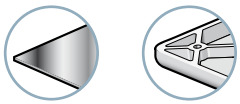
GVMAX V3 series

Self-regulating vacuum pumps

(electric vacuum and blow-off control)

Branch-specific applications



Applications

The two solutions, GVMAX SP345V3 and GVMAX SP345V3R are used for gripping air-tight objects in the stamping, sheet-metal/bodywork and mounting industries for handling, transfer and holding operations. The GVMAX SP345V3 was designed and developed for the Automotive sector.

Presentation

The GVMAXSP345V3/V3R series of vacuum pumps feature the Twintech™ technology combining Intelligence and Integration.

These pumps provide an "all-in-one" solution integrating all the required functions, such as pressure regulators, controls, valves, vacuum regulation, powerful integrated blow-off, Object presence detection by vacuum switch and silencer in a single compact, light-weight module.
The M12 connections dramatically simplify installation and use. They are available in two versions:

- GVMAXSP345V3: non-adjustable vacuum switch (factory configured)
- GVMAXSP345V3R: adjustable vacuum switch

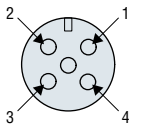
Characteristics

model	Ø nozzle (mm)	maximum vacuum (%)	flow consumed at 4 bar (Nl/s)	max. suction power (Nl/min)	dynamic supply pressure	(g)
GVMAX SP345V3/V3R	3	90	6.4	245	5 bar relative pressure	450

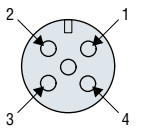
Evacuation time in seconds per liter

% vacuum	10	20	30	40	50	60	70	80	85
GVMAX SP345V3/V3R	0.03	0.06	0.09	0.13	0.18	0.24	0.33	0.48	0.64

Electrical connections



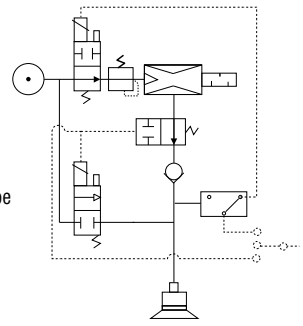
- Automaton inlet
5-pole M12 connector
(1) Inlet connector - brown, 24 V DC
(3) 0 Volt (or –) - blue
(4) Vacuum switch threshold 2 outlet - black



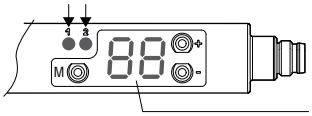
- Automaton outlet
5-pole M12 connector
(2) Blow-off control - white, 24 V DC
(4) Vacuum immobilization in waiting position (neutral position) - black, 24 V DC

- Pneumatic supply maintained on the "compressed air" inlet of the vacuum pump.

- Electric power supply
Suction:
24V DC N.O. solenoid valve.
From rest to suction (must be powered to stop suction).
Blow-off:
24V DC N.C. solenoid valve



Red LED Green LED



2 digit display in % vacuum(e.g. 75 for 75% vacuum)

Advantages

- Safety: vacuum generation in case of power failure by air inlet solenoid valve in normally open operation (24 V DC).
- Strong suction reduces time to create a vacuum.
- Powerful, controllable integral blow-off.
- Data processing circuit (connection cable)
- Connection by 2 male 5 pin M12 connectors, (Input/ Output)
- Integrated pressure regulator.
- Silent operation
- Non-adjustable vacuum switch with the GVMAX SP345 V3 and adjustable vacuum switch with the GVMAX SP345 V3R.
- In case of interruption in the network supply pressure, the vacuum network is brought to atmosphere.

Specifications

Base body	Aluminum (AU 4 PB)
Valve body	POM (black polyacethal)
Silencer	Black PC with felt internal element
Vacuum switch	PA66, PC, brass, NBR seal
Electric wiring	PA66
Screw	Zinc-plated steel
Inside parts	Brass; Aluminum; Desmopan
Seals	NBR
Membrane	NBR with nylon substrate
Protection level	IP 65

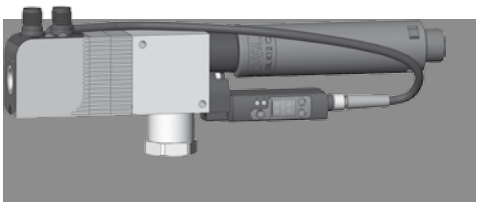
Vacuum switch display legibility

The GVMAX is fitted with an indexable vacuum switch (45°, 90°, 180°). This vacuum switch is set to the following values (values used in the automotive industry): 65% (object present) and 75% (regulation).

For all orders, please specify: **GVMAX SP345 V3** (Non-adjustable vacuum switch)
GVMAX SP345 V3R (Adjustable vacuum switch)

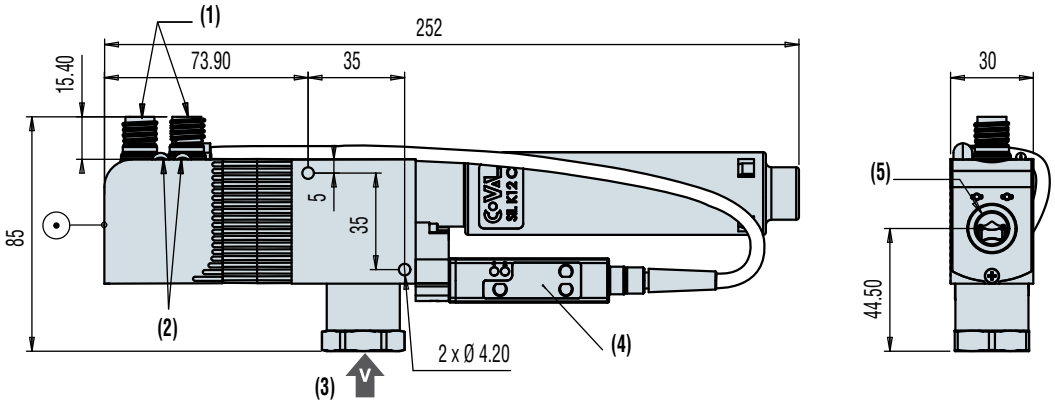
GVMAX V3 series

Dimensions
Curves
Options

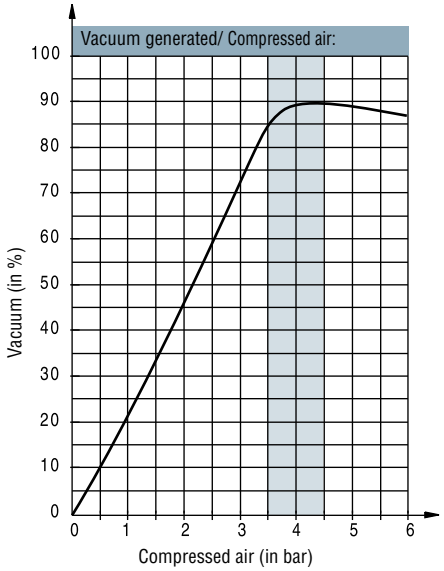


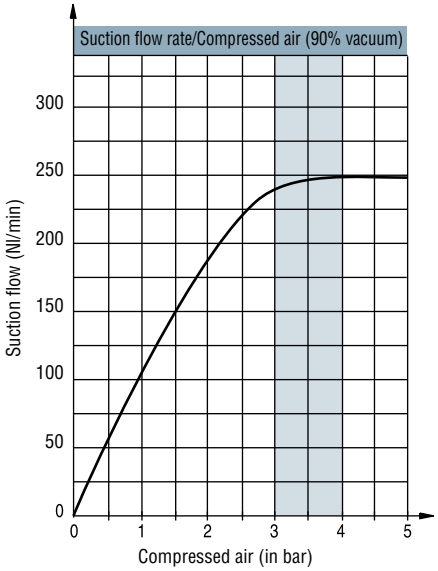
Dimensions

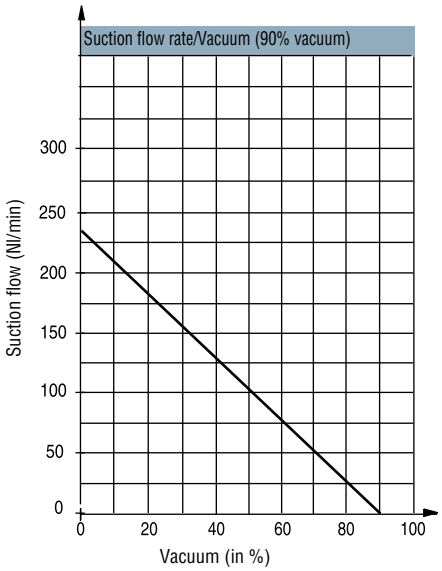
(1) 5-pole M12 connector automation input and output
(2) Blow-off and vacuum display LED
(3) Vacuum 1/2 Gas
(4) PSA100 B or BU
(5) Compressed air network inlet 1/4G (5 to 8 bar)

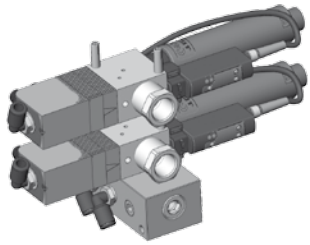


Curves

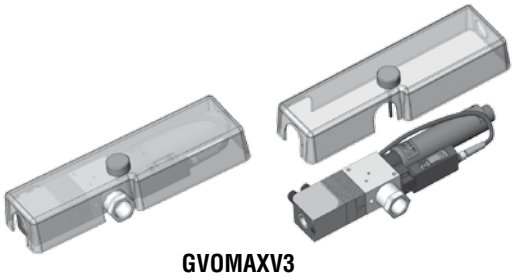








GVMAX SP 345V3 B2



GVOMAXV3

Options

■ Manifold mounting

The GVMAXSP345V3 and V3R can also be manifold-mounted.

Up to 4 vacuum pumps can be installed on one base.

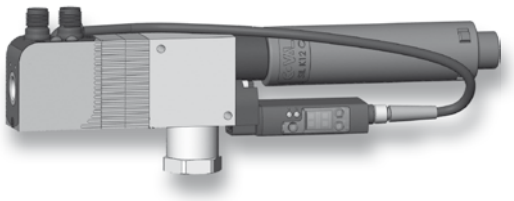
Manifold references (example with GVMAX SP 345 V3)
GVMAX SP 345V3 B1 (Base + 1 x GVMAX SP 345V3)
GVMAX SP 345V3 B2 (Base + 2 x GVMAX SP 345V3)
GVMAX SP 345V3 B3 (Base + 3 x GVMAX SP 345V3)
GVMAX SP 345V3 B4 (Base + 4 x GVMAX SP 345V3)

Also see the new Quick Change, GVOQC1, page 9/30.

■ Protective housing for GVMAX SP345V3/V3R, ref. GVOMAXV3

The protective housing for the GVMAX is transparent and removable. Coval recommends using a protective housing to protect the vacuum pump.

Self-regulating vacuum pumps GVMAX series



Description

COVAL's innovative GVMAX series of pumps are designed for gripping, handling and retaining air-tight objects.

The principle is simple: as soon as the required level of vacuum is reached, the compressed air supply is stopped and the vacuum is maintained in the installation thanks to the check valve. Thus, the self-regulating system guarantees an optimum level of vacuum.

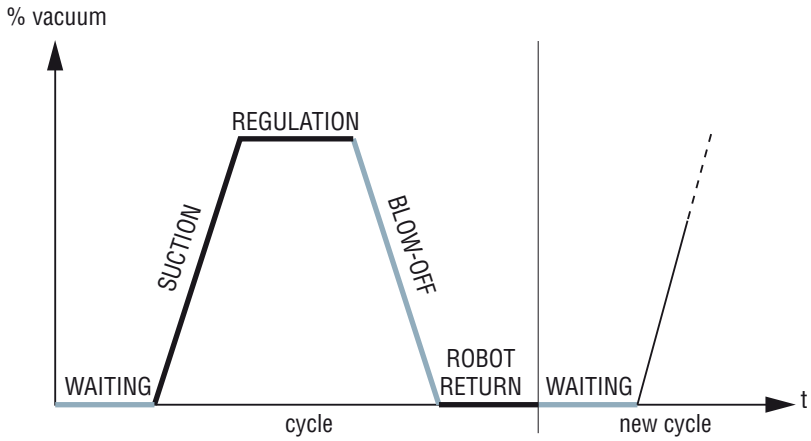
This approach considerably reduces both compressed air consumption and the noise level. Moreover, thanks to their intelligent functions, they guarantee safety and optimum vacuum management for the application. COVAL recommends these pumps for applications involving air-tight objects.

The specific functions of vacuum-regulating vacuum pumps

They have the following characteristics:

- Vacuum generation by venturi effect (maximum pressure drop - 900mbar or 90% vacuum).
- Air-saving, vacuum-regulating function.
- Adjustable blow-off.
- Visual and switching output control of vacuum level by digital electronic vacuum switch.
- Positive safety holds objects in case of electrical emergency stop (electrical outlets switched off) via its NO vacuum supply valve, maintenance can be carried out in complete safety.

Operating principle of a GVMAX series vacuum pump



The cycle shows the three stages of a GVMAX: Waiting - Suction - Blow-off.

Regulation is automatically performed by the equipment's internal loop. The interest of the GVMAX vacuum pump is based on these three stages:

- Waiting: no consumption, no clogging, no noise.
- Suction-regulation: the object is gripped and the vacuum pump automatically stops.
- Blow-off: automatically timed for release and return to neutral position in readiness for the next cycle.

Note: in addition to silent operation and energy savings, status 1 allows to perform the operation without an upstream solenoid valve cutting off the air inlet in "waiting" mode.

Self-regulating vacuum pumps GVMAX series

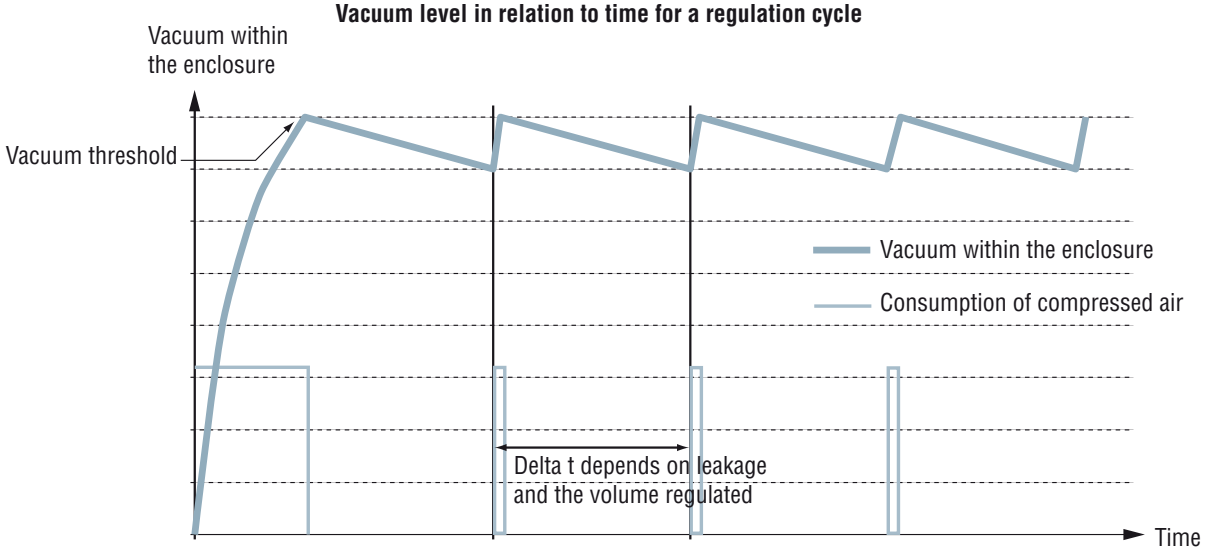
Regulating system in an air-saving vacuum pump

The GVMAX vacuum pump is designed to save compressed air during a gripping cycle. The equipment stops consuming compressed air when the vacuum threshold pre-set in the vacuum switch is reached in the network. This is known as "regulation".

The curve below shows the regulating system of a vacuum pump. As soon as optimum vacuum (vacuum threshold 1) is reached, the pumps maintain the vacuum until the level of vacuum descends to the hysteresis value after a period of time "t" due to leakage.

The self-regulating system guarantees that an optimum level of vacuum is maintained and reduces both air consumption and the noise level throughout the cycle.

Vacuum level in relation to time for a regulation cycle



GVMAX vacuum pump yield

Volume of air consumed and time to create a vacuum in a 5 liter tank with a 4 bar GVMAX vacuum pump:

vacuum (%)	time to create a vacuum (s)	air consumed (Nl)
10	0.2	0.9
20	0.3	1.8
30	0.6	2.9
40	0.8	4.2
50	1.1	5.9
60	1.5	7.8
70	2.1	10.9
80	3.0	15.7
85	4.0	21.0

Applications

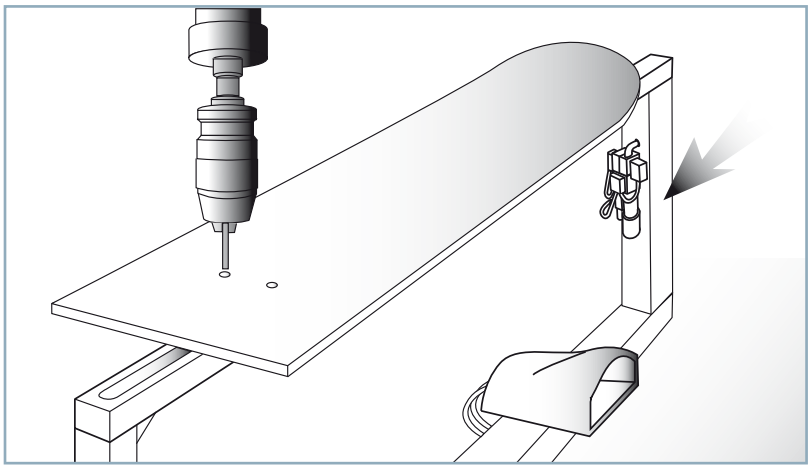
Self-regulating vacuum pumps GVMAX series

Holding

During the final phase of manufacture a snowboard must be held in position for many minutes.

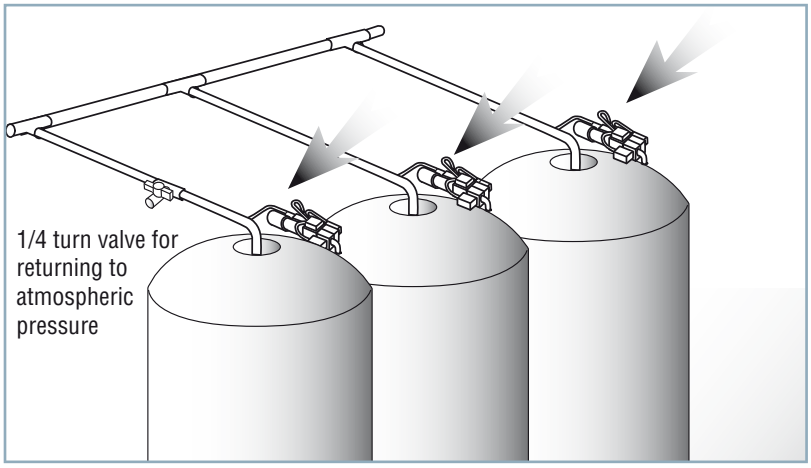
Using vacuum pumps with air-saving function generates significant energy savings.

Also see the LEMAX series, pages 9/8 - 9/13.



Emptying a tank

The regulation function of the vacuum pumps are used in this type of application. Hysteresis of the switching output regulation is adjustable between 1 and 25% vacuum on electric models.



Note: For regulation of the vacuum level in tanks of more than 10 liters, consult us for the pneumatic versions.

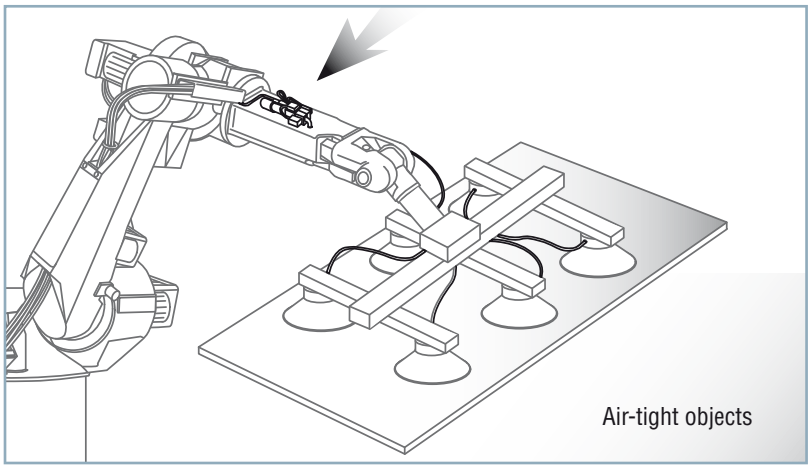
Grip is maintained safely

■ Electric GVMAX

Grip is maintained on the object (air-tight object) if there is a power failure.

■ Pneumatic GVMAX

Grip is maintained on the object (air-tight object) if the pneumatic power is interrupted.



Grip is maintained if the electrical power or compressed air supply is interrupted.

The range of modular and intelligent vacuum pumps

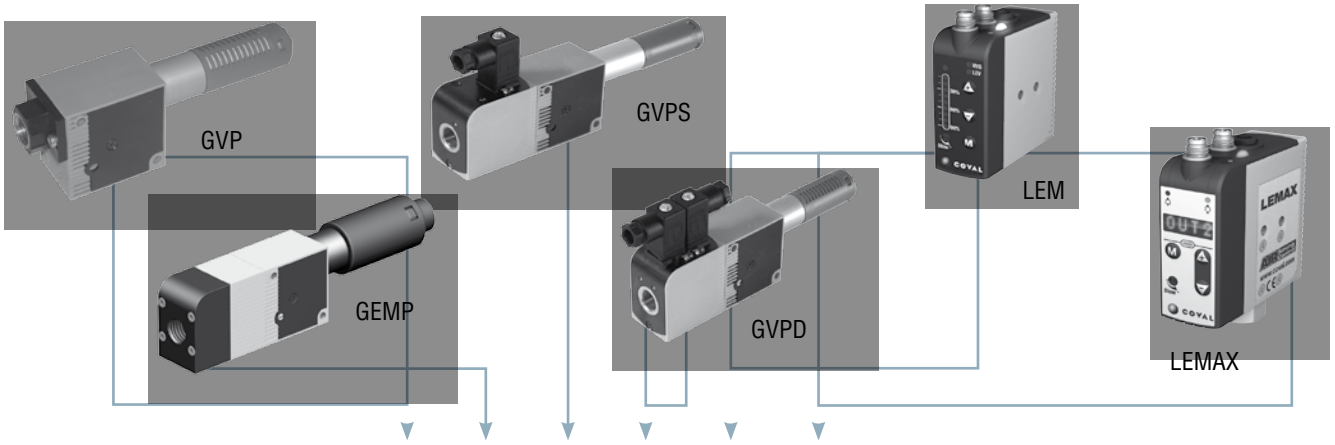
Advantages

- Reduced energy consumption
- Reduced noise levels
- Increased life expectancy
- Can be adapted to all branches
- Technical development of the Coval valve resulting from technological advances in aerospace and automotive applications.

New optimized fluidics

The COVAL range of modular vacuum pumps operates with a pressure supply of 4 bar.

Developed by COVAL over the years, this range is the result of research and optimized technical solutions. Thanks to the new fluidics, this range of vacuum pumps offer an optimized performance.



Model	MODULAR VACUUM PUMPS				INTELLIGENT VACUUM PUMPS					
	GVP	GEMP	GVPS	GVPD	LEM	LEMAX	GEM	GVMAX--V3	GVMAX--V2	GVMAX
Compressed air control (Suction)			■	■	■	■	■	■	■	■
Blow-off control				■	■	■	■	■	■	■
Integrated pressure regulator		■			■	■	■	■		
Powerful blow-off						■		■		
Electronic vacuum switch with display	□	□	□	□	■	■	■	■	■	■
Electronic vacuum switch	□	□	□	□	■	■	■			
Vacuum switch with electrical contact	□	□	□	□			■			
Vacuum check-valve	□		□	□	□	■	□	■	■	■
Electric control			■	■	■	■	■	■	■	■
Pneumatic control										■
Twin Tech (Integration & Intelligence)					■	■	■	■		
ASC (Air saving Control)						■				
Automatic vacuum regulation						■		■	■	■
M8 connections					■	■				
M12 connections							■	■	■	

■: Standard or integrated □ : Option