request.



GVMAX HD

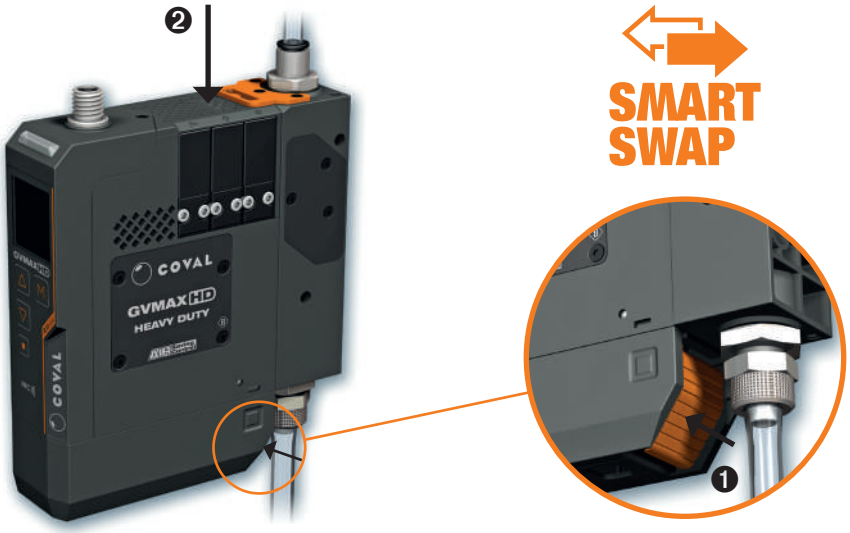
Heavy Duty Communicating Vacuum Pumps

Modularity and Maintenance

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SMART SWAP Quick-Mounting System





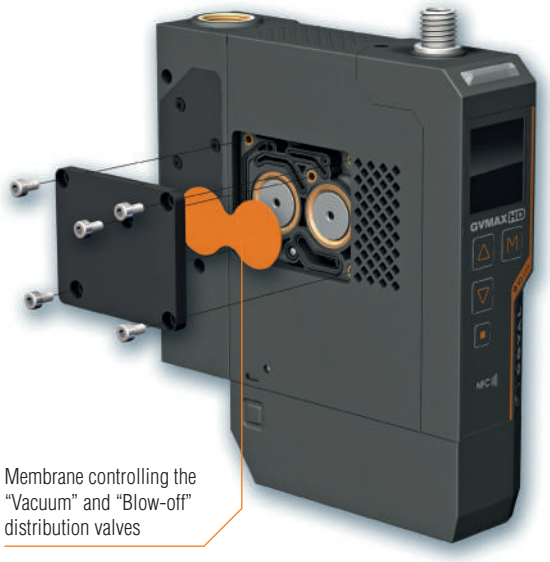
COVAL's patented SMART SWAP quick-mounting system allows you to mount the GVMAX HD module onto its pneumatic socket or remove it in the blink of an eye, without needing to disconnect compressed air and vacuum tubes.

No tools required, just two steps by operator to release: press release tab ❶ at back of silencer and apply pressure to upper housing ❷ of GVMAX HD.

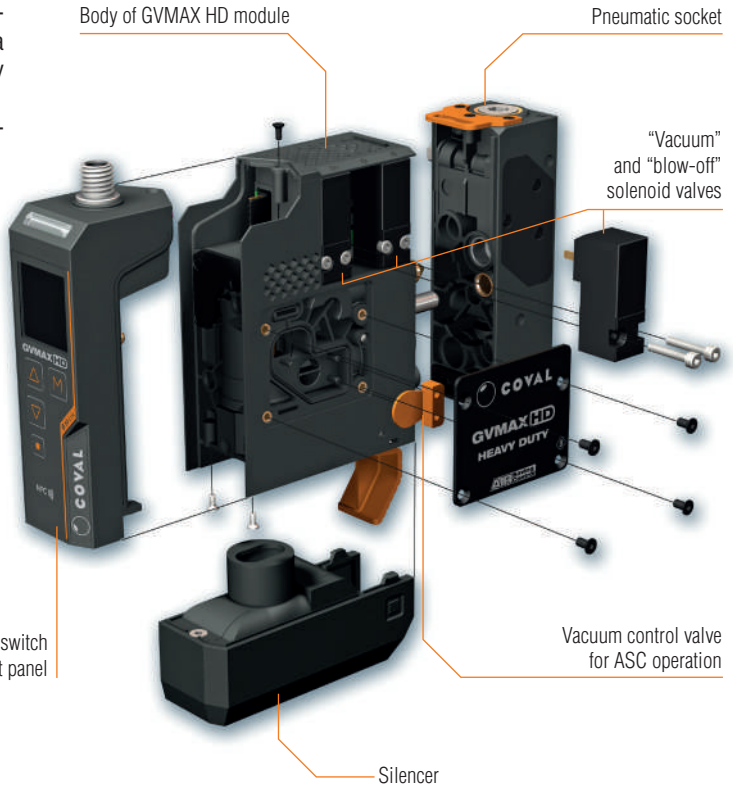
- ➔ There is a locking screw on the release tab, which can be tightened to require operators to use a screwdriver to remove the module.
- ➔ Removal under pressure is made possible by the integrated non-return valve.

Modularity/Maintenance

The GVMAX HD vacuum pumps have been designed to withstand the demands from all your applications and to guarantee a high level of performance. However, handling certain objects may require replacement or cleaning.
The modular design of the GVMAX HD pumps ensures easy maintenance as the functions are all easily accessible.



Membrane controlling the "Vacuum" and "Blow-off" distribution valves



GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Selection guide

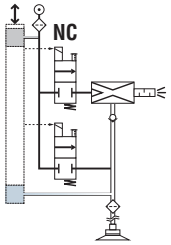
NFC
IO-Link
AIR Saving Control



Vacuum Control: 3 Solutions

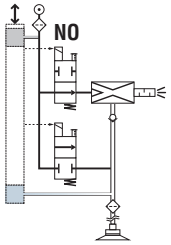
Model GVMAXHD__S: vacuum pump with **NC** vacuum control and **NC** blow-off
In the event of power failure, vacuum is no longer generated. In the event of compressed air failure, the vacuum is no longer maintained.

- NC blow-off and vacuum control: solenoid valves
- Choice of blow-off settings:
  - Controlled by external signal
  - Automatic timer from 50 to 9999 ms (advantage: saves one controller output)



Model GVMAXHD__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
- Blow-off controlled by external signal



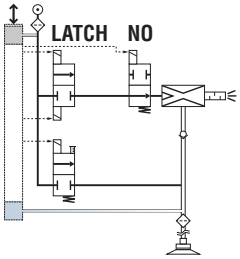
Model GVMAXHD__L: vacuum pump with **pulse-triggered bistable** vacuum control and **NC** blow-off (patented system)
In the event of power failure, the vacuum pump maintains its previous state.
More specifically, one of the following two scenarios will take place should the failure occur:

- During vacuum generation, the vacuum is maintained ➔ fail-safe
- During blow-off or when the pump is off, the pump remains "Off"

Vacuum control is automatically stopped when the blow-off command is activated.
The vacuum can only be stopped with the blow-off command.

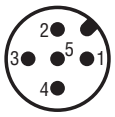
In the event of compressed air failure, the vacuum is no longer maintained.

- Pulse-triggered bistable vacuum control solenoid valve (50 ms min.)
- NC blow-off control solenoid valve
- Blow-off controlled by external signal



Electrical Connections

▪ **C15A1**: One M12 5-pin male connector



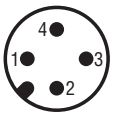
⇆	1	24 V DC
	2	24 V DC suction command (1)
⇆	3	0 V - GND
⇆	4	24 V DC object gripped DO1 - C/Q
	5	24 V DC blow-off command

▪ **C18A1**: One M12 8-pin male connector



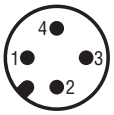
	1	24 V DC object gripped DO1
⇆	2	24 V DC
	3	/
	4	24 V DC suction command (1)
⇆	5	24 V DC ASC Status DO2 - C/Q (2)
	6	24 V DC blow-off command
⇆	7	0 V - GND
	8	/

▪ **C24A2**: Two M12 4-pin male connectors



Rear connector: IN

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



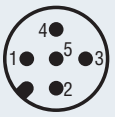
Front connector: OUT

⇆	1	24 V DC
	2	24 V DC ASC Status DO2 (2)
⇆	3	0 V - GND
⇆	4	24 V DC object gripped DO1 - C/Q

Note: The Digital Outputs 1 and 2 signals can be swapped in the parameter settings.

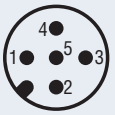
Version for use with remote HMI

▪ **C25A5**: Two M12 5-pin male connectors



Rear connector: IN

	1	24 V DC
	2	RS485 +
	3	0 V - GND
	4	RS485 -
	5	/



Front connector: OUT

⇆	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

⇆ : *Connections for* IO-Link

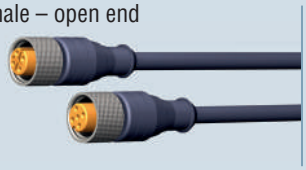
(1) 24 V DC suction command, depending on version:
*- **S**: 24 V DC vacuum control*
*- **V**: 24 V DC vacuum off command*
*- **L**: 24 V DC vacuum control with min. pulse-triggering of 50 ms*

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

Accessories

Power supply cable: M12, straight, female – open end

- **CDM12N**: 4-pin, length. 2 m.
- **CDM12L5**: 4-pin, length. 5 m.
- **CDM125PL2**: 5-pin, length. 2 m.
- **CDM125PL5**: 5-pin, length. 5 m.



Power supply cable: M12, elbow, female – open end

- **CCM12**: 4-pin, length. 2 m.
- **CCM125PL2**: 5-pin, length. 2 m.



GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Selection guide

NFC
IO-Link
AIR Saving Control

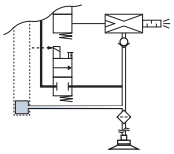


Blow-off Function

There are 2 different versions of GVMAX HD vacuum pumps that feature different blow-off types to meet the requirements of any application:

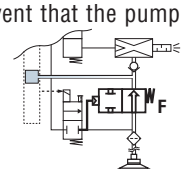
- Standard blow-off (version GVMAXHD…**F1**)

The blow-off flow is directed into the vacuum network and ensures the object is released in most applications.



- Powerful blow-off (version GVMAXHD…**F2**)

This type of blow-off allows for objects to be quickly released in the event that the pump cannot be placed as close as possible to the suction cups, or to reduce the cycle time as much as possible.
The isolation valve **F** directs the entire blow-off flow towards the suction cups. In this case, the blow-off pressure is identical to the vacuum pump's compressed air supply pressure.



The blow-off control mode is configurable on GVMAX HD___**S** pumps:

- Controlled by external signal
- Automatic timer, adjustable from 50 to 9999 ms (advantage: saves one controller output)

On GVMAX HD___**V** and **L** pumps, the blow-off control mode is controlled by an external signal.

Standalone Vacuum Pumps or in Island Assemblies?

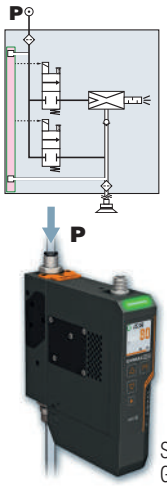
Standalone GVMAX HD vacuum pumps meet the needs of most common applications: a GVMAX HD controls one or several suction cups, which all operate according to the same sequence. Whenever several suction cups operate according to different sequences, several vacuum pumps are required. The choices are as follows:

- Several standalone pumps
- An island assembly including 1 to 4 vacuum pumps and a shared internal pressure supply

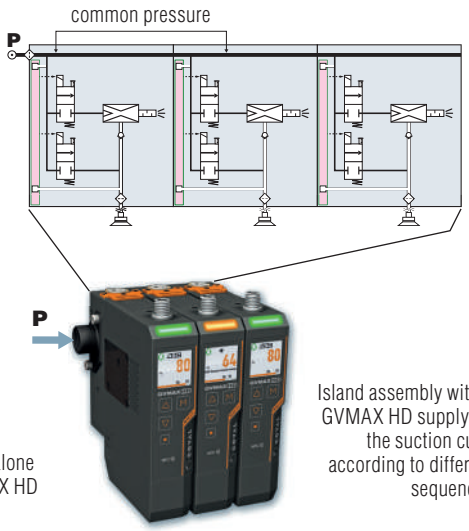
Standalone vacuum pumps are available in 2 versions:

- GVMAXHD__**VA**: pneumatic socket forms an integral part of the GVMAX HD module
- GVMAXHD__**RA**: patented SMART SWAP to quickly mount the GVMAX HD module on its pneumatic socket

GVMAXHD__RB1/2/3/4 mounted on an island: equipped as standard with the SMART SWAP system to quickly mount the GVMAX HD module on its pneumatic socket



Standalone GVMAX HD



Island assembly with 3 GVMAX HD supplying the suction cups according to different sequences

Configuration of Island Assemblies



Configuration of an island assembly with 3 identical vacuum pumps GVMAXHD___RB3L

Standard island assemblies consist of 1 to 4 identical GVMAX HD vacuum modules and a pneumatic socket(*). They have specific part numbers and are delivered assembled.

For island assemblies consisting of different GVMAX HD vacuum modules, sub-assemblies must be ordered separately:

- Pneumatic socket in versions with 1, 2, 3, or 4 slots (*)
- GVMAX HD modules with SMART SWAP quick-mounting system (version R) depending on the selected configurations

Custom island assemblies are delivered unassembled.

(*) Assembled pneumatic sockets are supplied as standard with the pressure connection on the left side (version L). On request, an R version with right-hand pressure connection or a T version with top pressure connection is available.

Adding to an island assembly

A GVMAX HD vacuum pump can be added to an existing island assembly by ordering the pneumatic socket: for islands **GVMAXHDPBG1RB** and version **R** of the desired GVMAX HD module.

Reminder: 4 GVMAX HD/island

Pneumatic socket for island assemblies



Additional GVMAX HD module

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Configuring a Vacuum Pump

NFC · IO-Link · AIR Saving Control



GVMAXHD90X	25	L	C15A1	X	G1		F1	D	RB3L

NOZZLE DIA.

2.5 mm dia	25
3.0 mm dia	30

GENERATOR CONTROL

Vacuum pump with **NC** vacuum control and **NC** blow-off Choice of blow-off settings: ▪ 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 ▪ Blow-off controlled by external signal	V
Vacuum pump with **pulse-triggered bistable** vacuum control and **NC** blow-off ▪ Blow-off controlled by external signal	L

BLOW-OFF

Standard blow-off	F1
Powerful blow-off *The powerful blow-off option is used when the object needs to be released quickly.*	F2

CONNECTOR(S)

C15A1	1 x M12 5-pin male
C18A1	1 x M12 8-pin male
C24A2	2 x M12 4-pin male
C25A5	2 x M12 5-pin male **For use with remote HMI**



CONFIGURATIONS

Standalone vacuum pumps

VA — **GVMAXHD90X __XG1_D_VA**
GVMAX HD module screwed onto its pneumatic socket



RA — **GVMAXHD90X __XG1_D_RA**
Standalone GVMAX HD module with SMART SWAP quick-mounting system and pneumatic socket



Vacuum pumps mounted on an island (with SMART SWAP quick-mounting system)

RB1L* — **GVMAXHD90X__XG1_D_RB1L**
1 x GVMAX HD module with SMART SWAP quick-mounting system and pneumatic socket with 1 slot
▪ Left lateral pressure connection



RB2L* — **GVMAXHD90X__XG1_D_RB2L**
Island consisting of 2 GVMAX HD modules with SMART SWAP quick-mounting system and pneumatic socket with 2 slots
▪ Common pressure supply
▪ Left lateral pressure connection



RB3L* — **GVMAXHD90X__XG1_D_RB3L**
Island consisting of 3 GVMAX HD modules with SMART SWAP quick-mounting system and pneumatic socket with 3 slots
▪ Common pressure supply
▪ Left lateral pressure connection



RB4L* — **GVMAXHD90X__XG1_D_RB4L**
Island consisting of 4 GVMAX HD modules with SMART SWAP quick-mounting system and pneumatic socket with 4 slots
▪ Common pressure supply
▪ Left lateral pressure connection



** On request, an RB_**R** version with right-hand pressure connection or a RB_**T** version with top pressure connection is available.*

Sample Part number consisting of a standalone vacuum pump:
GVMAXHD90X30VC24A2XG1F1DVA

Standalone GVMAX HD module screw-mounted onto a pneumatic socket, max. vacuum 85%, 3.0 mm nozzle, controlled by an NO vacuum solenoid valve, 2 M12 4-pin connectors, with standard blow-off.

Sample Part number consisting of an island:
GVMAXHD90X25LC18A1XG1F2DRB3L

Island assembly consisting of 3 GVMAX HD modules with SMART SWAP quick-mounting system and 1 pneumatic socket with 3 slots, left lateral pressure connection, max. vacuum 85%, 2.5 mm nozzle, pulse-triggered bistable vacuum control, 1 M12 8-pin connector, with powerful blow-off.

Mounting accessories for GVMAX HD

- **GVMAXHDFIXA**: front panel installation kit (1 plate + 4 fastening screws)
- **GVMAXHDFIXB**: DIN rail installation kit (1 clip + 2 fastening screws)

Remote HMI

Only to be used with GVMAXHD___**C25A5**___

- **Part No. HMIHD1M84P**
  With M8 4-pin female connector cable, 0.3 m length



Accessories for remote HMI

- Front mounting plate: Part No. **HMIHD1FIXA**
- 90° angled mounting plate: Part No. **HMIHD1FIXB**
- M12 4-pin female / M8 4-pin male connector cable
  - 2 m length: Part No. **CDM8MM12F4PL2**
  - 5 m length: Part No. **CDM8MM12F4PL5**
  - Other lengths available upon request.

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Build your own island assembly



NFC
IO-Link
AIR Saving Control

To build a custom island assembly containing different GVMAX HD vacuum modules, you need to order the parts below separately:

Note: Custom island assemblies come unassembled.

1 Select the Pneumatic Socket

GVMAXHDPBG1RB_L sockets come assembled with the corresponding set of end pieces and the pressure connection on the left side.

SMART SWAP



GVMAXHDPBG1RB1L*
Pneumatic socket
with 1 slot



GVMAXHDPBG1RB2L*
Pneumatic socket
with 2 slots



GVMAXHDPBG1RB3L*
Pneumatic socket
with 3 slots



GVMAXHDPBG1RB4L*
Pneumatic socket
with 4 slots

** On request, an R version with right-hand pressure connection or a T version with top pressure connection is available.*

2 Select the GVMAX HD Modules *(1 module for each slot in the socket)*

GVMAXHD90X	25	L	C15A1	X	G1		F1	D	R



NOZZLE DIA.

2.5 mm dia	25
3.0 mm dia	30

GENERATOR CONTROL

Vacuum pump with **NC** vacuum control and **NC** blow-off Choice of blow-off settings: ▪ Controlled by external signal ▪ Automatic timed from 50 to 9999 ms (advantage: saves one controller output)	S
Vacuum pump with **NO** vacuum control and **NC** blow-off ▪ Blow-off controlled by external signal	V
Vacuum pump with **pulse-triggered bistable** vacuum control and **NC** blow-off ▪ Blow-off controlled by external signal	L

CONNECTOR(S)

C15A1	1 x M12 5-pin male
C18A1	1 x M12 8-pin male
C24A2	2 x M12 4-pin male
C25A5	2 x M12 5-pin male **For use with remote HMI**



BLOW-OFF

F1	Standard blow-off
F2	**Powerful blow-off** *The powerful blow-off option is used when the object needs to be released quickly.*

Example of a custom island assembly:

- 1 X GVMAXHDPBG1RB3 → 1 pneumatic socket with 3 slots and SMART SWAP quick-mounting system
- 1 X GVMAXHD90X25SC18A1XG1F1DR
- 1 X GVMAXHD90X30VC18A1XG1F2DR
- 1 X GVMAXHD90X25LC15A1XG1F1DR

} 3 GVMAX HD modules of different types for island assembly

Accessories for island assemblies

Part No. GVMAXHDPBG1RB



Single-slot pneumatic socket with SMART SWAP quick-mounting system to add a GVMAX HD vacuum pump to an existing island assembly.

Part No. 80005594



Complete set of island assembly end pieces (version **R**) containing the following items:
- **Right** flange with G1/2''-F pressure connection + 350 µm filter screen.
- Left sealing flange.
- Flange fastening screws.

Part No. 80005413



Complete set of island assembly end pieces (version **L**) containing the following items:
- **Left** flange with G1/2''-F pressure connection + 350 µm filter screen.
- Right sealing flange.
- Flange fastening screws.

Part No. 80005960



Complete set of island assembly end pieces (version **T**), containing the following items:
- 2 sealing flanges.
- Flange fastening screws.

GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Dimensions and Installation Options

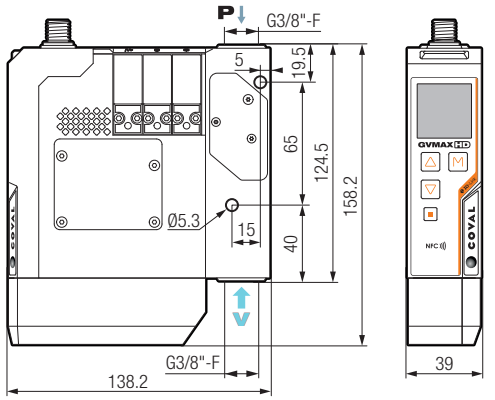
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IO-Link
AIR Saving Control



Lateral installation (standalone version)

2 x 5.3 mm dia. (for two Ø 5 mm through screws or bolts with large washers).





Note: All dimensions are in mm.

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

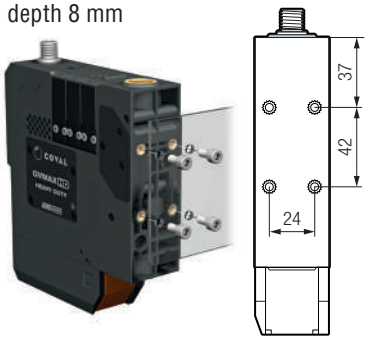
www.coval.com

3D COVAL Data

Front Panel Installation

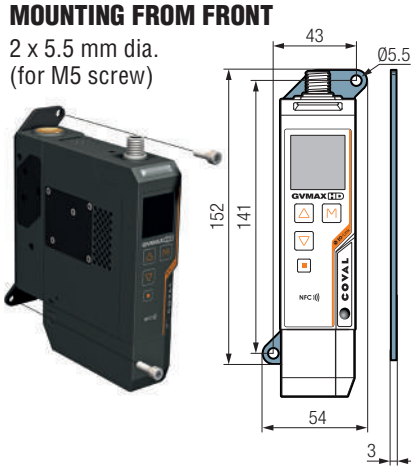
MOUNTING FROM REAR

4 x M5 screw threads, depth 8 mm



MOUNTING FROM FRONT

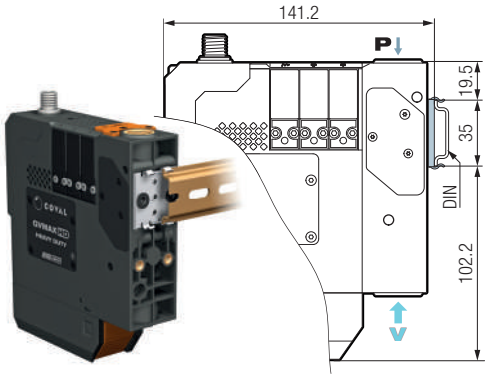
2 x 5.5 mm dia. (for M5 screw)



For front panel installation, order the following installation kit:

Part No.: **GVMAXHDFIXA**
(1 plate + 4 fastening screws)

Installation on DIN Rail



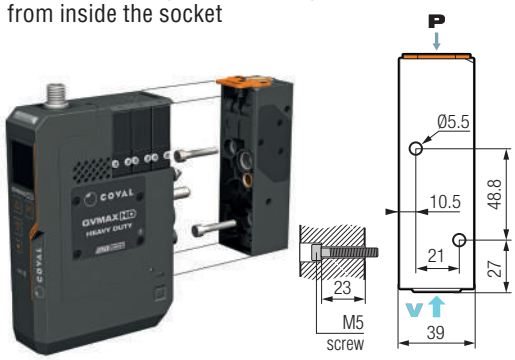
The pump can be mounted on a DIN rail for a static installation (e.g. in a cabinet).
In this case, it must be equipped with an installation clip that is to be ordered separately:

Part No.: **GVMAXHDFIXB**
(1 clip + 2 fastening screws) *Note: For an island assembly, you need to order 2 installation kits.*

Front Panel Installation for Modules with SMART SWAP Quick-mounting System

STANDALONE VERSION

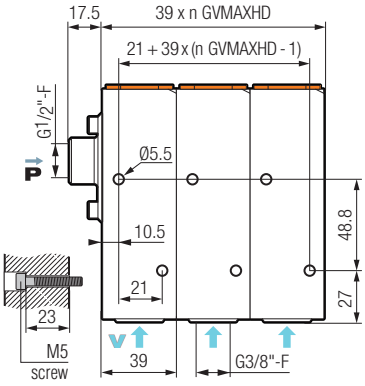
2 x 5.5 mm dia. (for M5 screws) from inside the socket



ISLAND VERSION

2 x 5.5 mm dia. (for M5 screws) from inside the socket





GVMAX HD

Heavy Duty Communicating Vacuum Pumps

Technical specifications

NFC
IO-Link
AIR Saving Control



- 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: • 5 bar for dia. 2.5 mm nozzle
  • 5.5 bar for dia. 3.0 mm nozzle
- Powerful blow-off (option F2): network pressure
- Pressure connection:
  - Standalone vacuum pump: G3/8"-F with removable 350 µm filter screen
  - Island assembly: G1/2"-F with 350 µm filter screen
- Vacuum connection: G3/8"-F with removable 350 µm filter screen
- Max. vacuum: 85%
- Air suction flow rate: 185 / 230 Nl/min
- Air consumption: 294 / 380 Nl/min, when operating "without ASC"
- Integrated non-clogging silencer
- Noise level: approx. 71 dBA "without ASC" 0 dBA with ASC
- Degree of protection: IP65
- Max. operating frequency: 4 Hz
- Endurance: 50 million cycles
- Weight: 870 g
- Operating temperature: from 0 to 50 °C
- Materials: PA GF, brass, aluminum, steel, NBR, PU, FKM
- M12 male connectors

Analysis of ASC vacuum control system

- Permanent monitoring of leakage level: abort or automatically return to ASC operation

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)
- Configurable input/output switching mode: PNP or NPN
- IO-Link or SIO (Standard Inputs Outputs) operation

DO1/DO2 output signals

- Configurable as PNP or NPN
- NO or NC
- Breaking capacity: 330 mA
- DO2 configurable (see Parameter settings)

Diagnostics

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

Information displayed

- LED gripping status indicator on front panel (green: object gripped ; yellow: ASC disabled due to vacuum leakage (object held in place) ; 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 control status of control functions:
    - Green suction cup: vacuum control
    - Orange suction cup: blow-off control
    - Red suction cup: simultaneous vacuum and blow-off controls
  - Configurable display orientation: 0 – 90 – 180 – 270°

Parameter settings

- Performed with 4-key membrane keyboard
- Choice of language: EN, FR, DE, IT, or ES
- Choice of blow-off type:
  - Controlled
  - Automatic timed, adjustable from 50 to 9999 ms
- Choice of vacuum measurement unit (kPa, %, mbar, inHg)
- Choice of pressure measurement unit (MPa, bar, Psi)
- Monostable electrical manual controls
- Object gripped (L1) and L2 control thresholds
- Whenever required by the application, specific threshold and hysteresis settings that are different from the initial factory settings can be defined: L1=65%, h1=10%, L2=75%, h2=10%
- DO2 configurable (24 V DC) (only on C18A1 et C24A2 models):
  - ASC status (default)
  - or Pressure fault (below 5 bar or above 8 bar)
  - or Power supply fault (below 21.6 V or above 26.4 V)
  - or ASC fault
  - or Object lost
- Activation/deactivation of the ASC control system
- Activation/deactivation of the leakage level monitoring system (DIAG ECO) + adjustment of monitoring parameters

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

COVAL
vacuum managers



A TECHNOLOGICAL PARTNER ON A GLOBAL SCALE

Located in the southeast region of France, COVAL conceives, manufactures and globally distributes high performance, advanced vacuum automation components and systems for industrial applications in all branches.

COVAL is an ISO 9001: V2015 certified company which offers innovative solutions integrating reliable and optimized components with intelligent functionalities. The focus is to provide the most personalized and economic solution to a given application while assuring a significant improvement in the productivity and the safety for the vacuum users around the world.

COVAL has an ambition for technical excellence and innovation. As a specialist in vacuum automation, COVAL is reputed for offering reliable, personalized, cost effective and productive solutions.

The references of COVAL can be found in several industrial sectors (Packaging, Automotive Industry, Plastic, Graphic, Aeronautic…) where vacuum handling is important for high efficiency and productivity.

COVAL markets its products and services all over Europe, in the United States and South America through its subsidiaries and authorized distribution network. COVAL strives to provide customer driven solutions and gives the best possible treatment to satisfy all its clients.

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