

Vacuum Automation

Improve your productivity and energy efficiency



Main industries where Piab is active

Consumer and food



Applications

Bag lifting, cartoning machines, carton erectors, rotary cartoners, palletizing/depalletizing, handling of flexible packages.

Pharmaceutical



Applications

Robot pick and place, blister packaging, vacuum drying, powder and tablet conveying, carton erecting, product/bags lifting, labeling, palletizing, bag opening.

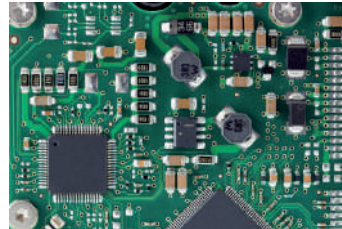
Automotive



Applications

Metal stamping/press transfer, body assembly, windshield assembly, injection moulding, ergonomic lifters, liquid filling.

Electronics and semiconductor



Applications

Surface mounting PCB, vacuum holding measuring, leak testing, display assembly, calibration.

Graphic



Applications

Feeder, decurler, delivery, folding, bookbinding, glue binder, stitching, saddle stitching, inserters, die cutting, palletizing.

Chemical and plastics



Applications

Injection moulding, thermo/vacuum forming, vacuum holding during machine operations, vacuum laminations, evacuation of molds, degassings, evaporation, conveying.

piGRIP® – The first modular suction cup on the market

Taking gripping to new dimensions



Versatility and productivity

A modular suction cup that fits most machines and that can be optimized for handling almost all materials. piGRIP®'s six different lip types, optimized for various products to lift, ensure the right hardness/softness and sealing capability for your material. Combined with the firm bellows, piGRIP® is stable enough to handle faster accelerations and more high speed lifts as compared to traditional cups.

Your choices are endless, piGRIP® is available as a flat, one, three or as a six bellow cup. The availability of more than 40 different fittings, six different types of lips, and also a low micron filter disc for the bellow and a mesh filter for the fitting makes the variations of this modular suction cup endless. You can configure more than thousands and thousands of different types of cups to meet your exact need.

Lips



Standard Lip

The green standard lip is suitable for relatively even surfaces on sealed materials. It has extra wear resistance.

The blue standard lip is recommended if the surface is more uneven or rough, e.g. textured plastic parts.



Flexible Lip

For surface leaking materials (wrinkled or textured) and porous materials, such as corrugated paper.



Bag Lip

For difficult bags such as pouches and heavy bags with e.g. liquids.



Hot Surface Lip

Used in handling hot parts or where silicone or PWIS is not allowed. Mark free.



Foam Lip

Suitable when conventional lips are not sealing enough. Can replace mechanical grippers.

60° TPE, Oil resistant, Silicone/PWIS free & Mark free

50° TPE, FDA



50° TPE, FDA

30° TPE, FDA



Materials & Durometers

50° Silicone FDA

50° HNBR, High temperature, oil resistant, silicone/PWIS free & Mark free

60° PU EPDM, Foam

S

60° PU NR, Foam

F

Suction cups/grippers

piGRIP® Modular suction cup

Grip Hold Accelerate ... like never before.



Applications

- ▶ Smooth, textured, uneven and also very rough surfaces on objects such as plastic pieces, wood, sheet metal (dry), glass, corrugated cardboard, carton, food, tiles, etc.

DURAFLEX®

High wear resistance without compromising adherence to the object.



DURAFLEX® Single durometer

- ▶ Smooth surfaces on objects such as plastic pieces, furniture parts, sheet metal (dry), glass, solar panels, etc.

Firm bellow, soft and flexible lip, very high sealing capacity and durability.



DURAFLEX® Dual durometer

- ▶ Textured, uneven and also very rough surfaces on objects such as plastic pieces, wood, sheet metal (dry), glass, corrugated cardboard, carton, tiles, etc.

Exceptional grip on oily surfaces.



DURAFLEX® Friction

- ▶ Oily metal sheets and other lubricated surfaces.

Silicone

For extremely high temperature applications and or when handling food products.



Applications

- ▶ Contact with food or FDA environments, packages, pre-colored plastic parts (high temperature), bakery (detectable), electronics/semiconductor (conductive/antistatic).
- ▶ Bags with fragile contents and food, bags with liquids, viscous contents and frozen food (low temperatures), open bags.

Nitrile-PVC and CR

NITRILE-PVC — Oil resistant, a traditionally designed cup.

CR — Especially good for low temperature environments, a traditionally designed cup.



- ▶ Conventional suction cup material for general purposes.

HNBR

Used in handling hot parts or where silicone or PWIS is not allowed. Mark free.



- ▶ Removing hot plastic parts from injection moulding equipment, glass handling.

CR — Chloroprene
 HNBR — Hydrogenated Nitrile Butadiene Rubber
 PWIS — Paint Wetting Impairment Substances

Suction Cup Accessories

Suction cup accessories are parts which make it easier to position the cup, add level compensation, reduce the risk for damaging parts or give a precise movement to the cup.

Level Compensators /Spring plungers

Wide range of thread connections and stroke lengths.



Applications

- ▶ Adjust differences in levels, for example on lifting devices with several suction cups.
- ▶ Allows for soft placement of cups on sensitive or thin objects.
- ▶ Available with rotational or non-rotational design (suitable for use with oval suction cups).

Height adjuster

Facilitates installation.



- ▶ Provides a height extension between the handling device and the suction cup.
- ▶ Adjustable in height.

Suction cup extensions

For handling devices used in cramped areas.



- ▶ Solid extension for mounting a suction cup.
- ▶ Several heights available.

Integrated filter

For increased system reliability in industrial environment.



- ▶ Available as an integrated filter disc in the bellow.
- ▶ A mesh filter is also available in the fitting.

Ball joints

Mounts on a suction cup to avoid stress.

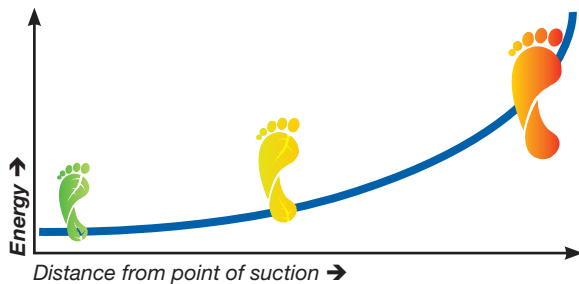


- ▶ Non-leaking design to work with vacuum system for ergonomic assist arms or other devices with high degree of safety.
- ▶ Available in loose-fit and locking versions.

An eco-friendly vacuum system

By never using more energy than absolutely necessary, companies can reduce their carbon footprint as well as their costs. Piab can work with you to achieve the lowest possible energy consumption.

Environmental index



The graph demonstrates the relationship between environmental impact and the distance of the pump from the point of suction.

Your pump will require less compressed air when placed close to the point of suction, thus reducing CO₂ emissions and energy consumption.

Best to use a decentralized vacuum system

A decentralized system with the vacuum pump/cartridge placed directly at the point of suction eliminates the risk of loss in the vacuum piping and the need for expensive, oversized components.

- ▶ Lowest energy usage
- ▶ Fastest cycle time
- ▶ Safest product handling
- ▶ Most flexible design for zoning
- ▶ Easiest troubleshooting
- ▶ Independently working suction cups
- ▶ Most consistent/even performance



If not, design a centralized vacuum system

A centralized vacuum system is designed to have one vacuum source for multiple suction points.

- ▶ Easy installation
- ▶ Easy vacuum sensing and controls
- ▶ Light end-of-arm tooling
- ▶ Simple filtration options
- ▶ Some loss in system performance due to distance



Vacuum Gripper System – VGS™

Makes selection easy and dimensioning right



Piab's decentralized Vacuum Gripper system, VGS™, is a product solution integrating high quality suction cups with COAX® cartridges.

- ▶ VGS™ makes selection, sizing and installation of a vacuum system much easier. Design and dimension mistakes for the vacuum system will be avoided.
- ▶ You will enjoy the benefits of a more efficient and reliable vacuum system.
- ▶ Increased machine speeds can be achieved thanks to faster response times with the vacuum source right at the cup and better initial vacuum flow which will grip the object faster.
- ▶ The decentralized approach provides safety with one vacuum source per suction point and it also eliminates flow losses in long vacuum hoses, making maximum use of energy.
- ▶ VGS™3040 with integrated energy saving functions like Vacustat and AQR02 (Atmospheric Quik Release) is a pioneering product and the world's most energy efficient concept for vacuum handling of sealed parts, such as glass and metal sheets.

Fully decentralized and the most energy efficient and reliable vacuum handling system.



VGS™2010

VGS™3010

VGS™5010

With integrated options for energy-saving, positive blow-off or automatic quick-release.



VGS™3040

Vacuum pumps/generators

Compact design

Powerful vacuum pumps with integrated functionality.



piCOMPACT® MICRO, P3010, P5010

Applications

- ▶ Electronic and semiconductor machine equipment.
- ▶ Robot handling equipment in plastic, consumer, furniture and automotive industries.
- ▶ Suitable for fast and reliable evacuation in sealed systems.

A large capacity pump (comparable up to 4kW [5 HP] electro mechanical pumps) that can still reduce energy costs by up to 40%.



P6010, P6040

- ▶ Automated material handling and other manufacturing processes in the automotive, robotic and packaging.
- ▶ Machine equipment for the graphic industry, e.g. off set press, post press machines.

Classic design

Now 22% improvement of energy efficiency compared to the previous model.



piCLASSIC

- ▶ Robot handling equipment in plastic, consumer, furniture and automotive industries.
- ▶ Packaging machines.

Maximum performance with minimum footprint.



Chip pump

- ▶ Where a small footprint is needed.

Inline design

40-50% energy reduction compared to other in-line vacuum ejectors in corresponding size.



piINLINE®

- ▶ Injection moulding automation equipment.
- ▶ Sheet metal handling equipment, such as laser cutting, bending and punching machines.
- ▶ Pick-and-place, such as labelling machines.

Large capacity vacuum pump suitable for cramped areas or for environments with tough chemical conditions.



Round pump

- ▶ For environments with tough chemical conditions.
- ▶ Vacuum forming, evacuation and filling of liquids, leak testing.

Energy optimizers

It is important to complete the vacuum system with “optimizing” control functions that will limit the use of compressed air and/or facilitate the use of a eco-friendly decentralized vacuum system.

Automatic Quick Release

Keeps energy consumption for releasing objects to a minimum.



AQR02 mounted on VGS™3010

Piab Cruise Control

The optimal energy saving function for leaking applications.



PCC mounted on a P6010

Energy Saving

Saves up to 95% of energy consumption in sealed vacuum applications.



ES mounted on a P3010

Automatic Vacuum Management

Integrated valve, vacuum switch, energy saving, flow control and much much more.



AVM™ 2 mounted on a P5010

System optimizers

Wide range both of filter types and degree of filtration.



Vacuum Filter

Flow through silencers to avoid clogging and reduced pump performance.



Silencers

Wide range of pneumatic, electric, electronic vacuum switches in fixed and adjustable versions.



Vacuum Switches

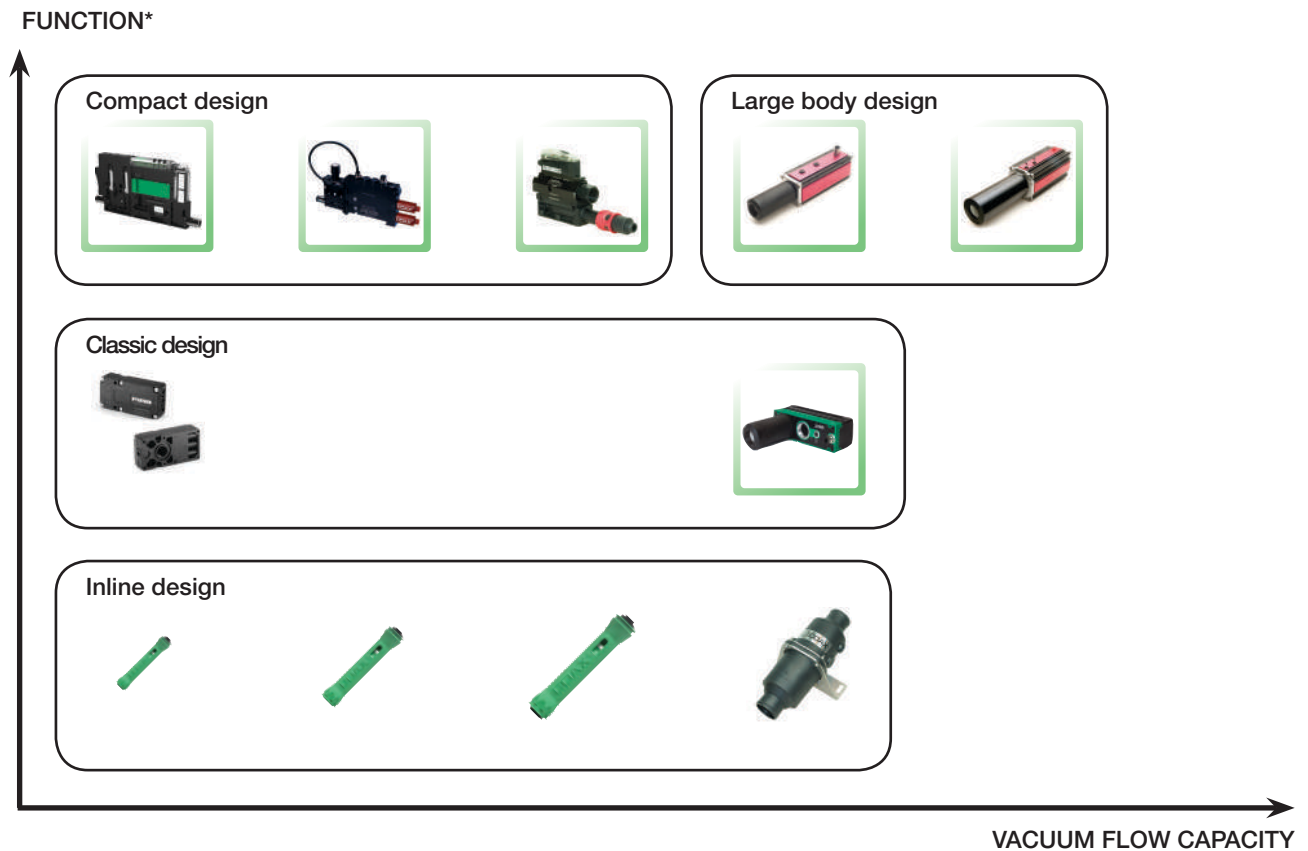
Reliable quick-release function for faster response time.



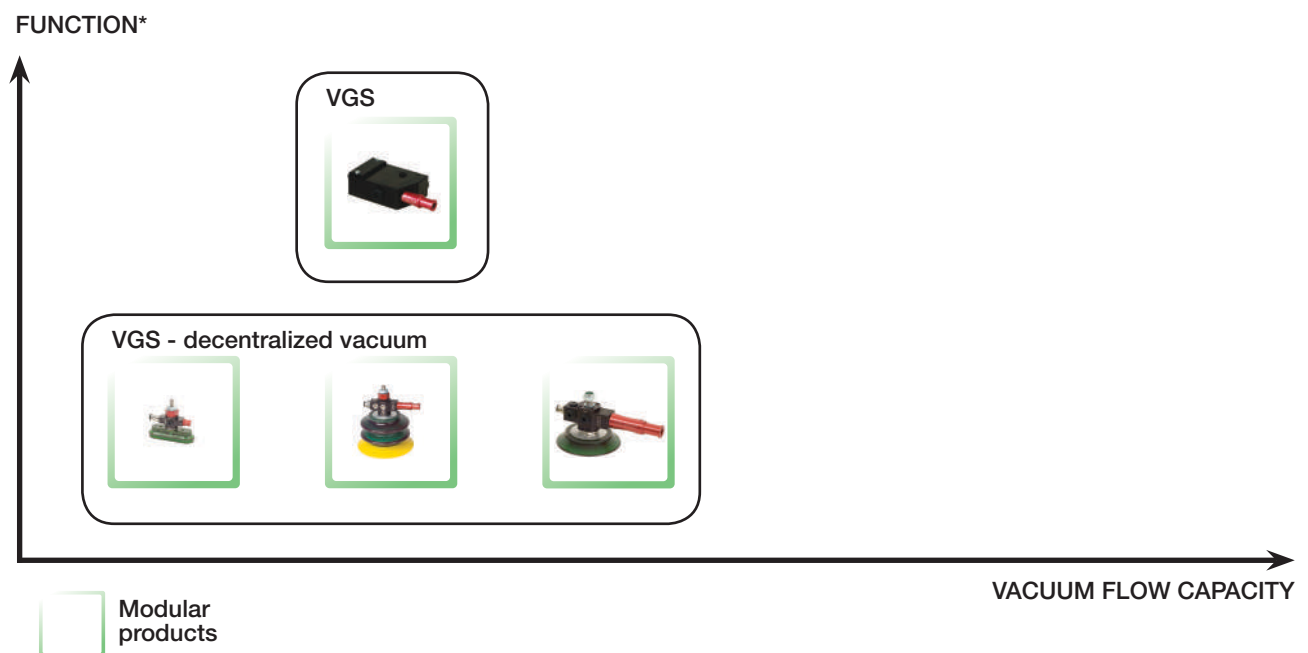
Blow Off Valve

Low opening pressure.

Overview of the vacuum pumps



Overview of the vacuum gripper system



* Function: Possibility to add functions, such as energy saving, release valve etc