

Move things faster, safer and with less energy consumption

VACUUM AUTOMATION CATALOG 8.0



CHAPTER INDEX

● Piab Vacuum Academy	3
● Suction Cups	29
● Suction Cup Accessories	195
● Vacuum Pumps/Generators	221
● Pump Accessories	323
● PMAT	353
● Kenos®	365
● Kenos® Accessories	417
● piSMART®	427
● Table Pages	429

OUR INDUSTRIES



Packaging



Plastics



Food contact



Glass



Automotive



Metal sheet forming



Electronics and semiconductive



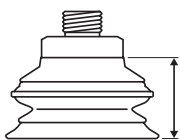
Med Tech



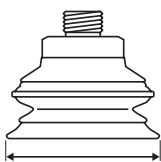
Wood

On the opposite side of this fold-out we present some recommended products for a variety of industries we support.

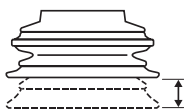
OUR SUCTION CUP SPECIFICATIONS



Height



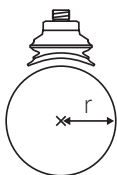
Outer diameter



Max. vertical movement



Volume



Min. curve radius

LET US HELP YOU!

PIAB USA, INC.
65 Sharp Street
US-02043 Hingham Ma

+1 (800) 321 7422
info-usa@piab.com

INDUSTRY GUIDE FOR OUR PRODUCTS

At Piab we offer leading products to optimize your needs in a variety of industries. Beneath we have selected some products that could be of particular interest for your industrial needs.



Packaging

piCOMPACT® (pg. 246)

BXF cups (pg. 123)

piINLINE® (pg. 236)

piCLASSIC (pg. 278)

piSAVE® optimize (pg. 342)

P6010 (pg. 283)

VGS™3010 (pg. 266)



Food contact

B-BL cups (pg. 123)

P-D cups (pg. 152)

F-BX cups (pg. 123)

F-OB cups (pg. 175)



Automotive

piCOMPACT®23 (pg. 246)

BXF cups (pg. 123)

OCF cups (pg. 188)

piINLINE®plus (pg. 240)

DCF cups (pg. 159)

PMAT (pg. 353)

BFFT cups (pg. 83)

OBF cups (pg. 175)



Electronics and semiconductive

piCLASSIC (pg. 278)

piSAVE® release (pg. 333)

piSAVE® onoff (pg. 337)

piCOMPACT® (pg. 246)

piSAVE® optimize (pg. 342)



Wood

piCOMPACT® (pg. 246)

piGRIP® (pg. 30)

piSAVE® onoff (pg. 337)

piSAVE® optimize (pg. 342)

piSAVE® release (pg. 333)

piSAVE® restrict (pg. 335)

piSAVE® sense (pg. 335)

piCLASSIC (pg. 278)

VGS™3010 (pg. 266)



Plastics

BX cups (pg. 83)

F cups (pg. 48)

P5010 (pg. 244)

piCOMPACT® (pg. 230)

VGS™3010 (pg. 249)

piGRIP® (pg. 30)

piINLINE® MICRO (pg. 234)

piSAVE® onoff (pg. 319)

piSAVE® optimize (pg. 324)

piSAVE® release (pg. 333)

piSAVE® restrict (pg. 335)

piSAVE® sense (pg. 317)

piCLASSIC (pg. 260)



Glass

BX cups (pg. 112)

F-MF cups (pg. 48)

P5010 (pg. 260)

piCLASSIC (pg. 278)

piCOMPACT® (pg. 246)

piGRIP® (pg. 30)

piSAVE® onoff (pg. 337)

piSAVE® optimize (pg. 342)

piSAVE® release (pg. 333)

piSAVE® restrict (pg. 335)

piSAVE® sense (pg. 335)

Vacuum switches (pg. 326)

VGS™3010 (pg. 266)

XLF (pg. 48)



Metal sheet forming

BFFT cups (pg. 83)

BX cups (pg. 123)

DCF cups (pg. 159)

FCF cups (pg. 73)

OBF cups (pg. 175)

P3010 (pg. 256)

P5010 (pg. 260)

P5010 AVM™2 (pg. 262)

piCOMPACT® (pg. 246)

piGRIP® (pg. 30)

piSAVE® onoff (pg. 337)

piSAVE® optimize (pg. 342)

piSAVE® release (pg. 333)

piSAVE® restrict (pg. 335)

piSAVE® sense (pg. 335)

piCLASSIC (pg. 278)

VS4118/VS4128 (pg. 328)

Vac. switch, pneum. (pg. 326)

VGS™3010 (pg. 266)

VGS™3040 (pg. 269)

XLF (pg. 48)



Med Tech

BX cups (pg. 123)

COAX® cartridges (pg. 222)

piCLASSIC (pg. 278)

piCOMPACT® (pg. 246)

piGRIP® (pg. 30)

piINLINE® MICRO (pg. 234)

piSAVE® onoff (pg. 337)

piSAVE® optimize (pg. 342)

piSAVE® release (pg. 333)

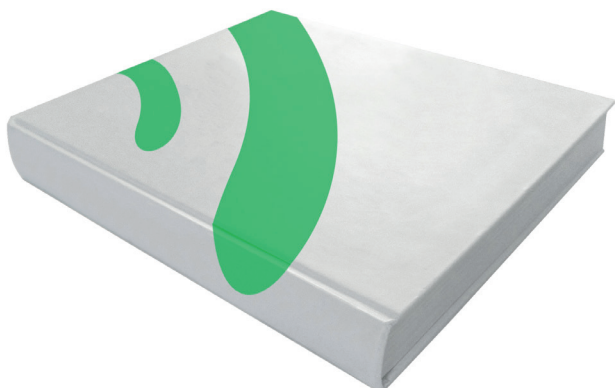
VGS™2010 (pg. 264)

VGS™3010 (pg. 266)

Index

PIAB VACUUM ACADEMY	3	PUMP ACCESSORIES	323
Introduction	5	Selection guide – Accessories	324
Vacuum theory	6	Vacuum switches	326
Expressions and units	7	Valves	333
Vacuum pumps	9	Regulators	342
Vacuum system calculations	13	Silencers	344
Optimizing controls	15	Vacuum Filters	346
Suction cups	16	Other	349
Thread systems	17		
Tables	18	PMAT	353
Applications and solutions	24	PMAT – Piab Modular Automation Tooling	354
		Connections to main frame of the end-effector	356
SUCTION CUPS	29	Swivel arms	357
piGRIP®	30	Function attachments	358
Flat family (F)	48	Accessories	361
Flat Concave family (FC)	73	PMAT Configurable Products	362
Bellows family (B)	83		
Multibellows family (BX/BL)	123	KENOS®	365
Deep family (D)	152	KVG 60 family	367
Deep family (DC)	159	KVG 120 family	374
Universal family (U)	162	KHVG series	392
Oval Bellows family (OB)	175	KSG series	396
Oval Flat family (OF)	184	KBC series	400
Oval Concave family (OC)	188	KVGL-S series	404
Rectangular Bellows (RB)	192	KVGL-CJ series	410
		KRV series	412
SUCTION CUP ACCESSORIES	195	KENOS® ACCESSORIES	417
Selection guide – Accessories	196	Hoses	418
Mounting Elements	198	Hose connector	418
Level Compensators	201	Hose clamps	420
Ball Joints	209	Mounting kit	420
Suction Cup Valves	210	Sealing flange	421
Suction Cup Fittings	214	T-slot nut kit	421
Other	218	EV connection cable	421
VACUUM PUMPS/GENERATORS	221	WARRANTY	422
Vacuum cartridges / custom integration	223		
piINLINE®	234	PRODUCT INDEX	423
Compact/stackable	244	PIAB DIVISIONS	426
Combined pump and gripper	264	piSMART®	427
Standard	278		
Extra safety	308	TABLE PAGES	429
Chemical resistant	316	NOTES	446

Piab Vacuum Academy



PIAB VACUUM ACADEMY	3
Introduction	5
Vacuum theory	6
Expressions and units	7
Vacuum pumps	9
Vacuum system calculations	13
Optimizing controls	15
Suction cups	16
Thread systems	17
Tables	18
Applications and solutions	24

1951



In 1951, the company took its name from its first product, an innovative compass that simplified the work for designers and draftsmen. Pi, π (=3.14) AB.

Our mission

*Smart solutions for the
automated worldTM*

INTRODUCTION

Giving you the best solution possible

We share our knowledge and experience with our customers and offer the vacuum solution most suited to their particular situation, contributing to reduced energy consumption, increased productivity and improved working environment.

Through vacuum expertise and industry competence

Piab's groundbreaking work within vacuum technology is based on investments in R&D and experience working with a broad variety of manufacturing industries globally. Combining expertise with an understanding of many different industry settings enables us to provide customers with the best vacuum solutions on the market.

Past & Present

The history of Piab starts in 1951 when the inventive company was established. The first product, an innovative pair of compasses, gave Piab ($\pi + AB$) its name. In 1960, the first Piab vacuum product, the "Pneucette", was developed for the electronic industry. The foundation for today's compressed- air driven vacuum system was laid in 1972 when the first multi-stage ejector was patented. Since then, Piab has continued to lead the way in the development of vacuum technology.

A powerful business partner

Piab's objective is to improve our customers' profitability and competitiveness. We strive to increase productivity, reinforcing their edge in the market. We also aim to contribute to our customers' reduced energy consumption and improve the work environment, aiding in their ability to attract and keep qualified personnel. Partnering with Piab means more than having a reliable vacuum solution supplier.

Technical leadership

We take pride in being the innovators in vacuum technology. Technical leadership means finding and developing solutions that have not yet been found. Our customers should feel confident in knowing that their relationship with us will keep them on the cutting edge.

Local presence and global competence

Being the global leader means designing, building and installing vacuum solutions in every corner of the world. Therefore, Piab has a worldwide organization with subsidiaries and distributors in more than 50 countries.

Contributing to a sustainable world

We believe strongly in taking responsibility for our shared environment. Therefore, we have developed an ambitious Environmental Policy and implemented an ISO 14001 certified Eco Management System. In addition, we

always look for the most environmentally friendly means of transportation for our products, and encourage our suppliers to research and develop materials that allow for sound manufacture, function and recycling. For our customers, our vacuum solutions are in themselves a mean to reduce energy and hence contribute to a better environment.

Piab focuses on developing systems that consume minimal energy and have minimal environmental impact, reducing the user's carbon footprint. Performance is never sacrificed, so productivity is consistently maximized. Contact Piab for information about our Energy Saving Innovations that will increase your productivity.

COAX® technology

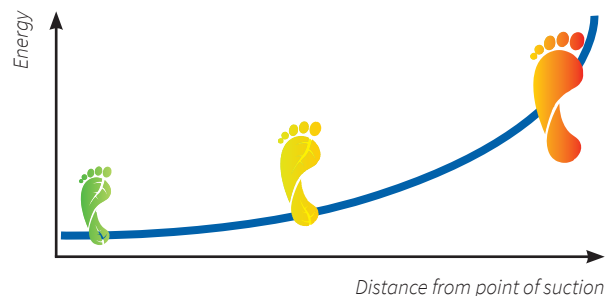
COAX® is an advanced solution for creating vacuum with compressed air. Based on Piab's multi-stage technology, COAX® cartridges are smaller, more efficient and more reliable than conventional ejectors, which allows for the design of a flexible, modular and efficient vacuum system.

Environmental index

At the basis of the highest performing, energy- efficient production process is an optimized handling solution. By never using more energy than absolutely necessary, companies can reduce their carbon footprint as well as their costs. From the vacuum pump itself down to each and every control accessory, Piab can work with you to achieve the lowest possible energy consumption.

Your pump will require less compressed air when it is placed close to the point of suction, thus reducing CO₂-emissions and energy consumption. The graph below demonstrates the relationship between environmental impact and the distance of the pump from the point of suction.

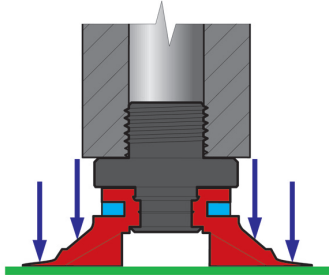
A vacuum system based on COAX® technology can provide you with three times more vacuum flow than conventional systems, allowing you to increase speed with high reliability, while reducing energy consumption.



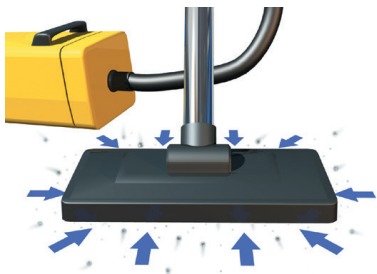
VACUUM THEORY

What is vacuum?

When using the terms "vacuum", "negative pressure", "suction", etc., we mean a pressure that is lower than the atmospheric pressure, which is the pressure of the weight of the air above us. At sea level it is usually 14.7 psi. That means that a column of air with a cross-sectional area of 1 ft² presses on the surface of the earth with a force of around 2,100 lbf. By reducing the pressure in a closed space the atmospheric pressure becomes a potential energy source.



A suction cup adheres to a surface by the surrounding higher pressure.

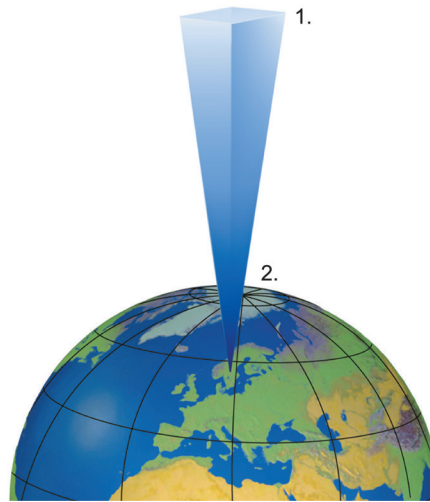


A vacuum cleaner does not suck. Air and dust are pressed into the vacuum cleaner by the surrounding higher atmospheric pressure.

Altitude above sea level

As the atmospheric pressure is the working force, the force will consequently change with the atmospheric pressure. This means that the present barometric pressure and the altitude above sea level must be taken into consideration. Up to 6,500 ft, the pressure is reduced by around 1% per 330 ft. An application which is dimensioned to hold 100 lb at sea level, can manage only 89 lb at an altitude of 3,280 ft.

The chapter "Tables" shows the effect of the atmospheric pressure on the vacuum level.



1. Atmospheric pressure = 0 at an altitude of 621 miles.
2. 14.7 psi at sea level.



At the summit of Mount Everest (29,030 ft) the atmospheric pressure is approximately 4.85 psi.

A definition for vacuum is:

1a. Absence of matter. b. A space empty of matter. c. A space relatively empty of matter. d. A space in which the pressure is significantly lower than atmospheric pressure.

Source: *The American Heritage® Dictionary of the English Language: Fourth Edition.*

EXPRESSIONS AND UNITS

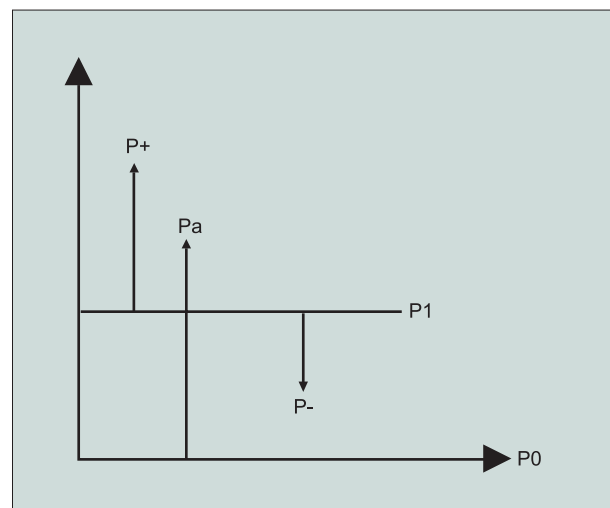
In everyday speech there are many different expressions and units for pressure below the atmospheric pressure. It is therefore important to relate to the same vocabulary in discussions. The adjoining table shows some common expressions and units used in connection with vacuum. For conversion tables between the different units, see tables No. 1, 2 and 3 in the “Tables” chapter.

Expressions
Under pressure
Absolute pressure
% vacuum (% of vacuum)
Negative pressure

Units	
-inHg	bar
-kPa	mm H ₂ O
mmHg	torr
hPa	mbar

Different terms for pressure in relation to “absolute vacuum”

Physically there is only one kind of “pressure” and that is the one that starts from “0” or absolute vacuum. All above “0” is pressure and correctly named absolute pressure. Normal atmospheric pressure (14.7 psi) is used as a reference, which is why the terms “positive pressure” or “negative pressure” are used. Earlier the term “% vacuum” was used, where 0% was atmospheric pressure and 100% absolute vacuum.



Applied vacuum can normally be divided into three main categories

Blowers or low vacuum	0-6 -inHg	For ventilation, cooling, vacuum cleaning, ...
Industrial vacuum	6-29 -inHg	For picking, holding, automation, ...
Process vacuum	29 -inHg +	Deep vacuum for laboratories, manufacturing of microchips, plating, ...

Energy needs for different vacuum levels

The energy required to create vacuum increases asymptotically towards infinity with increased vacuum. To obtain optimum energy exchange it is very important to choose the least possible vacuum. To illustrate the energy needs, a cylinder with a piston (piston pump) is suitable.

According to Boyle's Law the pressure (p) in a gas is inversely proportional to its volume (V) at constant temperature:

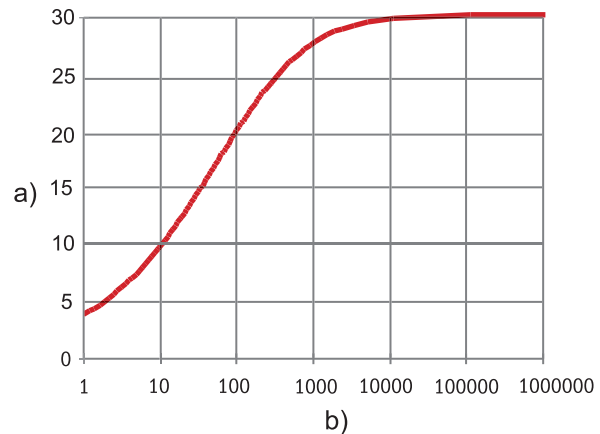
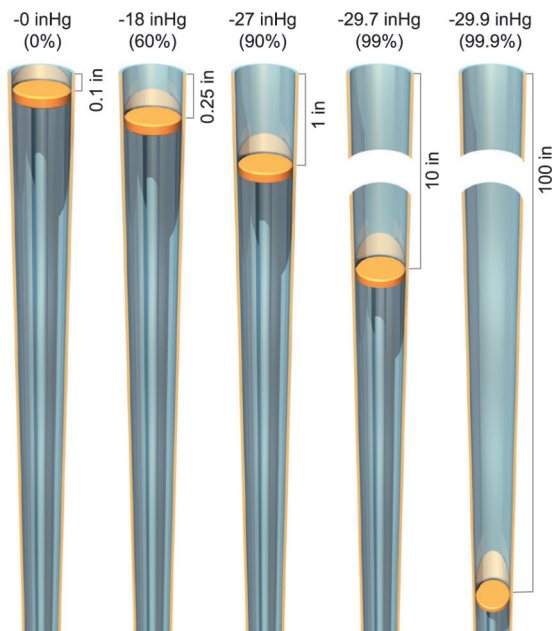
$$P_1 \times V_1 = P_2 \times V_2$$

This means that increased volume gives a lower pressure.

By pulling the piston slowly, the distance extended will show the increased energy needs. The temperature is not constant in practice. However, at a slow operation the temperature effect is negligible.

Energy requirement at increased vacuum

The diagram illustrates the energy requirement at increased vacuum. As can be seen, the energy requirement increases drastically above 27 -inHg, which is why a vacuum level below this is always advisable.



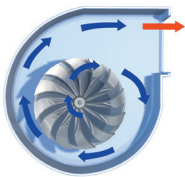
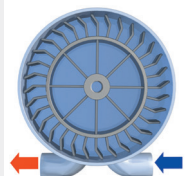
a) Pressure below atmospheric -inHg.

b) Energy factor.

VACUUM PUMPS

Mechanical pumps

The main principle for all mechanical pumps is that they convey, in one way or another, a certain volume of air from the suction side (the vacuum side) to the exhaust side. In that way they create a vacuum. Mechanical pumps usually have an electric motor as power source, but it can also be an internal combustion engine, a hydraulic or a compressed air-driven pump.

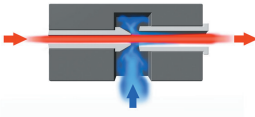
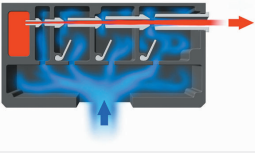

Fans		Advantages	Disadvantages
	Centrifugal blower	<ul style="list-style-type: none"> • Few moving parts • Large suction volumes • Strong 	<ul style="list-style-type: none"> • Low maximum vacuum • Slow start-up and long stop time • High noise level
	Regenerative blower	<ul style="list-style-type: none"> • Few moving parts • Large suction volumes • Low energy consumption 	<ul style="list-style-type: none"> • Low maximum vacuum • Slow start-up and long stop time • High noise level

Displacement pumps

Displacement pumps		Advantages	Disadvantages
	Piston pump	<ul style="list-style-type: none"> • Relatively low price 	<ul style="list-style-type: none"> • High heat emission
	Membrane pump	<ul style="list-style-type: none"> • Few moving parts • Compact • Low price 	<ul style="list-style-type: none"> • Small suction volumes
	Vane pump	<ul style="list-style-type: none"> • High vacuum and flow • Relatively low noise level 	<ul style="list-style-type: none"> • Sensitive to contamination • Relatively high price • High service requirements • High heat emission
	Roots pump	<ul style="list-style-type: none"> • High flow • Low service requirements 	<ul style="list-style-type: none"> • High price • High heat emission • High noise level

Compressed air-driven ejector pumps

All ejector pumps are driven with pressurized gas, usually compressed air. The compressed air flows into the ejector pump, where it expands in one or more ejector nozzles. When expanding, the stored energy (pressure and heat) is converted into motive energy. The speed of the compressed air jet increases rapidly, while the pressure and the temperature go down, attracting more air and thereby creating a vacuum on the suction side. Some ejector pumps may also be used to blow air.

Compressed air-driven ejector pumps	Advantages	Disadvantages
 <p data-bbox="418 533 589 558">Single-stage ejector</p>	<ul data-bbox="662 499 852 596" style="list-style-type: none"> • Low price • No heat emission • Compact 	<ul data-bbox="1127 485 1382 611" style="list-style-type: none"> • High noise level • Gives either high flow or high vacuum • Poor efficiency
 <p data-bbox="418 737 581 762">Multi-stage ejector</p>	<ul data-bbox="662 663 927 831" style="list-style-type: none"> • High efficiency • Low energy consumption • High reliability • Low noise level • No heat emission 	<ul data-bbox="1127 737 1295 762" style="list-style-type: none"> • Large footprint
 <p data-bbox="418 1052 573 1077">COAX® technology</p>	<ul data-bbox="662 888 1081 1236" style="list-style-type: none"> • High efficiency • Low energy consumption • High reliability • Low noise level • No heat emission • Operates even at low feed pressure • Integrated features • Modularly built • Easy to supplement and upgrade later on • Easy to clean 	<ul data-bbox="1127 1052 1295 1077" style="list-style-type: none"> • Large footprint

Vacuum flow, how is it measured?

In order to obtain pressure lower than atmospheric pressure in a container, some of the air mass must be removed by a vacuum pump. For example, half the air mass must be removed to obtain a vacuum level of 15 -inHg. The air evacuated by the pump per unit of time is called the vacuum flow and is a measure of how quickly the pump can perform this function.

Many manufacturers of mechanical vacuum pumps state vacuum flow in terms of the pump's displacement volume. This flow is called "displacement flow" or "volume flow". Displacement flow equals the chamber volume times the number of revolutions per unit time. It is often expressed as Actual Cubic feet per Minute (ACFM), Inlet Cubic Feet per Minute (ICFM) or even simply as Cubic Feet per Minute (CFM). In mechanical pumps, this value is constant and can lead the observer to think, incorrectly, that the vacuum flow is constant during the entire evacuation process.

In the evacuation process the air actually becomes thinner and thinner for every stroke of the cylinder until the pump reaches the maximum vacuum level which is that point where the vacuum flow would then be zero. The pump is still pumping the same volume flow but the air mass is so thin that compared to air at normal atmospheric pressure it is as if there was no air.

To account for the change in air mass during the evacuation process Piab provides flow data in terms of standard cubic feet per minute (SCFM). Also called free air flow, this method normalizes the flow to standard atmospheric conditions. As the vacuum becomes deeper and the air is thinner, a higher actual volume must be displaced to evacuate each standard cubic foot. The table below lists one pump's performance in terms of displacement flow (CFM) and free air flow (SCFM). At zero vacuum, the flows are equal. This is because the actual conditions are in fact standard conditions. But as the vacuum level increases, the values diverge. At 15 -inHg. (50%) vacuum, the displacement flow figure is twice the free air flow figure. At deeper vacuum levels, the difference is even greater.

Displacement flow vs free air flow

	Units	Vacuum level -inHg								
		0	3	6	9	12	15	18	21	24
Displacement flow	cfm	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16	2.16
Free air flow	scfm	2.16	1.94	1.73	1.51	1.30	1.08	0.86	0.65	0.43

VACUUM SYSTEMS

When making a vacuum system/lifting device there are several different methods to increase safety and reliability. To give efficient operation and good economy it is important that the designed system is made for a specific application. In addition to the choice of suction cups with attachments, the type and size of vacuum pumps, accessories, safety level and type of system must also be decided upon.

Sealed systems

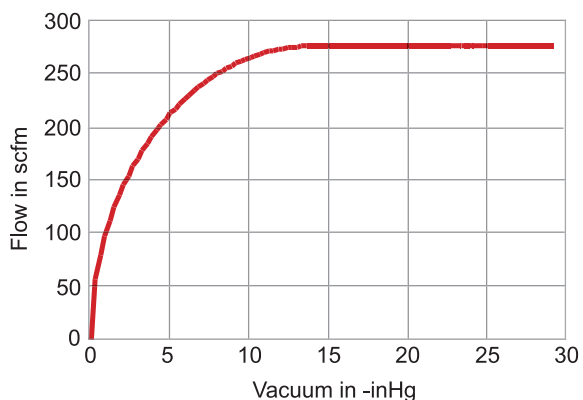
For sealed systems the capacity of the pump is determined by how fast the system can be evacuated to a certain vacuum level. This capacity is called the evacuation time of the pump and is normally specified in s/cf. This value is multiplied by the volume of the system in order to obtain the evacuation time to the desired vacuum level.

Non-sealed systems

With non-sealed systems (lifting of porous materials) the case is different. To maintain the desired vacuum level the pump must have the capacity to pump away the air leaking in. Leakage can be due to, for example, porous material or that one is forced to lift over holes. By establishing the leaking flow, it is possible, by reading the pump data, to find the right pump for the application in question.

If the leakage occurs via a known aperture, the flow can be established according to the adjoining diagram. The diagram gives values for leakage flow when the leakage area is known. The leakage flow is valid when there is an opening of 1 in² (normal atmospheric pressure at sea level). To obtain the total flow, the value is multiplied by the total leakage area.

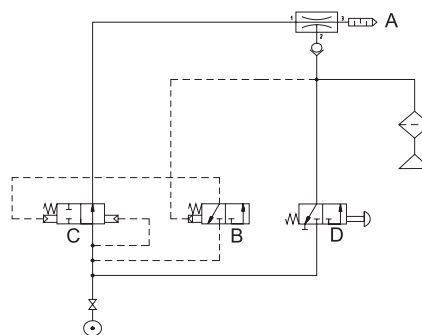
When the leakage occurs through a porous material or in an unknown way, the flow can be established by a test with a vacuum pump. The pump is connected to the system and the obtained vacuum level is read. (It should be at least 6 -inHg) The flow that is pumped away at this vacuum level can be seen on the page of the particular pump. This flow roughly corresponds to the leaking flow.



At 13.9 -inHg, the air reaches sonic velocity, and consequently the flow is constant.

Energy-saving systems

Electrically driven, mechanical vacuum pumps normally work during the whole operating cycle and the vacuum requirements are controlled by a valve on the vacuum side. In systems with compressed air-driven vacuum pumps it is often possible to save a lot of energy. As these pumps have a faster reaction time (fast start-up and stop time) the pump can be shut off when the vacuum is no longer needed. The principles of a simple energy-saving system are shown below. Many pumps can be delivered with an energy-saving system as standard.



A = Vacuum pump with non-return valve.

B = Vacuum control unit.

C = Feed valve for compressed air.

D = Release valve.

VACUUM SYSTEM CALCULATIONS

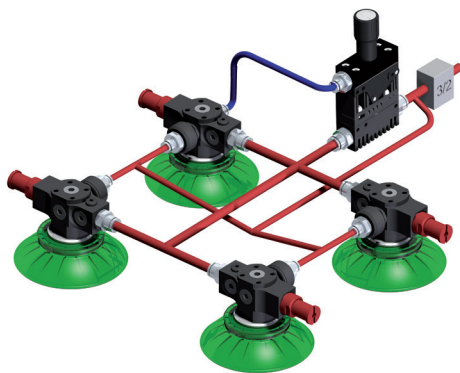
General input

Vacuum systems for material handling can be decentralized or centralized. A decentralized vacuum system is designed so that each suction cup has a dedicated, independent vacuum source. A centralized vacuum system is designed to have one vacuum source for multiple suction cups. Handling sheet metal is an example of a sealed system and handling cardboard is an example of a leaking system.

The examples are calculated using the following general facts:

Initial flow required are for the sealed system examples 1.5 scfm per suction cup FC75P and the corresponding value is 2.5 scfm for the leaking system examples using BX75P. CO₂-emission, world index: 0.001 lb CO₂ per produced ft³ of compressed air and 0.01 lb CO₂ per kWh. Machine operating hours per year: 3000 h.

Sealed system/Handling non-porous material



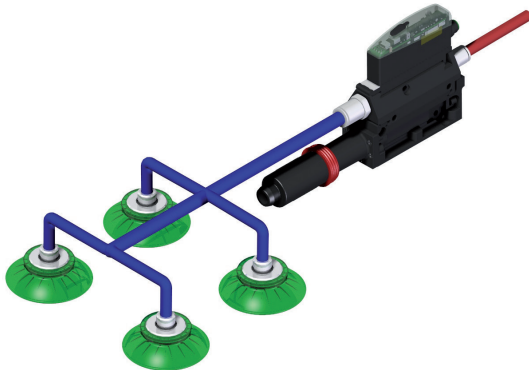
System description:

Decentralized vacuum system using: Vacuum Gripper System VGS™3010 with suction cup FC75P and COAX® cartridge Xi10 2-stage vacuum pump with non return valve, AQR Atmospheric Quick Release, Vacustat and 3/2 on/off-valve.

Annual Cost of Ownership: \$243

Annual CO₂ emission: 29 lb

Annual energy usage: 17 kWh



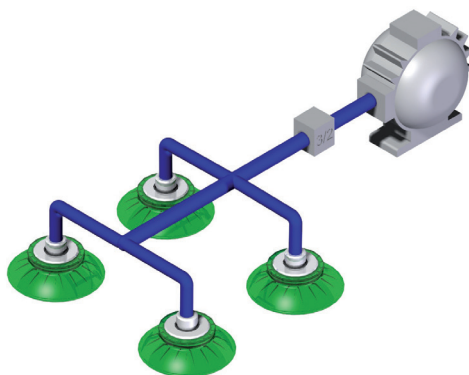
System description:

Centralized vacuum system using: P5010 with AVM™ – Automatic Vacuum Management control, COAX® cartridge Xi40 3-stage vacuum pump with non return valve and suction cup FC75P.

Annual Cost of Ownership: \$389

Annual CO₂ emission: 377 lb

Annual energy usage: 900 kWh



System description:

Centralized vacuum system using: 550 W Electro mechanical vacuum pump with suction cup FC75P and vacuum on/off-valve.

Annual Cost of Ownership: \$933

Annual CO₂ emission: 977 lb

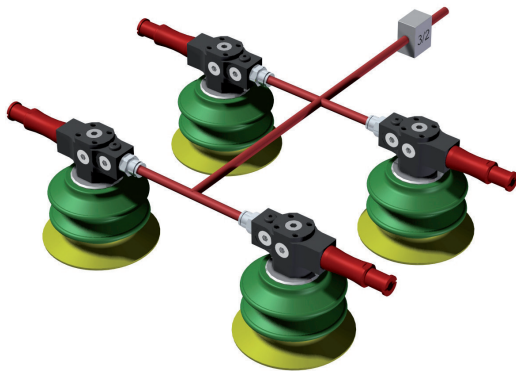
Annual energy usage: 1656 kWh

- Electric vane vacuum pumps are constantly running.
- Energy cost: 2.0 cents per produced 1 ft³ compressed air and 15 cents per kWh.
- Annual Cost of Ownership, including: energy costs, purchase price -annual cost, service and CO₂-emission tax \$0,03 per lb. Suction cups excluded.
- Interest rate: 5%.
- Life time: 5 years.

Red tubing = Compressed air

Blue tubing = Vacuum

Leaking System/Handling porous material



Calculating carbon footprint:

Based on the World average of power generation, 1 scfm of compressed air will result in a 0.019 oz CO₂-emission footprint. To calculate your specific footprint, just multiply your air consumption (scfm) by 0.019. The result is your CO₂-emission footprint per second.



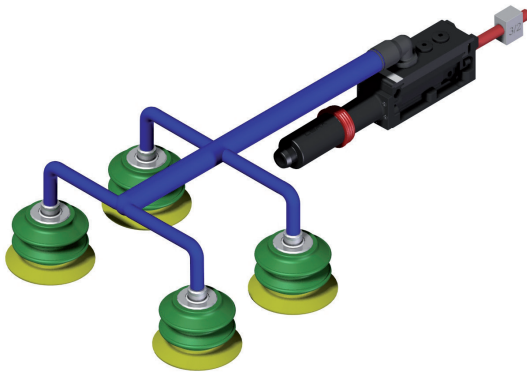
System description:

Decentralized vacuum system using: Vacuum Gripper System VGS™3010 with suction cup BX75P and COAX® cartridge Si08 3-stage vacuum pump and 3/2 on/off-valve.

Annual Cost of Ownership: \$508

Annual CO₂ emission: 712 lb

Annual energy usage: 1701 kWh



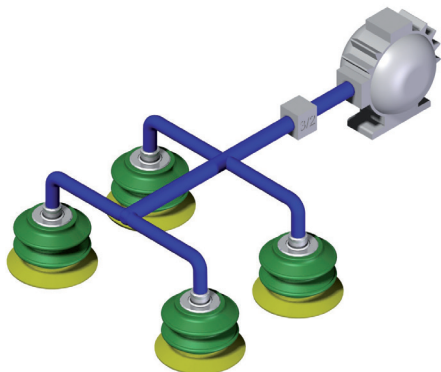
System description:

Centralized vacuum system using: P5010 with COAX® cartridge Si32 3-stage vacuum pump, suction cup BX75P and 3/2 on/off valve.

Annual Cost of Ownership: \$555

Annual CO₂ emission: 996 lb

Annual energy usage: 2381 kWh



System description:

Centralized vacuum system using: 750 W Electro mechanical vacuum pump with suction cup BX75P and vacuum on/off-valve.

Annual Cost of Ownership: \$1,491

Annual CO₂ emission: 2,112 lb

Annual energy usage: 5040 kWh

OPTIMIZING CONTROLS

Aside from placing the pump close to the point of suction, it is important to complete and optimize your vacuum system with control accessories that will limit the use of compressed air to the amount that the system requires. This way, you will have an efficient vacuum system with minimum usage of compressed air. Piab has a range of optimizing controls and this selection guide will help you to choose the one(s) optimal for your system.

Regulators

Energy saving can be achieved in many ways, but the most simple way is by using a pressure regulator to control your pump's optimum feed pressure.

piSAVE release

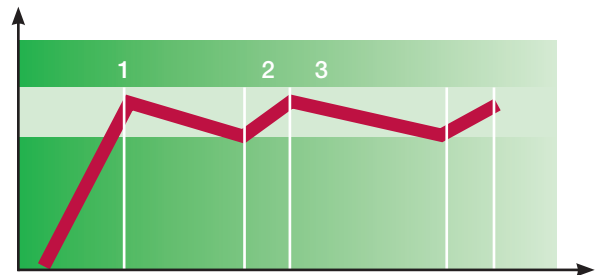
Instead of using compressed air to release objects you can use piSAVE release to provide a fast release. The piSAVE release is a valve that breaks vacuum seal in e.g. suction cups by equalizing pressure with atmospheric air and at the same time does not consume additional compressed air.

piSAVE optimize

The piSAVE optimize automatically regulates the feed pressure towards an optimal programmed vacuum level. Fluctuations in vacuum pressure caused by product variations or changes in cycle time allow the pump to only consume the amount of air that the optimized vacuum level requires.

piSAVE onoff

When handling sealed objects many times the vacuum pump can be turned off when not needed. The piSAVE onoff is a vacuum-controlled valve that shuts off the flow of compressed air to the pump when the pre-set vacuum level is reached (1). From micro leakage in the system, the vacuum level drops, and after a while the start-up level of the valve is reached (2). At this point, the pump will start and work until the shut-off level is reached again (3) etc.



AVM™ – Automatic vacuum management

Like the piSAVE onoff the AVM™ instantly shuts off the flow of compressed air when the preprogrammed vacuum level is reached and turns on again when the start-up level of the valve is reached. The AVM™ not only saves energy it also features a complete monitoring system with on/off valves and vacuum switches.

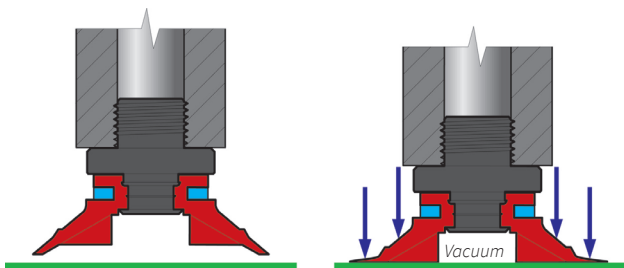
Contact Piab for information about our products that will increase your productivity and provide for energy savings.

SUCTION CUPS

How does a suction cup work?

A suction cup adheres to a surface as the surrounding pressure (atmospheric pressure) is higher than the pressure between the suction cup and the surface. To create the low pressure in the suction cup it is connected to a vacuum pump. The lower the pressure (higher vacuum), the greater the force on the suction cup.

$$\Delta p = P_{AT} - P_1$$

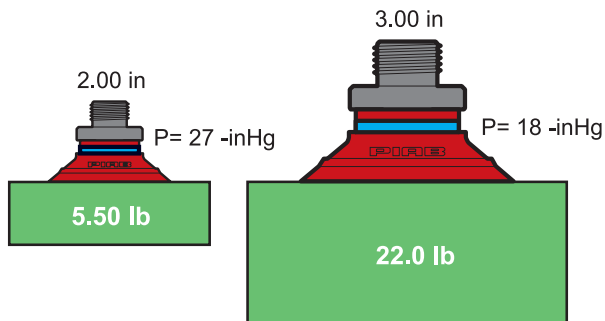


Sizing suction cups

Suction cups have quite different capacities depending on the design. Please see the values in the tables for each respective suction cup.

Energy requirements at different vacuum levels

A deep vacuum means that the suction cup has to work harder and thus wears out quicker; also the energy requirements increase at higher vacuum levels. If the vacuum level increases from 18 to 27 -inHg, the lifting force increases by 1.5 times but with ten times the energy requirement. It is better to maintain a lower vacuum level and instead increase the suction cup area. In many applications, a good target for the vacuum level could be 18 -inHg; at this level you get a high lifting force with relatively low energy requirements.



Consider the height above sea level

Atmospheric pressure decreases with increased height. This means that the available force decreases at the same rate. An application designed for lifting 100 lb at sea level, can only manage to hold 89 lb at 3,330 feet. A vacuum gauge is normally calibrated with atmospheric pressure as a reference. This means that the gauge shows available vacuum levels at different heights.

Advantages and limitations of the suction cup

Material handling with suction cups is a simple, inexpensive and reliable technique. It is therefore a solution worth considering before going over to more complicated methods. Suction cups can lift, move and hold objects that weigh just a few ounces up to several hundred pounds.

Lifting force in different directions

A suction cup can be used irrespective of whether the force is perpendicular or parallel to the surface. If the force is parallel, it is transferred through friction between the suction cup and the surface. A suction cup with cleats is most suitable in this case because it is rigid and provides high friction.

Advantages	Limitations
<ul style="list-style-type: none"> • Easy installation • Low service requirements • Low price • Does not damage the material handled • Quick attachment and detachment 	<ul style="list-style-type: none"> • Limited force (atmospheric pressure) • Positioning accuracy

THREAD SYSTEMS

ISO thread:

- Cylindrical metric thread: designated with the letter M. Example M5.
- Cylindrical inch thread (also called Unified thread): designated with the letter UNF. Example 10-32UNF.

Dry seal thread (American system of pipe threads):

The dry seal system consists of cylindrical and conical pipe-threads. The threads have a 60° profile angle and are sealed without packing or seal rings (please note that when these are used in other combination of thread systems, that “sealing” is not applicable). The dimensions are given in inches and Piab’s catalog uses the letters NPT and NPSF:

- Conical thread is designated NPT. Example: 1/8”NPT.
- Cylindrical thread is noted as the letters NPSF: Example: 1/8”NPSF.

BSP thread (British system of pipe threads):

- The threads have a 55° profile angle and are dimensioned in inches.
- Cylindrical thread is designated with the letter G. Example: G1/8”.

Compatibility of different thread systems

Please note that some thread size in different thread systems not always fit. See below table:

	M5 male	M5 female	G1/8” male	G1/8” female	G1/4” male	G1/4” female	G3/8” male	G3/8” female	G1/2” male	G1/2” female	G3/4” male	G3/4” female	G1” male	G1” female	G2” female
10-32UNF female or male	●●	●●●													
1/8” NPSF female			●●●												
1/8”NPT female or male			●	●●											
1/4”NPSF female					●●										
1/4”NPT female or male					●	●									
3/8”NPSF female							●								
3/8”NPT female or male							●	●							
1/2”NPSF female									●●						
1/2”NPT female or male									●	●●●					
3/4”NPSF female											●●				
3/4”NPT female or male											●	●●●			
1”NPT female or male													●	●	
2”NPT female or male															●

●●● Fits, ●● Fits with short thread, ● Does not fit.

TABLES

In everyday speech, many different expressions and units are used for both pressure and flow. It is important to agree on what is meant by them.

Pressure

$P=F/A$ (Force/Area). SI unit (Système International d'Unités): Pascal (Pa). 1 Pa = 1 N/m². Common multiple units: MPa and kPa.

	Pa (N/m ²)	bar	atm (kp/cm ²)	torr	psi (lb/in ²)
Pa (N/m ²)	1	0.00001	10.1972x10 ⁻⁶	7.50062x10 ⁻³	0.145038x10 ⁻³
bar	100 000	1	1.01972	750.062	14.5038
atm (kp/cm ²)	98 066.5	0.980665	1	735.559	14.2233
torr*	133.322	1.33322x10 ⁻³	1.35951x10 ⁻³	1	19.3368x10 ⁻³
psi (lb/in ²)	6 894.76	68.9476x10 ⁻³	0.145038x10 ⁻³	51.7149	1

Pressure above atmospheric

kPa	bar	psi	atm (kp/cm ²)
1013	10.13	146.9	10.3
1000	10	145	10.2
900	9	130.5	9.2
800	8	116	8.2
700	7	101.5	7.1
600	6	87	6.1
500	5	72.5	5.1
400	4	58	4.1
300	3	43.5	3.1
200	2	29	2
100	1	14.5	1
0	0	0	0

Pressure below atmospheric

	kPa	mbar	torr	-kPa	-mmHg	-inHg	% vacuum
Sea level	101.3	1013	760	0	0	0	0
	90	900	675	10	75	3	10
	80	800	600	20	150	6	20
	70	700	525	30	225	9	30
	60	600	450	40	300	12	40
	50	500	375	50	375	15	50
	40	400	300	60	450	18	60
	30	300	225	70	525	21	70
	20	200	150	80	600	24	80
	10	100	75	90	675	27	90
Absolute vacuum	0	0	0	101.3	760	30	100

Change in atmospheric pressure in relation to altitude (height above sea level)

A vacuum gauge is normally calibrated with normal atmospheric pressure at sea level as a reference, 14.7 psi, and is influenced by the surrounding atmospheric pressure in accordance with the table below.

The vacuum gauge shows the differential pressure between atmospheric pressure and absolute pressure. This means that the gauge shows what vacuum level is available at different heights.

Atmospheric pressure

Barometric pressure			The reading on the vacuum gauge at 14.7 psi				
mmHg	psi	Equivalent ft above sea level	18 -inHg	22.5 -inHg	25.5 -inHg	27 -inHg	29.7 -inHg
593	11.4	6,562	11.7	16.2	19.2	20.7	23.4
671	12.9	3,281	14.8	19.4	22.4	23.9	26.6
690	13.3	2,553	15.6	20.1	23.1	24.6	27.3
700	13.5	2,149	16.0	20.5	23.5	25.0	27.7
710	13.7	1,788	16.4	20.9	23.9	25.4	28.1
720	13.9	1,532	16.8	21.3	24.3	25.8	28.5
730	14.1	902	17.2	21.7	24.7	26.2	28.9
740	14.3	656	17.6	22.1	25.1	26.6	29.3
750	14.5	364	17.9	22.4	25.4	26.9	29.6
760	14.7	0	18.0	22.5	25.5	27.0	29.7

Flows

Flows, volume per unit of time. Quantity designations: Q, q, = V/t (volume/time).

SI Unit: cubic meters per second (m³/s).

Common multiple units: scfm, l/min, l/s, m³/h.

m ³ /s	m ³ /h	l/min	l/s	ft ³ /min (cfm)*
1	3600	60000	1000	2118.9
0.28x10 ⁻³	1	16.6667	0.2778	0.5885
16.67x10 ⁻⁶	0.06	1	0.0167	0.035
1x10 ⁻³	3.6	60	1	2.1189
0.472x10 ⁻³	1.6992	28.32	0.4720	1

Leakage flows

The table below shows the leakage flow at different vacuum levels through an opening of 1 in².

Vacuum level -inHg	Leakage flow cf/m and in ²
3.0	167
6.0	222
9.0	253
12.0	268*

* From about 13.0 to 29.5 -inHg the flow is constant.

Pressure drop in compressed air hoses

When installing compressed air hoses it is important that the dimension (diameter) and length do not lead to excessive pressure drops. Piab vacuum pumps are supplied with recommended hose dimensions that will not cause excessive pressure drops at lengths below 6.5 ft.

In cases when the pressure drop has to be calculated, the formula below can be used.

ΔP	=	Pressure drop in psi
qv	=	Flow in scfm
d	=	Inner diameter in inches.
L	=	Length of compressed air hoses in ft
P1	=	Absolute starting pressure in psi

$$\Delta P = \frac{6.82 \times 10^{-4} \times qv^{1.85} \times L}{d^5 \times P1}$$

$$d = \left(\frac{6.82 \times 10^{-4} \times qv^{1.85} \times L}{\Delta P \times P1} \right)^{0.2}$$

Material

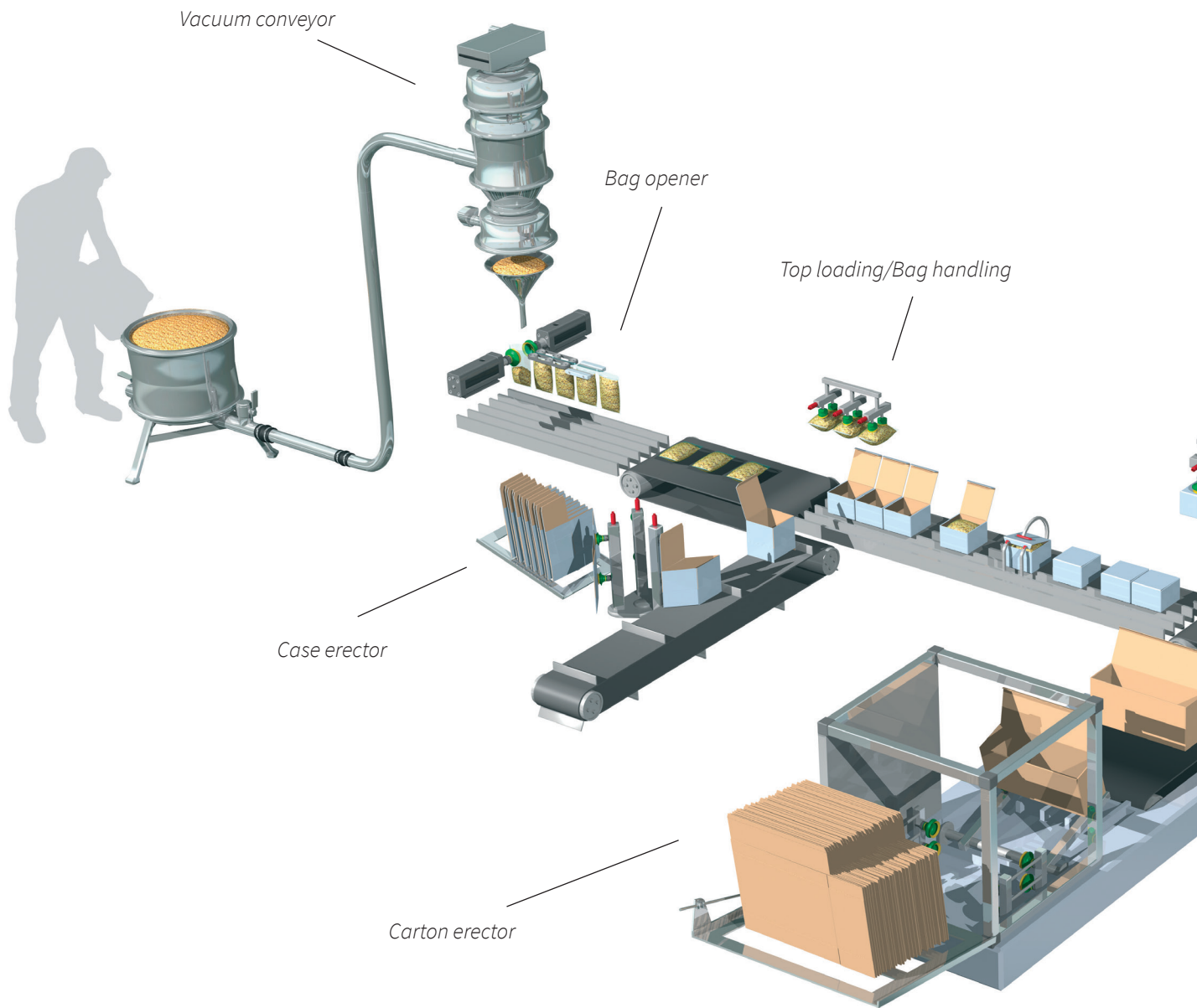
Name	Color	Hardness, Shore A°	Temperature, °F
Chloroprene (CR)	Black	50	-40-230
Conductive Silicone (CSIL)	Black	50	-67-446
Ethylene Propylene (EPDM)	Black	50	-40-248
HNBR	Blue	50	-22-284
HNBR	BlueGrey	75	-22-284
Nitrile (NBR)	Black	50	-4-212
Nitrile-PVC (NPV)	Black	50	32-194
Polyurethane (PU30)	Yellow	30	50-122
Polyurethane (PU40)	Red transparent	40	50-122
Polyurethane (PU50)	Blue transparent	50	50-122
Polyurethane (PU55)	Orange	55	50-122
Polyurethane (PU60)	Green transparent	60	50-122
Polyurethane (PU60)	Orange	60	50-122
Polyurethane (PU70)	Black	70	50-122
Silicone (SIL)	Red	50	-40-392
Silicone (SIL)	White	30	-40-392
Silicone (SIL FDA)	Transparent	40	-40-392
Silicone (SIL FDA)	Transparent	50	-40-392
Silicone (SIL FDA detectable)	Blue	40	-40-392
Silicone (SIL FDA detectable)	Transparent	40	-40-392
Thermoplastic Polyurethane (TPE-U)	White transparent	81	-4-176

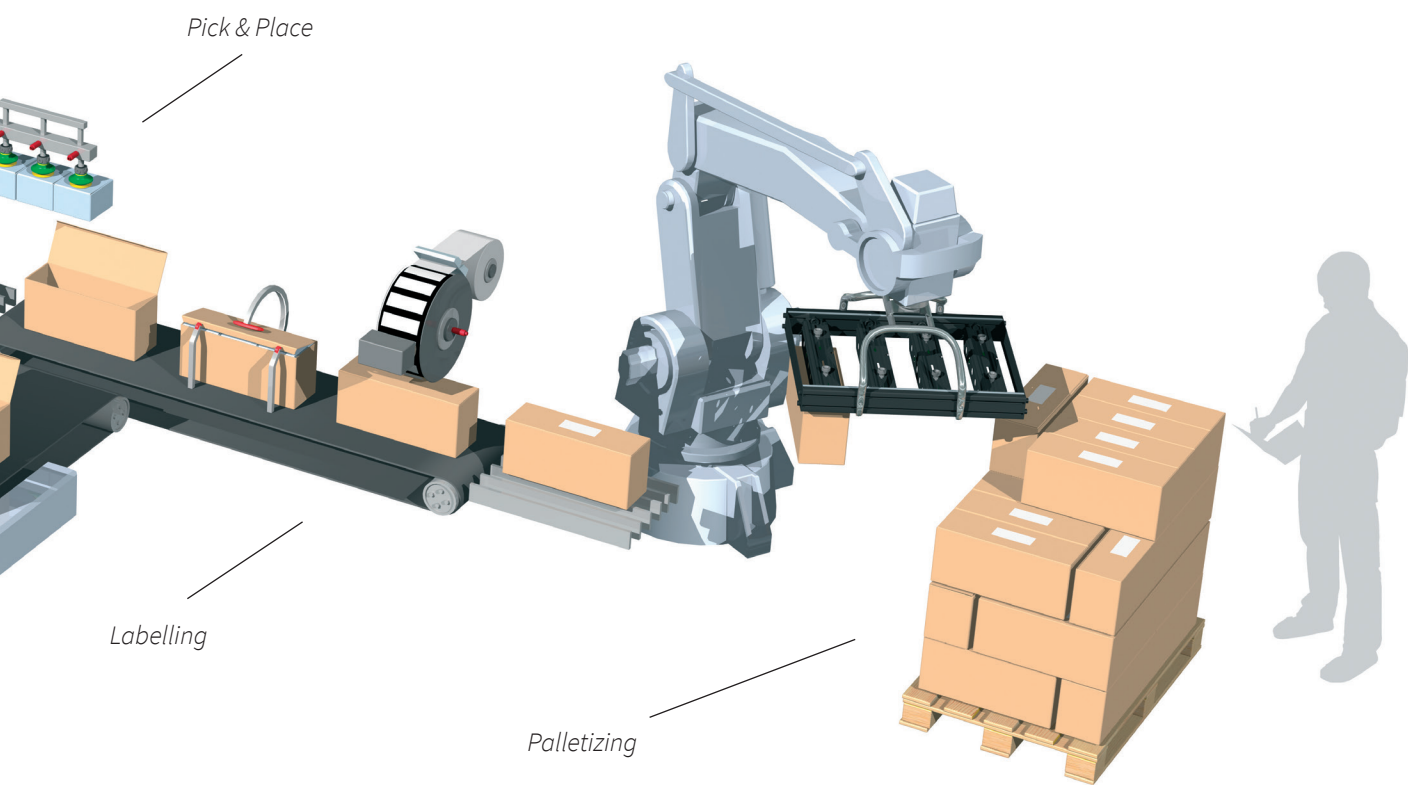
Material resistance

Name	Wear resistance	Oil	Weather and ozone	Hydrolysis	Gasoline	Concentrated acids	Alcohol	Oxidation
Chloroprene (CR)	●●●	●●	●●●	●●●	●●	●	●●●	●●●
Conductive Silicone (CSIL)	●●●	●	●●●	●●	●	●	●●●	●●●
Ethylene Propylene (EPDM)	●●	●	●●●	●●●	●	●	●●●	●●●
HNBR	●●●	●●●	●●●	●●●	●●●	●●	●●●	●●●
Nitrile (NBR)	●●●	●●●	●●	●●●	●●●	●●	●●●	●●●
Nitrile-PVC (NPV)	●●●	●●●	●●●	●●●	●●●	●●	●●●	●●●
Polyurethane (PU)	●●●	●●●	●●●	●●	●●	●●	●●/●*	●
Silicone (SIL)	●●●	●	●●●	●●	●	●	●●●	●●●
Thermoplastic Polyurethane (TPE-U)	●●●	●●●	●●●	●	●	●	●●●	●●●

●●● Excellent, ●●● Good, ●● Fair, ● Poor, * Ethanol / methanol.

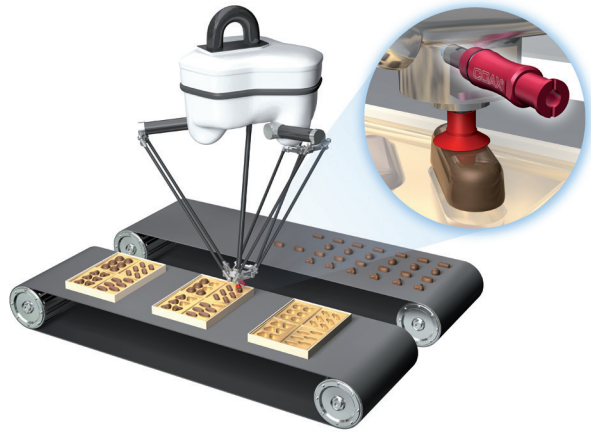
APPLICATIONS AND SOLUTIONS



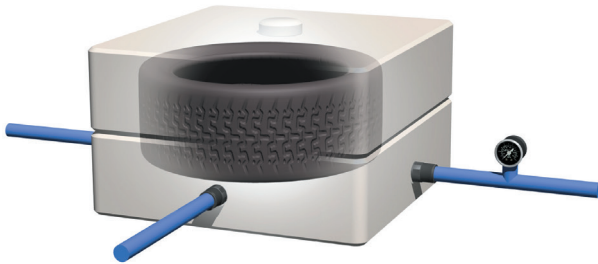




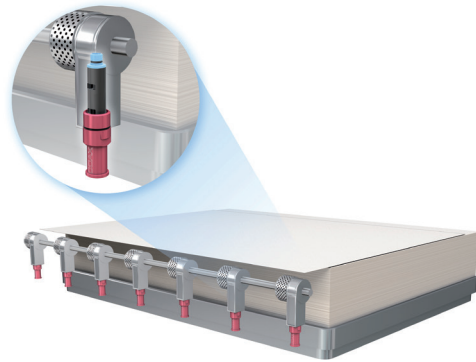
Injection molding



Pick-and-place



Vacuum molding tires



Sheet brake



Press to press transfer

Suction cups



SUCTION CUPS

piGRIP®	29
Flat family (F)	30
Flat Concave family (FC)	48
Bellows family (B)	73
Multibellows family (BX/BL)	83
Deep family (D)	123
Deep family (DC)	152
Universal family (U)	159
Oval Bellows family (OB)	162
Oval Flat family (OF)	175
Oval Concave family (OC)	184
Rectangular Bellows (RB)	188
	192

piGRIP®

THOUSANDS OF SUCTION CUPS READY TO IMPROVE YOUR MACHINE

The piGRIP® is a unique configurable suction cup concept with individually optimized parts for gripping, lifting and height compensation. Also a large selection of fittings makes it ready to fit new machines and easy to retrofit existing cups. The fittings available are both threaded and push on fittings.



FITTING, VALVES & FLOW RESTRICTORS

A large selection of fittings makes piGRIP® cups ready to fit new machines and easy to retrofit existing cups. Available are both threaded and push on fittings. There is also a fitting that has an ejector integrated, the COAX® in piGRIP® for creating a decentralized pump. piSAVE restrict and piSAVE sense are options that are suitable for handling different sized or a variable number of objects.



FILTERS

A low micron filter disc inside the bellows traps dust and particles increasing system reliability. A mesh filter is available in the fitting.



BELLOWS

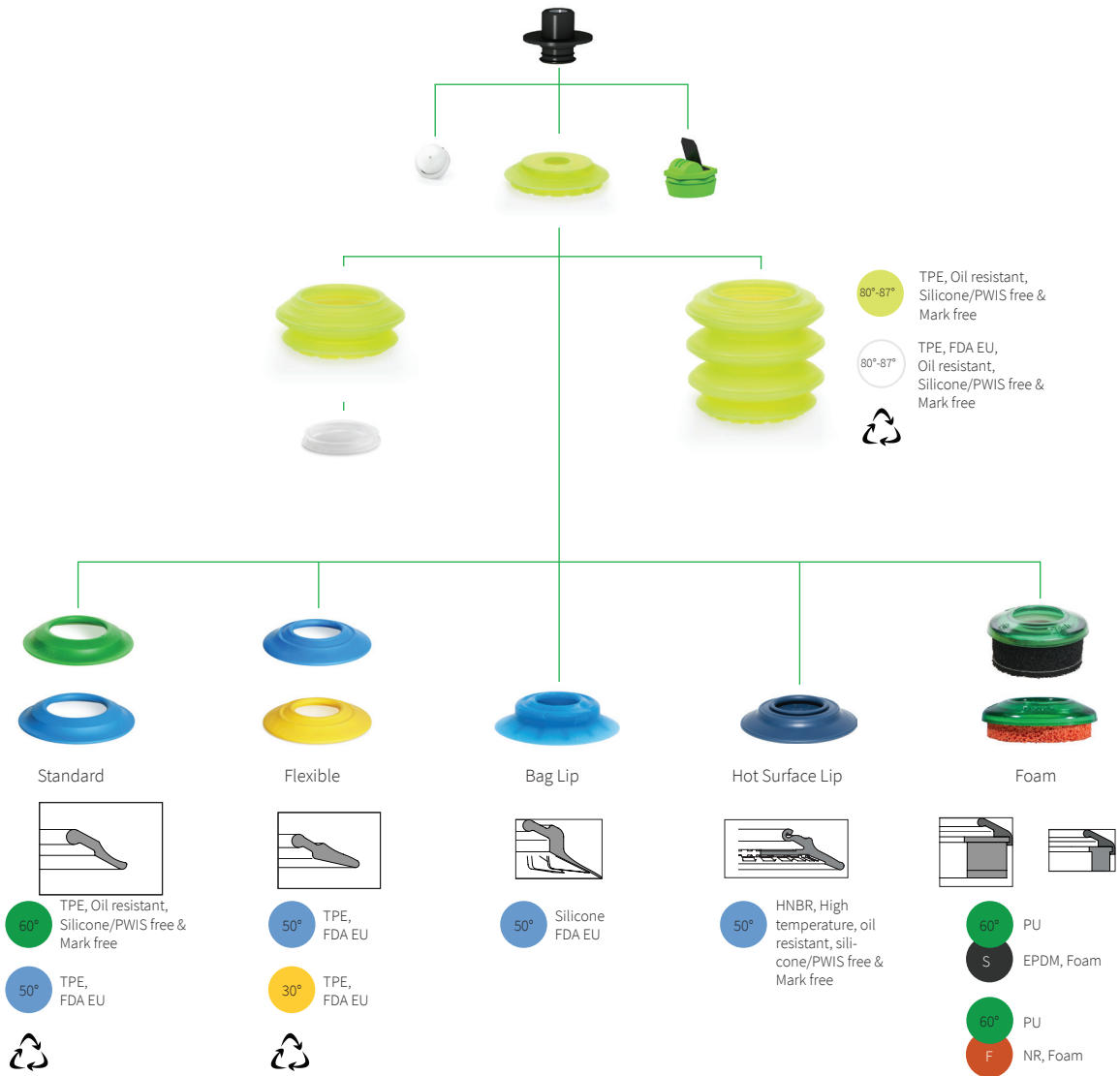
Firm and Stable 1-, 3- and 6- folded bellows allows for faster machine speeds. Thin-wall design makes them faster to compress using less force and energy. The strength of the material increases lifting capacity between 30–50% compared to similar conventional cups. FDA-approved (EU 1935/2004) material available (transparent).



LIPS

Get an excellent grip on almost anything with the right lip for your application. Choose standard lips from 60° shore to extremely flexible, soft lips in 30° shore.

Tailor-made Bag lips for handling bags and pouches. Foam lips for objects which are difficult to grip rough surfaces with traditional cups. High temperature lips are also available when so needed.



Product Group
piGRIP®
G



Lip		Material & Durometer	
Dimension & Type		Material & Durometer	
S25	Ø 25 mm Standard lip	T60 T50	TPE 60° Shore A TPE 50° Shore A
S35	Ø 35 mm Standard lip		
S50	Ø 50 mm Standard lip		
S70	Ø 70 mm Standard lip		
FX28	Ø 28 mm Flexible lip	T50 T30	TPE 50° Shore A TPE 30° Shore A
FX39	Ø 39 mm Flexible lip		
FX55	Ø 55 mm Flexible lip		
FX77	Ø 77 mm Flexible lip		
FLI25S	Ø 25 mm Foam lip	S	Foam EPDM (soft)
FLI35S	Ø 35 mm Foam lip		
FLI50S	Ø 50 mm Foam lip		
FLI70S	Ø 70 mm Foam lip		
FLI25F	Ø 25 mm Foam lip	F	Foam NR (firm)
FLI35F	Ø 35 mm Foam lip		
FLI50F	Ø 50 mm Foam lip		
FLI70F	Ø 70 mm Foam lip		
BGI25	Ø 25 mm Bag lip with retainer	S50	Silicone 50° Shore A
BGI34	Ø 34 mm Bag lip with retainer		
BGI41	Ø 41 mm Bag lip with retainer		
BGI48	Ø 48 mm Bag lip with retainer		
BGI63	Ø 63 mm Bag lip with retainer		
BGI80	Ø 80 mm Bag lip with retainer		
HS29	Ø 29 mm HS29	HN50	HNBR 50° Shore A
HS39	Ø 39 mm HS39		
HS58	Ø 58 mm HS58		
HS79	Ø 79 mm HS79		

Several of the lips are available as spare parts.



Bellows or Flat Cup	
B1	1 bellows
B3	3 bellows
B6	6 bellows (3+3)
F	No bellows



Support	
S1	Support type 1

G . S50T60 . B3 . S1 . G38M . 01 . ()



Fitting					
Type		Size		Style	
G NT	G-Thread NPT-Thread	18	1/8"	M	Male
		14	1/4"		
		38	3/8"		
		12	1/2"		
GL NTL	G-Thread low NPT-Thread low	18	1/8"	M	Male
		14	1/4"		
		38	3/8"		
NS G	NPSF-Thread G-Thread	18	1/8"	F	Female
		14	1/4"		
		38	3/8"		
		12	1/2"		
		518	5x1/8"		
NT	NPT-Thread	14	1/4"	F	Female
		38	3/8"		
M	M-Thread	M6	M6*	M	Male
		MF8	M8x1*		
		M10	M10		
		M12	M12		
		MF14	M14x1		
		MF16	M16x1.5		
M	M-Thread	M5	M5	F	Female
		M6	M6		
		M8	M8		
		M10	M10		
		M12	M12		
		MF16	M16x1.5		
U	UNC-Thread	12	1/2"	F	Female
C	COAX® in piGRIP®	S	High flow	X	No style
		T	Extra high flow		
X	No type	X	No size	X	No style

* Steel material.
Push-on fitting sold separately.



Option	
00	No Filter
01	Filter mesh
02	Filter disc (only bellows cup)
03	piSAVE restrict Ø 0.7
04	piSAVE restrict Ø 1.0
05	piSAVE restrict Ø 1.3
06	piSAVE restrict Ø 0.7 and filter disc
07	piSAVE restrict Ø 1.0 and filter disc
08	piSAVE restrict Ø 1.3 and filter disc
13	piSAVE sense 03/60, C/M*-flow: 0.81/0.21 scfm
14	piSAVE sense 04/60, C/M*-flow: 1.12/0.36 scfm
15	piSAVE sense 05/60, C/M*-flow: 1.55/0.57 scfm
16	piSAVE sense 03/60, C/M*-flow: 0.81/0.21 scfm & filter disc
17	piSAVE sense 04/60, C/M*-flow: 1.12/0.36 scfm & filter disc
18	piSAVE sense 05/60, C/M*-flow: 1.55/0.57 scfm & filter disc
19	piSAVE sense 02/60, C. flow: 0.44 scfm
20	piSAVE sense 02/60, C. flow: 0.44 scfm and filter disc

*C/M = Closing/Minimum



FDA EU approved
option includes
material certificate

	No*
FDA	US Food and Drug Admini stration

* Leave blank for no
certificate.

LIFTING FORCES AND GENERAL SPECIFICATIONS – piGRIP® F

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
S25T50	2.56	3.82	1.28	1.91	0.98	0.98	0.08	0.05
S25T60	2.63	4.02	1.33	2.02	0.98	0.98	0.07	0.05
S35T50	5.40	7.76	2.70	3.87	1.38	1.57	0.11	0.09
S35T60	5.62	8.09	2.81	4.05	1.38	1.57	0.10	0.09
S50T50	11.2	16.1	5.62	8.07	1.97	2.95	0.16	0.24
S50T60	11.7	16.5	5.87	8.27	1.97	2.95	0.15	0.24
S70T50	22.7	32.7	11.4	16.4	2.76	3.15	0.22	0.67
S70T60	23.3	33.3	11.6	16.6	2.76	3.15	0.20	0.67
FX28T30	3.03	4.25	1.51	2.14	1.10	0.98	0.11	0.03
FX28T50	3.35	4.79	1.66	2.41	1.10	0.98	0.10	0.03
FX39T30	6.02	8.39	3.01	4.20	1.54	1.57	0.15	0.08
FX39T50	6.50	9.22	3.26	4.61	1.54	1.57	0.15	0.08
FX55T30	12.2	16.9	6.09	8.43	2.17	2.95	0.21	0.24
FX55T50	12.7	18.2	6.36	9.10	2.17	2.95	0.21	0.24
FX77T30	24.1	33.8	12.0	16.9	3.03	3.54	0.30	0.65
FX77T50	25.2	35.7	12.6	17.9	3.03	3.54	0.29	0.65
FLI25F	0.49	0.85	0.25	0.43	1.00	*	0.15	0.05
FLI25S	*	*	*	*	1.00	*	0.20	0.03
FLI35F	1.30	2.47	0.65	1.24	1.40	*	0.15	0.10

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
FLI35S	*	*	*	*	1.40	*	0.28	0.05
FLI50F	2.25	3.60	1.12	1.80	2.01	*	0.22	0.32
FLI50S	*	*	*	*	2.01	*	0.64	0.31
FLI70F	7.19	13.5	3.60	6.74	2.80	*	0.22	0.93
FLI70S	*	*	*	*	2.80	*	0.65	1.18
HS29HN50	3.57	5.24	3.03	4.45	1.14	0.71	0.09	0.05
HS39HN50	6.65	9.49	5.67	8.07	1.61	0.98	0.11	0.13
HS58HN50	14.8	21.2	12.6	18.1	2.32	1.50	0.19	0.43
HS79HN50	28.1	40.0	23.9	34.0	3.15	2.01	0.25	1.06

* Dependent on application.

LIFTING FORCES AND GENERAL SPECIFICATIONS – piGRIP® B1

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
S25T50	2.56	3.82	1.28	1.91	0.98	0.47	0.20	0.13
S25T60	2.63	4.02	1.33	2.02	0.98	0.47	0.19	0.13
S35T50	5.40	7.76	2.70	3.87	1.38	0.67	0.28	0.33
S35T60	5.62	8.09	2.81	4.05	1.38	0.67	0.28	0.33
S50T50	11.2	16.1	5.62	8.07	1.97	1.18	0.40	0.96
S50T60	11.7	16.5	5.87	8.27	1.97	1.18	0.39	0.96
S70T50	22.7	32.7	11.4	16.4	2.76	1.97	0.56	2.62

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
S70T60	23.3	33.3	11.6	16.6	2.76	1.97	0.54	2.62
FX28T30	3.03	4.25	1.51	2.14	1.10	0.59	0.23	0.11
FX28T50	3.35	4.79	1.66	2.41	1.10	0.59	0.22	0.11
FX39T30	6.02	8.39	3.01	4.20	1.54	0.79	0.32	0.32
FX39T50	6.50	9.22	3.26	4.61	1.54	0.79	0.32	0.32
FX55T30	12.2	16.9	6.09	8.43	2.17	1.57	0.46	0.95
FX55T50	12.7	18.2	6.36	9.10	2.17	1.57	0.45	0.95
FX77T30	24.1	33.8	12.0	16.9	3.03	2.17	0.64	2.61
FX77T50	25.2	35.7	12.6	17.9	3.03	2.17	0.63	2.61
FLI25F	0.49	0.85	0.25	0.43	1.00	*	0.27	0.13
FLI25S	*	*	*	*	1.00	*	0.32	0.11
FLI35F	1.30	2.47	0.65	1.24	1.40	*	0.32	0.34
FLI35S	*	*	*	*	1.40	*	0.46	0.30
FLI50F	2.25	3.60	1.12	1.80	2.01	*	0.46	1.03
FLI50S	*	*	*	*	2.01	*	0.88	1.03
FLI70F	7.19	13.5	3.60	6.74	2.80	*	0.56	2.89
FLI70S	*	*	*	*	2.80	*	0.99	3.13
BGI25S50	1.15	1.66	0.58	0.83	0.98	0.43	0.17	0.13
BGI34S50	2.32	3.37	1.17	1.69	1.34	0.63	0.18	0.20

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
BGI41S50	3.62	5.28	1.82	2.65	1.61	0.75	0.22	0.48
BGI48S50	4.70	6.86	2.36	3.44	1.89	1.38	0.24	0.76
BGI63S50	8.97	13.1	4.50	6.54	2.48	1.54	0.31	1.64
BGI80S50	14.9	21.7	7.44	10.9	3.15	2.28	0.39	3.97
HS29HN50	3.57	5.24	3.03	4.45	1.14	0.59	0.21	0.13
HS39HN50	6.65	9.49	5.67	8.07	1.61	0.79	0.28	0.37
HS58HN50	14.8	21.2	12.6	18.1	2.32	1.06	0.44	1.14
HS79HN50	28.1	40.0	23.9	34.0	3.15	1.57	0.59	3.01

* Dependent on application.

LIFTING FORCES AND GENERAL SPECIFICATIONS – piGRIP® B3

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
S25T50	2.56	3.82	1.28	1.91	0.98	0.47	0.54	0.32
S25T60	2.63	4.02	1.33	2.02	0.98	0.47	0.53	0.32
S35T50	5.40	7.76	2.70	3.87	1.38	0.67	0.76	0.85
S35T60	5.62	8.09	2.81	4.05	1.38	0.67	0.75	0.85
S50T50	11.2	16.1	5.62	8.07	1.97	1.18	1.08	2.48
S50T60	11.7	16.5	5.87	8.27	1.97	1.18	1.07	2.48
S70T50	22.7	32.7	11.4	16.4	2.76	1.97	1.51	6.79
S70T60	23.3	33.3	11.6	16.6	2.76	1.97	1.49	6.79

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
FX28T30	3.03	4.25	1.51	2.14	1.10	0.59	0.57	0.30
FX28T50	3.35	4.79	1.66	2.41	1.10	0.59	0.56	0.30
FX39T30	6.02	8.39	3.01	4.20	1.54	0.79	0.80	0.85
FX39T50	6.50	9.22	3.26	4.61	1.54	0.79	0.79	0.85
FX55T30	12.2	16.9	6.09	8.43	2.17	1.57	1.13	2.47
FX55T50	12.7	18.2	6.36	9.10	2.17	1.57	1.13	2.47
FX77T30	24.1	33.8	12.0	16.9	3.03	2.17	1.59	6.77
FX77T50	25.2	35.7	12.6	17.9	3.03	2.17	1.58	6.77
FLI25F	0.49	0.85	0.25	0.43	1.00	*	0.61	0.32
FLI25S	*	*	*	*	1.00	*	0.66	0.30
FLI35F	1.30	2.47	0.65	1.24	1.40	*	0.80	0.87
FLI35S	*	*	*	*	1.40	*	0.93	0.82
FLI50F	2.25	3.60	1.12	1.80	2.01	*	1.14	2.55
FLI50S	*	*	*	*	2.01	*	1.56	2.54
FLI70F	7.19	13.5	3.60	6.74	2.80	*	1.51	7.05
FLI70S	*	*	*	*	2.80	*	1.94	7.30
BGI25S50	1.15	1.66	0.58	0.83	0.98	0.43	0.50	0.32
BGI34S50	2.32	3.37	1.17	1.69	1.34	1.18	0.53	0.45
BGI41S50	3.62	5.28	1.82	2.65	1.61	0.75	0.70	1.01

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
BGI48S50	4.70	6.86	2.36	3.44	1.89	1.38	0.71	1.29
BGI63S50	8.97	13.1	4.50	6.54	2.48	1.54	0.98	3.16
BGI80S50	14.9	21.7	7.44	10.9	3.15	2.28	1.34	8.14
HS29HN50	3.57	5.24	3.03	4.45	1.14	0.59	0.55	0.32
HS39HN50	6.65	9.49	5.67	8.07	1.61	0.79	0.75	0.90
HS58HN50	14.8	21.2	12.6	18.1	2.32	1.06	1.11	2.66
HS79HN50	28.1	40.0	23.9	34.0	3.15	1.57	1.54	7.18

* Dependent on application.

LIFTING FORCES AND GENERAL SPECIFICATIONS – piGRIP® B6

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
S25T50	2.56	3.82	1.28	1.91	0.98	0.47	1.00	0.59
S25T60	2.63	4.02	1.33	2.02	0.98	0.47	0.99	0.59
S35T50	5.40	7.76	2.70	3.87	1.38	0.67	1.40	1.62
S35T60	5.62	8.09	2.81	4.05	1.38	0.67	1.39	1.62
S50T50	11.2	16.1	5.62	8.07	1.97	1.18	2.00	4.71
S50T60	11.7	16.5	5.87	8.27	1.97	1.18	1.99	4.71
S70T50	22.7	32.7	11.4	16.4	2.76	1.97	2.80	12.9
S70T60	23.3	33.3	11.6	16.6	2.76	1.97	2.78	12.9
FX28T30	3.03	4.25	1.51	2.14	1.10	0.59	1.03	0.57

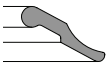

Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
FX28T50	3.35	4.79	1.66	2.41	1.10	0.59	1.02	0.57
FX39T30	6.02	8.39	3.01	4.20	1.54	0.79	1.44	1.62
FX39T50	6.50	9.22	3.26	4.61	1.54	0.79	1.44	1.62
FX55T30	12.2	16.9	6.09	8.43	2.17	1.57	2.06	4.70
FX55T50	12.7	18.2	6.36	9.10	2.17	1.57	2.05	4.70
FX77T30	24.1	33.8	12.0	16.9	3.03	2.17	2.88	12.9
FX77T50	25.2	35.7	12.6	17.9	3.03	2.17	2.87	12.9
FLI25F	0.49	0.85	0.25	0.43	1.00	*	1.07	0.59
FLI25S	*	*	*	*	1.00	*	1.12	0.57
FLI35F	1.30	2.47	0.65	1.24	1.40	*	1.44	1.64
FLI35S	*	*	*	*	1.40	*	1.57	1.59
FLI50F	2.25	3.60	1.12	1.80	2.01	*	2.06	4.78
FLI50S	*	*	*	*	2.01	*	2.48	4.78
FLI70F	7.19	13.5	3.60	6.74	2.80	*	2.80	13.2
FLI70S	*	*	*	*	2.80	*	3.23	13.4
BGI25S50	1.15	1.66	0.58	0.83	0.98	0.43	0.96	0.59
BGI34S50	2.32	3.37	1.17	1.69	1.34	1.18	0.99	0.72
BGI41S50	3.62	5.28	1.82	2.65	1.61	0.75	1.34	1.78
BGI48S50	4.70	6.86	2.36	3.44	1.89	1.38	1.36	2.06

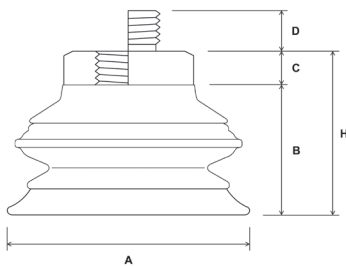
Lip	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level		Outer diameter in	Min. curve radius at 18 -inHg in	Max vertical movement in	Volume in ³
	12 -inHg	18 -inHg	12 -inHg	18 -inHg				
BGI63S50	8.97	13.1	4.50	6.54	2.48	1.54	1.91	5.39
BGI80S50	14.9	21.7	7.44	10.9	3.15	2.28	2.63	14.3
HS29HN50	3.57	5.24	3.03	4.45	1.14	0.59	1.01	0.59
HS39HN50	6.65	9.49	5.67	8.07	1.61	0.79	1.40	1.67
HS58HN50	14.8	21.2	12.6	18.1	2.32	1.06	2.04	4.89
HS79HN50	28.1	40.0	23.9	34.0	3.15	1.57	2.83	13.3

* Dependent on application.

SUCTION CUP DIMENSIONS, IN

Lip type & size		Dim. A	Dim. B			
			F (Flat)	B-1 (1 Bellows)	B-3 (3 Bellows)	B-6 (3+3 Bellows)
	S25	0.98	0.43	0.74	1.17	1.92
	S35	1.38	0.49	0.92	1.53	2.57
	S50	1.97	0.58	1.19	2.06	3.55
	S70	2.76	0.70	1.56	2.78	4.86
	FX28	1.10	0.45	0.76	1.19	1.94
	FX39	1.50	0.52	0.94	1.56	2.59
	FX55	2.17	0.62	1.23	2.10	3.59
	FX77	3.03	0.76	1.61	2.83	4.91
	FLI25S	0.98	0.69	1.00	1.43	2.18
	FLI35S	1.38	0.85	1.28	1.89	2.93
	FLI50S	1.97	1.26	1.88	2.75	4.23
	FLI70S	2.76	1.34	2.20	3.42	5.50
	FLI25F	0.98	0.63	0.94	1.37	2.12
	FLI35F	1.38	0.67	1.10	1.71	2.75
	FLI50F	1.97	0.83	1.44	2.31	3.80
	FLI70F	2.76	0.91	1.77	2.99	5.07





Lip type & size		Dim. A	Dim. B			
			F (Flat)	B-1 (1 Bellows)	B-3 (3 Bellows)	B-6 (3+3 Bellows)
	BGI25	0.98	—	0.89	1.33	2.07
	BGI34	1.34	—	0.98	1.41	2.16
	BGI41	1.61	—	1.16	1.77	2.81
	BGI48	1.89	—	1.22	1.83	2.87
	BGI63	2.48	—	1.57	2.44	3.93
	BGI80	3.15	—	1.94	3.17	5.24
	HS29	1.14	0.53	0.56	1.00	1.74
	HS39	1.54	0.61	0.77	1.38	2.42
	HS58	2.28	0.77	1.08	1.98	3.46
	HS79	3.11	0.96	1.54	2.76	4.84

**BUILD HEIGHT:**


$$B + C = H$$

$$\text{Ex. } 0.74 + 0.20 = 0.94$$

FITTING DIMENSIONS, in

Type	Code	Dim. C	Dim. D	Description	Recommended fitting size for best performance*			
					S25 FX28 FLI25 BGI25 BGI34 HS29	S35 FX39 FLI35 BGI41 BGI48 HS39	S50 FX55 FLI50 BGI63 HS58	S70 FX77 FLI70 HS79 BGI80
	G18M	0.20	0.24	Fitting G1/8" male	●	●	●	
	G14M	0.24	0.35	Fitting G1/4" male	●	●	●	●
	G38M	0.24	0.39	Fitting G3/8" male		●	●	●
	G12M	0.24	0.39	Fitting G1/2" male			●	●
	GL18M	0.06	0.24	Fitting G1/8" low male	●	●	●	
	GL14M	0.06	0.35	Fitting G1/4" low male	●	●	●	●
	GL38M	0.06	0.39	Fitting G3/8" low male		●	●	●
	NT18M	0.20	0.28	Fitting 1/8" NPT male	●	●	●	
	NT14M	0.24	0.43	Fitting 1/4" NPT male	●	●	●	●
	NT38M	0.24	0.45	Fitting 3/8" NPT male		●	●	●
	NT12M	0.24	0.59	Fitting 1/2" NPT male			●	●
	NTL18M	0.06	0.28	Fitting 1/8" NPT low male	●	●	●	
	NTL14M	0.06	0.43	Fitting 1/4" NPT low male	●	●	●	●
	NTL38M	0.06	0.45	Fitting 3/8" NPT low male		●	●	●

Type	Code	Dim. C	Dim. D	Description	Recommended fitting size for best performance*			
					S25 FX28 FLI25 BGI25 BGI34 HS29	S35 FX39 FLI35 BGI41 BGI48 HS39	S50 FX55 FLI50 BGI63 HS58	S70 FX77 FLI70 HS79 BGI80
	MM6M	0.20	0.24	Fitting M6 male	●	●		
	MMF8M	0.20	0.24	Fitting M8 x 1 male	●	●	●	
	MM10M	0.24	0.39	Fitting M10 male	●	●	●	
	MM12M	0.24	0.39	Fitting M12 male	●	●	●	
	MMF14M	0.24	0.47	Fitting M14 x 1 male	●	●	●	●
	MMF16M	0.24	0.47	Fitting M16 x 1.5 male		●	●	●
	G14F	0.39	—	Fitting G1/4" fem	●	●	●	
	G38F	0.51	—	Fitting G3/8" fem		●	●	●
	G12F	0.55	—	Fitting G1/2" fem			●	●
	NS18F**	0.28	—	Fitting 1/8" NPSF fem	●	●	●	
	NS14F	0.39	—	Fitting 1/4" NPSF fem	●	●	●	●
	NS38F	0.51	—	Fitting 3/8" NPSF fem		●	●	●
	NS12F	0.55	—	Fitting 1/2" NPSF fem			●	●
	NS518F**	0.71	—	Fitting 5x1/8" NPSF fem	●	●	●	
		NT14F	0.47	—	Fitting 1/4" NPT fem	●	●	●
NT38F		0.51	—	Fitting 3/8" NPT fem		●	●	●

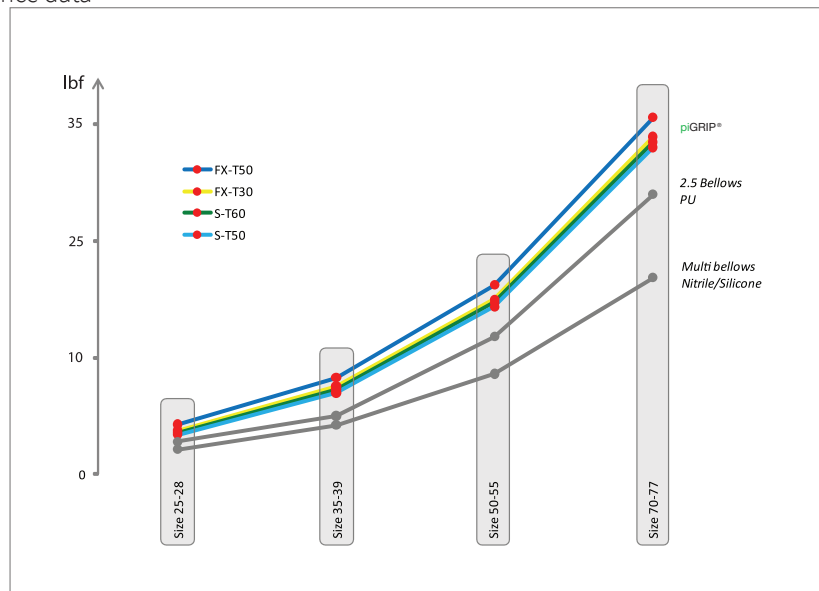
Type	Code	Dim. C	Dim. D	Description	Recommended fitting size for best performance*			
					S25 FX28 FLI25 BGI25 BGI34 HS29	S35 FX39 FLI35 BGI41 BGI48 HS39	S50 FX55 FLI50 BGI63 HS58	S70 FX77 FLI70 HS79 BGI80
	U12F	0.47	—	Fitting 1/2" UNC fem			●	●
	MM5F	0.24	—	Fitting M5 fem	●	●		
	MM6F	0.24	—	Fitting M6 fem	●	●		
	MM8F	0.28	—	Fitting M8 fem	●	●	●	
	MM10F	0.28	—	Fitting M10 fem	●	●	●	
	MM12F	0.47	—	Fitting M12 fem	●	●	●	
	MMF16F	0.51	—	Fitting M16 x 1.5 fem		●	●	●

* No flow restriction or excessive volume to evacuate, which will deteriorate the performance of the vacuum system. ** Fitting code G18F and G518F are automatically changed to NS18F and NS518F due to identical threads.

Go to suction cup selection guide on [piab.com](https://www.piab.com) to configure your suction cup.

piGRIP® MATERIAL DATA

Up to 50% improved lifting force with piGRIP®. Use fewer cups or smaller sizes. See suction cup selection guide on piab.com for specified performance data



Proven function and lifting capacity within specified area of operation.

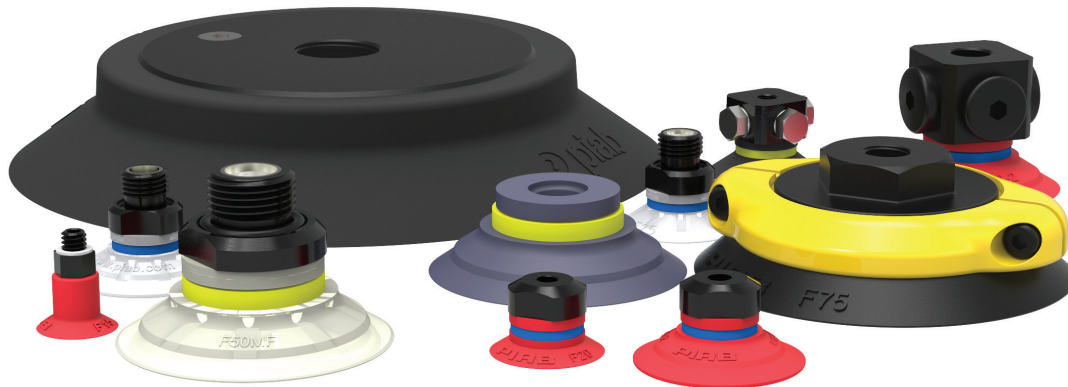
MATERIAL SPECIFICATIONS

Material	Hardness, Shore A °	Item(s)	Color	Temp. range, °F	Special qualities
TPE	80–87	Support S1	Lime/Transparent	-4–140/212*	FDA EU**, silicone/PWIS free, mark free, oil resistant
TPE	87	Bellows	Lime/Transparent	-4–140/212*	FDA EU**, silicone/PWIS free, mark free, oil resistant
TPE	60	Standard Lip (S) T60	Green	-4–140/248*	Silicone/PWIS free, mark free, oil resistant
TPE	50	Standard Lip (S) T50	Blue	-4–140/248*	FDA EU
TPE	50	Flexible Lip (FX) T50	Blue	-4–140/248*	FDA EU
TPE	30	Flexible Lip (FX) T30	Yellow	-4–140/212*	FDA EU
EPDM	—	Foam Lip (FLI-S)	Green/Black	-4–176	Ultra soft cellular rubber
NR	—	Foam Lip (FLI-F)	Green/Orange	-4–176	Firm natural rubber
Silicone	50	Bag Lip (BGI)	Blue	-4–392	FDA EU
HNBR	50	Hot Surface Lip (HS)	Blue	-22–248/302*	PWIS free, mark free
PU	60	Foam Lip holder	Green	50–122	

* Max Temperature short term contact, <10 sec and 50% intermittence, ambient temperature 59-86 °F, mechanical properties will start to degrade.

** FDA EU approved option in transparent material.

Flat family (F)



There is a variety of cups in this family to suit a number of different flat surfaces, e.g. cardboard, glass and metal sheets. The cleats stop deformation by preventing suction of the object into the cup. The suction cup has good stability and very little movement. Also suitable when the lifting force is parallel to the surface as the cleats increase friction. There is also a variety in materials from mark-free to high temperature applications and FDA compliant material (FDA 21 CFR 177.2600) that meets EU's regulation EU 1935/2004.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
F15	0.79	1.91	2.47	0.79	1.46	1.69
F20	1.35	3.26	4.27	1.12	1.80	1.91
F25	2.02	4.38	5.62	1.80	2.02	2.25
F30-2	2.70	5.62	6.97	2.47	3.60	4.50
F40-2	4.50	8.99	11.2	3.37	5.62	6.74
F50-2	8.09	16.6	21.6	5.40	8.99	11.2
F75	18.0	45.0	60.7	13.5	24.7	31.5
F110	31.5	94.4	125.9	31.5	56.2	67.4
F150	67.4	191.1	247.3	56.2	134.9	179.8
F26 FDA	2.47	5.62	6.97	2.02	4.72	5.85
F33 FDA	3.60	8.54	11.0	3.03	7.31	9.33

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
F75P	15.7/18.4*	43.4/51.9*	61.4/74.2*	9.89/10.6*	39.6/25.4*	69.2/38.0*
F110P	37.5/42.9*	97.1/112.0*	132.9/158.5*	33.5/66.8*	99.1/117.6*	138.7/149.3*
F15MF	0.90	1.80	2.70	1.01	2.02	3.26
F20MF	0.81	3.26	4.95	1.80	3.26	4.72
F25MF	1.42	5.51	7.89	2.02	5.51	8.16
F30MF	2.47	7.76	10.8	3.06	6.29	9.44
F40MF	4.05	12.8	18.7	3.60	11.0	12.8
F50MF	5.51	20.7	31.7	6.97	18.4	24.1
XLF150	74.2/116.9**	112.4/173.1**	175.4/254.0**	63.2	95.5	149.0
XLF200	170.9/231.6**	254.0/339.5**	386.7/494.6**	145.2	216.0	328.7
XLF250	294.5/368.7**	438.4/553.0**	645.2/795.8**	250.4	372.7	548.5
XLF300	483.3/589.0**	719.4/845.3**	1040.9/1225.2**	411.0	611.5	884.8

* PU30°/PU60° / PU60°, ** Inner/Outer lip

GENERAL SPECIFICATIONS




	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
F15	0.62	0.43	0.51	0.04	0.02
F20	0.87	0.31	0.71	0.06	0.06
F25	1.06	0.35	0.87	0.06	0.07
F30-2	1.26	0.41	0.98	0.08	0.12
F40-2	1.65	0.51	2.05	0.10	0.29








	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
F50-2	2.09	0.69	2.17	0.12	0.61
F75	3.03	0.51	5.91	0.12	1.22
F110	4.41	0.79	9.84	0.16	4.27
F150	5.98	1.04	19.7	0.24	9.76
F26 FDA	1.02	0.93	0.98	0.06	0.10
F33 FDA	1.30	0.93	1.38	0.06	0.13
F75P	3.03	0.51	5.91	0.08	1.16
F110P	4.53	0.79	9.84	0.16	3.66
F15MF	0.65	0.43	0.67	0.04	0.02
F20MF	0.87	0.31	0.71	0.08	0.06
F25MF	1.06	0.35	0.91	0.06	0.07
F30MF	1.26	0.39	1.73	0.06	0.12
F40MF	1.65	0.51	2.36	0.08	0.29
F50MF	2.09	0.69	3.74	0.08	0.61
XLF150	6.02	1.06	19.7	0.31	8.85
XLF200	8.03	1.06	31.5	0.31	16.8
XLF250	9.84	1.06	51.2	0.31	26.5
XLF300	12.0	1.06	74.8	0.31	40.6

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material								MSF
F15	Chloroprene, CR	●				●		●	●
F15	Silicone, SIL	●	●						
F15	Silicone FDA EU, SIL FDA	●	●						
F20	Chloroprene, CR	●				●		●	●
F20	Silicone, SIL	●	●						
F20	Silicone FDA EU, SIL FDA	●	●						
F25	Chloroprene, CR	●				●		●	●
F25	Silicone, SIL	●	●						
F25	Silicone FDA EU, SIL FDA	●	●						
F30-2	Chloroprene, CR	●				●		●	●
F30-2	Silicone, SIL	●	●						
F30-2	Silicone FDA EU, SIL FDA	●	●						
F40-2	Nitrile-PVC, NPV	●				●		●	●
F40-2	Silicone, SIL	●	●						
F40-2	Silicone FDA EU, SIL FDA	●	●						
F50-2	HNBR	●					●	●	
F50-2	Nitrile-PVC, NPV	●				●		●	●
F50-2	Silicone, SIL	●	●						
F50-2	Silicone FDA EU, SIL FDA	●	●						

Cup	Material								MSF
F75	HNBR	●					●	●	
F75	Nitrile-PVC, NPV	●				●		●	●
F75	Silicone, SIL	●	●						
F75	Silicone FDA EU, SIL FDA	●	●						
F110	HNBR	●					●	●	
F110	Nitrile-PVC, NPV	●				●		●	●
F110	Silicone, SIL	●	●						
F110	Silicone FDA EU, SIL FDA	●	●						
F150	Nitrile-PVC, NPV	●				●		●	●
F150	Silicone, SIL	●	●						
F150	Silicone FDA EU, SIL FDA	●	●						
F26 FDA	Silicone FDA EU, SIL FDA	●	●						
F33 FDA	Silicone FDA EU, SIL FDA	●	●						
F75P	PU30°/PU60°	●		●					
F75P	PU60°	●		●	●	●		●	●
F110P	PU30°/PU60°	●		●					
F110P	PU60°	●		●	●	●		●	●
F15MF	Thermoplastic Polyurethane, TPE-U				●			●	
F20MF	Thermoplastic Polyurethane, TPE-U				●			●	

Cup	Material								MSF
F25MF	Thermoplastic Polyurethane, TPE-U				●			●	
F30MF	Thermoplastic Polyurethane, TPE-U				●			●	
F40MF	Thermoplastic Polyurethane, TPE-U				●			●	
F50MF	Thermoplastic Polyurethane, TPE-U				●			●	
XLF150	Nitrile-PVC, NPV	●				●		●	●
XLF200	Nitrile-PVC, NPV	●				●		●	●
XLF250	Nitrile-PVC, NPV	●				●		●	●
XLF300	Nitrile-PVC, NPV	●				●		●	●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit [piab.com](https://www.piab.com).

	Dry sheet metal	Bag opening/ thin paper – slip sheets/film	Food contact materials (FDA & EU), non- detectable	Glass handling	High/low temp cup (plastic)	Mark free	Plastic injection molded parts
F15	●		●				
F20	●		●				
F25	●		●				
F75	●		●	●	●	●	●
F110	●		●	●	●	●	●
F150	●		●				
F26 FDA		●	●				

	Dry sheet metal	Bag opening/ thin paper – slip sheets/film	Food contact materials (FDA & EU), non- detectable	Glass handling	High/low temp cup (plastic)	Mark free	Plastic injection molded parts
F33 FDA		●	●				
F30-2	●		●				
F40-2	●		●				
F50-2	●		●	●	●	●	●
F75P	●					●	
F110P	●					●	
F15MF						●	
F20MF						●	
F25MF						●	
F30MF						●	
F40MF						●	
F50MF						●	
XLF150	●			●		●	
XLF200	●			●		●	
XLF250	●			●		●	
XLF300	●			●		●	

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup F15 Chloroprene	F15.10
Suction cup F15 Chloroprene, M5 male	F15.10.01AC
Suction cup F15 Silicone	F15.20
Suction cup F15 Silicone FCM	F15.21
Suction cup F15 Silicone FCM, M5 male	F15.21.01AC
Suction cup F15 Silicone, M5 male	F15.20.01AC
Suction cup F20 Chloroprene	F20.10
Suction cup F20 Chloroprene, G1/8" male/M5 female, PA	F20.10.02CD
Suction cup F20 Chloroprene, M5 female	F20.10.02AA
Suction cup F20 Chloroprene, G1/8" male, with mesh filter	F20.10.02AB
Suction cup F20 Chloroprene, 1/8" NPT male, with mesh filter	F20.10.02AC
Suction cup F20 Chloroprene, G1/8" male/M5 female	F20.10.02AD
Suction cup F20 Chloroprene, 5xM5 female	F20.10.02AE
Suction cup F20 Chloroprene, G1/8" male/M5 female, with mesh filter	F20.10.02AF
Suction cup F20 Chloroprene, M5 female, with dual flow control valve	F20.10.02DA
Suction cup F20 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	F20.10.02DB
Suction cup F20 Chloroprene, G1/8" male/M5 female, with dual flow control valve	F20.10.02DD
Suction cup F20 Silicone	F20.20
Suction cup F20 Silicone, 1/8" NPT male, with dual flow control valve	F20.20.02DC
Suction cup F20 Silicone, M5 female	F20.20.02AA

Description	Part no.
Suction cup F20 Silicone, G1/8" male, with mesh filter	F20.20.02AB
Suction cup F20 Silicone, 1/8" NPT male, with mesh filter	F20.20.02AC
Suction cup F20 Silicone, G1/8" male/M5 female	F20.20.02AD
Suction cup F20 Silicone, 5xM5 female	F20.20.02AE
Suction cup F20 Silicone, G1/8" male/M5 female, with mesh filter	F20.20.02AF
Suction cup F20 Silicone, G1/8" male, with mesh filter and dual flow control valve	F20.20.02DB
Suction cup F20 Silicone, G1/8" male/M5 female, PA	F20.20.02CD
Suction cup F20MF Thermoelastic polyurethane	F20MF.40
Suction cup F20MF Thermoelastic polyurethane, M5 female	F20MF.40.02AA
Suction cup F20MF Thermoelastic polyurethane, G1/8" male, with mesh filter	F20MF.40.02AB
Suction cup F20MF Thermoelastic polyurethane, 1/8" NPT male with mesh filter	F20MF.40.02AC
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 female	F20MF.40.02AD
Suction cup F20MF Thermoelastic polyurethane, 5xM5 female	F20MF.40.02AE
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 female, with mesh filter	F20MF.40.02AF
Suction cup F20MF Thermoelastic polyurethane, G1/8" male, with mesh filter and dual flow control valve	F20MF.40.02DB
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 fem., with dual flow control valve	F20MF.40.02DD
Suction cup F20MF Thermoelastic polyurethane, 5xM5 female, with dual flow control valve	F20MF.40.02DE
Suction cup F25 Chloroprene, G1/8" male/M5 female, PA	F25.10.02CD
Suction cup F25 Silicone FCM	F25.21
Suction cup F25 Silicone, M5 female	F25.20.02AA
Suction cup F25 Silicone, G1/8" male, with mesh filter	F25.20.02AB

Description	Part no.
Suction cup F25 Silicone, 1/8" NPT male, with mesh filter	F25.20.02AC
Suction cup F25 Silicone, G1/8" male/M5 female	F25.20.02AD
Suction cup F25 Silicone, 5×M5 female	F25.20.02AE
Suction cup F25 Silicone, G1/8" male/M5 female, with mesh filter	F25.20.02AF
Suction cup F25 Silicone, 1/8" NPT male, with dual flow control valve	F25.20.02DC
Suction cup F25 Silicone, G1/8" male/M5 female, with dual flow control valve	F25.20.02DD
Suction cup F25 Silicone, G1/8" male/M5 female, PA	F25.20.02CD
Suction cup F25 Silicone FCM, G1/8" male, with mesh filter	F25.21.02AB
Suction cup F25 Silicone FCM, 1/8" NPT male, with mesh filter	F25.21.02AC
Suction cup F25 Silicone FCM, G1/8" male/M5 female, with mesh filter	F25.21.02AF
Suction cup F25MF Thermoelastic polyurethane	F25MF.40
Suction cup F25MF Thermoelastic polyurethane, M5 female	F25MF.40.02AA
Suction cup F25MF Thermoelastic polyurethane, M5 female, with dual flow control valve	F25MF.40.02DA
Suction cup F25MF Thermoelastic polyurethane, G1/8" male, with mesh filter	F25MF.40.02AB
Suction cup F25MF Thermoelastic polyurethane, G1/8" male, with mesh filter and dual flow control valve	F25MF.40.02DB
Suction cup F25MF Thermoelastic polyurethane, G1/8" male/M5 female, with mesh filter	F25MF.40.02AF
Suction cup F25MF Thermoelastic polyurethane, 5×M5 female	F25MF.40.02AE
Suction cup F25MF Thermoelastic polyurethane, 1/8" NPT male, with mesh filter	F25MF.40.02AC
Suction cup F25MF Thermoelastic polyurethane, G1/8" male/M5 female	F25MF.40.02AD
Suction cup F75 HNBR	F75.37
Suction cup F75 HNBR with washer	F75.37.W

Description	Part no.
Suction cup F75 HNBR, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	F75.37.07UH
Suction cup F75 HNBR, 1/8" NPSF female Al, with mesh filter	F75.37.07UA
Suction cup F75 HNBR, 1/8" NPSF female, with mesh filter	F75.37.07NA
Suction cup F75 HNBR, 3/8" NPSF female, with mesh filter	F75.37.07NE
Suction cup F75 HNBR, G1/2" female Al, with mesh filter	F75.37.07UD
Suction cup F75 HNBR, G1/2" female, with mesh filter	F75.37.07NF
Suction cup F75 HNBR, G3/8" female, with mesh filter	F75.37.07ND
Suction cup F75 Nitrile-PVC	F75.30
Suction cup F75 Nitrile-PVC with washer	F75.30.W
Suction cup F75 Nitrile-PVC, 1/8" NPSF female Al, with mesh filter	F75.30.07UA
Suction cup F75 Nitrile-PVC, 3/8" NPSF female Al, with mesh filter	F75.30.07UB
Suction cup F75 Nitrile-PVC, 3/8" NPSF female, with mesh filter	F75.30.07NE
Suction cup F75 Nitrile-PVC, G1/2" female Al, with mesh filter	F75.30.07UD
Suction cup F75 Nitrile-PVC, G1/2" female, with cone valve	F75.30.07VF
Suction cup F75 Nitrile-PVC, G1/2" female, with mesh filter	F75.30.07NF
Suction cup F75 Nitrile-PVC, G3/8" female, with cone valve	F75.30.07VD
Suction cup F75 Nitrile-PVC, G3/8" female, with mesh filter	F75.30.07ND
Suction cup F75 Nitrile-PVC, 1/8" NPSF female, with mesh filter	F75.30.07NA
Suction cup F75 Silicone	F75.20
Suction cup F75 Silicone FCM	F75.21
Suction cup F75 Silicone FCM, 3/8" NPSF female, with mesh filter	F75.21.07NE

Description	Part no.
Suction cup F75 Silicone FCM, G3/8" female, with mesh filter	F75.21.07ND
Suction cup F75 Silicone with washer	F75.20.W
Suction cup F75 Silicone, 1/8" NPSF female Al, with mesh filter	F75.20.07UA
Suction cup F75 Silicone, 1/8" NPSF female, with mesh filter	F75.20.07NA
Suction cup F75 Silicone, 3/8" NPSF female Al, with mesh filter	F75.20.07UB
Suction cup F75 Silicone, 3/8" NPSF female, with mesh filter	F75.20.07NE
Suction cup F75 Silicone, G1/2" female Al, with mesh filter	F75.20.07UD
Suction cup F75 Silicone, G1/2" female, with cone valve	F75.20.07VF
Suction cup F75 Silicone, G1/2" female, with mesh filter	F75.20.07NF
Suction cup F75 Silicone, G3/8" female, with cone valve	F75.20.07VD
Suction cup F75 Silicone, G3/8" female, with mesh filter	F75.20.07ND
Suction cup F75P Polyurethane 30/60	F75P.4K
Suction cup F75P Polyurethane 30/60, 1/8" NPSF female, with mesh filter	F75P.4K.07NA
Suction cup F75P Polyurethane 30/60, 3/8" NPSF female	F75P.5K.N40W
Suction cup F75P Polyurethane 30/60, 3/8" NPSF female, with mesh filter	F75P.4K.07NE
Suction cup F75P Polyurethane 30/60, for thread insert	F75P.5K
Suction cup F75P Polyurethane 30/60, G1/2" female, with mesh filter	F75P.4K.07NF
Suction cup F75P Polyurethane 30/60, G3/8" female, with cone valve	F75P.4K.07VD
Suction cup F75P Polyurethane 30/60, G3/8" female, with mesh filter	F75P.4K.07ND
Suction cup F75P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	F75P.5K.G40M
Suction cup F75P Polyurethane 60	F75P.4E

Description	Part no.
Suction cup F75P Polyurethane 60, 1/8" NPSF female, with mesh filter	F75P.4E.07NA
Suction cup F75P Polyurethane 60, 3/8" NPSF female	F75P.5E.N40W
Suction cup F75P Polyurethane 60, 3/8" NPSF female, with mesh filter	F75P.4E.07NE
Suction cup F75P Polyurethane 60, for thread insert	F75P.5E
Suction cup F75P Polyurethane 60, G1/2" female, with mesh filter	F75P.4E.07NF
Suction cup F75P Polyurethane 60, G3/8" female, with cone valve	F75P.4E.07VD
Suction cup F75P Polyurethane 60, G3/8" female, with mesh filter	F75P.4E.07ND
Suction cup F75P Polyurethane 60, thread insert G3/8" male, with mesh filter	F75P.5E.G40M
Suction cup F110 HNBR	F110.37
Suction cup F110 HNBR with washer	F110.37.W
Suction cup F110 HNBR, 3/8" NPSF female, with mesh filter	F110.37.11NB
Suction cup F110 HNBR, G1/2" female Al, with mesh filter	F110.37.11UA
Suction cup F110 HNBR, G1/2" female, with mesh filter	F110.37.11NC
Suction cup F110 HNBR, G3/8" female, with mesh filter	F110.37.11NA
Suction cup F110 Nitrile-PVC	F110.30
Suction cup F110 Nitrile-PVC with washer	F110.30.W
Suction cup F110 Nitrile-PVC, 3/8" NPSF female, with mesh filter	F110.30.11NB
Suction cup F110 Nitrile-PVC, G1/2" female Al, with mesh filter	F110.30.11UA
Suction cup F110 Nitrile-PVC, G1/2" female, with cone valve	F110.30.11VC
Suction cup F110 Nitrile-PVC, G1/2" female, with mesh filter	F110.30.11NC
Suction cup F110 Nitrile-PVC, G3/8" female, with mesh filter	F110.30.11NA

Description	Part no.
Suction cup F110 Silicone	F110.20
Suction cup F110 Silicone FCM	F110.21
Suction cup F110 Silicone FCM, 3/8" NPSF female, with mesh filter	F110.21.11NB
Suction cup F110 Silicone FCM, G1/2" female, with mesh filter	F110.21.11NC
Suction cup F110 Silicone with washer	F110.20.W
Suction cup F110 Silicone, 3/8" NPSF female, with mesh filter	F110.20.11NB
Suction cup F110 Silicone, G1/2" female AI, with mesh filter	F110.20.11UA
Suction cup F110 Silicone, G1/2" female, with cone valve	F110.20.11VC
Suction cup F110 Silicone, G1/2" female, with mesh filter	F110.20.11NC
Suction cup F110 Silicone, G3/8" female, with mesh filter	F110.20.11NA
Suction cup F110P Polyurethane 30/60	F110P.4K
Suction cup F110P Polyurethane 30/60, 3/8" NPSF female	F110P.5K.N40W
Suction cup F110P Polyurethane 30/60, 3/8" NPSF female, with mesh filter	F110P.4K.11NB
Suction cup F110P Polyurethane 30/60, for thread insert	F110P.5K
Suction cup F110P Polyurethane 30/60, G1/2" female, with cone valve	F110P.4K.11VC
Suction cup F110P Polyurethane 30/60, G1/2" female, with mesh filter	F110P.4K.11NC
Suction cup F110P Polyurethane 30/60, G3/8" female, with mesh filter	F110P.4K.11NA
Suction cup F110P Polyurethane 30/60, thread insert G3/8" with mesh filter	F110P.5K.G40M
Suction cup F110P Polyurethane 60	F110P.4E
Suction cup F110P Polyurethane 60, 3/8" NPSF female	F110P.5E.N40W
Suction cup F110P Polyurethane 60, 3/8" NPSF female, with mesh filter	F110P.4E.11NB

Description	Part no.
Suction cup F110P Polyurethane 60, for thread insert	F110P.5E
Suction cup F110P Polyurethane 60, G1/2" female, with cone valve	F110P.4E.11VC
Suction cup F110P Polyurethane 60, G1/2" female, with mesh filter	F110P.4E.11NC
Suction cup F110P Polyurethane 60, G3/8" female, with mesh filter	F110P.4E.11NA
Suction cup F110P Polyurethane 60, thread insert G3/8", with mesh filter	F110P.5E.G40M
Suction cup F150 Nitrile-PVC	F150.30
Suction cup F150 Nitrile-PVC with washer	F150.30.W
Suction cup F150 Nitrile-PVC, G1/2" female Al, with mesh filter	F150.30.15UA
Suction cup F150 Nitrile-PVC, G1/2" female, with cone valve	F150.30.15VA
Suction cup F150 Nitrile-PVC, G1/2" female, with mesh filter	F150.30.15NA
Suction cup F150 Nitrile-PVC, G3/4" female, with mesh filter	F150.30.15NB
Suction cup F150 Silicone	F150.20
Suction cup F150 Silicone FCM	F150.21
Suction cup F150 Silicone FCM, G1/2" female, with mesh filter	F150.21.15NA
Suction cup F150 Silicone with washer	F150.20.W
Suction cup F150 Silicone, G1/2" female Al, with mesh filter	F150.20.15UA
Suction cup F150 Silicone, G1/2" female, with cone valve	F150.20.15VA
Suction cup F150 Silicone, G1/2" female, with mesh filter	F150.20.15NA
Suction cup F150 Silicone, G3/4" female, with mesh filter	F150.20.15NB
Suction cup F26 Silicone FCM	02.01.216
Suction cup F26 Silicone FCM, G1/4" male	99.14.238

Description	Part no.
Suction cup F26 Silicone FCM, 1/8" NPSF female	99.14.251
Suction cup F33 Silicone FCM	02.00.328
Suction cup F33 Silicone FCM, G1/4" male	99.14.237
Suction cup F33 Silicone FCM, 1/8" NPSF female	99.14.252
Suction cup F30-2 Chloroprene	F30-2.10
Suction cup F30-2 Chloroprene, 1/8" NPT male, with dual flow control valve	F30-2.10.02DC
Suction cup F30-2 Chloroprene, 1/8" NPT male, with mesh filter	F30-2.10.02AC
Suction cup F30-2 Chloroprene, 5×M5 female	F30-2.10.02AE
Suction cup F30-2 Chloroprene, for fitting with cone valve	31.50.239
Suction cup F30-2 Chloroprene, G1/8" male, with mesh filter	F30-2.10.02AB
Suction cup F30-2 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	F30-2.10.02DB
Suction cup F30-2 Chloroprene, G1/8" male/M5 female	F30-2.10.02AD
Suction cup F30-2 Chloroprene, G1/8" male/M5 female PA	F30-2.10.02CD
Suction cup F30-2 Chloroprene, G1/8" male/M5 female, with cone valve	F30-2.10.02UV
Suction cup F30-2 Chloroprene, G1/8" male/M5 female, with dual flow control valve	F30-2.10.02DD
Suction cup F30-2 Chloroprene, G1/8" male/M5 female, with mesh filter	F30-2.10.02AF
Suction cup F30-2 Chloroprene, M5 female	F30-2.10.02AA
Suction cup F30-2 Chloroprene, M5 female, with dual flow control valve	F30-2.10.02DA
Suction cup F30-2 Silicone	F30-2.20
Suction cup F30-2 Silicone FCM	F30-2.21
Suction cup F30-2 Silicone FCM, 1/8" NPT male, with mesh filter	F30-2.21.02AC

Description	Part no.
Suction cup F30-2 Silicone FCM, G1/8" male, with mesh filter	F30-2.21.02AB
Suction cup F30-2 Silicone FCM, G1/8" male/M5 female, with mesh filter	F30-2.21.02AF
Suction cup F30-2 Silicone, 1/8" NPT male, with dual flow control valve	F30-2.20.02DC
Suction cup F30-2 Silicone, 1/8" NPT male, with mesh filter	F30-2.20.02AC
Suction cup F30-2 Silicone, 5×M5 female	F30-2.20.02AE
Suction cup F30-2 Silicone, G1/8" male, with mesh filter	F30-2.20.02AB
Suction cup F30-2 Silicone, G1/8" male, with mesh filter and dual flow control valve	F30-2.20.02DB
Suction cup F30-2 Silicone, G1/8" male/M5 female	F30-2.20.02AD
Suction cup F30-2 Silicone, G1/8" male/M5 female, with cone valve	F30-2.20.02UV
Suction cup F30-2 Silicone, G1/8" male/M5 female, with dual flow control valve	F30-2.20.02DD
Suction cup F30-2 Silicone, G1/8" male/M5 female, with mesh filter	F30-2.20.02AF
Suction cup F30-2 Silicone, M5 female	F30-2.20.02AA
Suction cup F30-2 Silicone, G1/8" male/M5 female PA	F30-2.20.02CD
Suction cup F40-2 Nitrile-PVC	F40-2.30
Suction cup F40-2 Nitrile-PVC, 1/4" NPT male, with dual flow control valve	F40-2.30.04DC
Suction cup F40-2 Nitrile-PVC, 1/4" NPT male, with mesh filter	F40-2.30.04AC
Suction cup F40-2 Nitrile-PVC, 1/8" NPSF female	F40-2.30.04AA
Suction cup F40-2 Nitrile-PVC, 1/8" NPSF female PA	F40-2.30.04CA
Suction cup F40-2 Nitrile-PVC, 1/8" NPSF female, with cone valve	F40-2.30.04UV
Suction cup F40-2 Nitrile-PVC, 1/8" NPSF female, with dual flow control valve	F40-2.30.04DA
Suction cup F40-2 Nitrile-PVC, 1/8" NPSF female, with mesh filter	F40-2.30.04AG

Description	Part no.
Suction cup F40-2 Nitrile-PVC, 5×1/8" NPSF female	F40-2.30.04AF
Suction cup F40-2 Nitrile-PVC, G1/4" male, with mesh filter	F40-2.30.04AB
Suction cup F40-2 Nitrile-PVC, G1/4" male, with mesh filter and dual flow control valve	F40-2.30.04DB
Suction cup F40-2 Nitrile-PVC, G3/8" male, with mesh filter	F40-2.30.04AD
Suction cup F40-2 Nitrile-PVC, G3/8" male, with mesh filter and dual flow control valve	F40-2.30.04DD
Suction cup F40-2 Nitrile-PVC, NPT3/8" male, with mesh filter	F40-2.30.04AE
Suction cup F40-2 Silicone	F40-2.20
Suction cup F40-2 Silicone FCM	F40-2.21
Suction cup F40-2 Silicone FCM, 1/4" NPT male, with mesh filter	F40-2.21.04AC
Suction cup F40-2 Silicone FCM, 1/8" NPSF female, with mesh filter	F40-2.21.04AG
Suction cup F40-2 Silicone FCM, G1/4" male, with mesh filter	F40-2.21.04AB
Suction cup F40-2 Silicone, 1/4" NPT male, with mesh filter	F40-2.20.04AC
Suction cup F40-2 Silicone, 1/8" NPSF female	F40-2.20.04AA
Suction cup F40-2 Silicone, 1/8" NPSF female PA	F40-2.20.04CA
Suction cup F40-2 Silicone, 1/8" NPSF female, with cone valve	F40-2.20.04UV
Suction cup F40-2 Silicone, 1/8" NPSF female, with mesh filter...	F40-2.20.04AG
Suction cup F40-2 Silicone, 5×1/8" NPSF female	F40-2.20.04AF
Suction cup F40-2 Silicone, G1/4" male, with mesh filter	F40-2.20.04AB
Suction cup F40-2 Silicone, G3/8" male, with mesh filter	F40-2.20.04AD
Suction cup F40-2 Silicone, NPT3/8" male, with mesh filter	F40-2.20.04AE
Suction cup F40-2 Silicone, NPTG1/4" male, with dual flow control valve	F40-2.20.04DC

Description	Part no.
Suction cup F40-2 Silicone, 1/8" NPSF female, with dual flow control valve	F40-2.20.04DA
Suction cup F50-2 HNBR	F50-2.37
Suction cup F50-2 HNBR, 1/4" NPT male, with dual flow control valve	F50-2.37.05DC
Suction cup F50-2 HNBR, 1/4" NPT male, with mesh filter	F50-2.37.05AC
Suction cup F50-2 HNBR, 1/8" NPSF female	F50-2.37.05AA
Suction cup F50-2 HNBR, 1/8" NPSF female with mesh filter	F50-2.37.05AG
Suction cup F50-2 HNBR, 1/8" NPSF female, with dual flow control valve	F50-2.37.05DA
Suction cup F50-2 HNBR, 5×1/8" NPSF female	F50-2.37.05AF
Suction cup F50-2 HNBR, G1/4" male, with mesh filter	F50-2.37.05AB
Suction cup F50-2 HNBR, G3/8" male, with mesh filter	F50-2.37.05AD
Suction cup F50-2 HNBR, NPT3/8" male, with mesh filter	F50-2.37.05AE
Suction cup F50-2 Nitrile-PVC	F50-2.30
Suction cup F50-2 Nitrile-PVC, 1/4" NPT male, with dual flow control valve	F50-2.30.05DC
Suction cup F50-2 Nitrile-PVC, 1/4" NPT male, with mesh filter	F50-2.30.05AC
Suction cup F50-2 Nitrile-PVC, 1/8" NPSF female	F50-2.30.05AA
Suction cup F50-2 Nitrile-PVC, 1/8" NPSF female, PA	F50-2.30.05CA
Suction cup F50-2 Nitrile-PVC, 1/8" NPSF female, with cone valve	F50-2.30.05UV
Suction cup F50-2 Nitrile-PVC, 1/8" NPSF female, with dual flow control valve	F50-2.30.05DA
Suction cup F50-2 Nitrile-PVC, 1/8" NPSF female, with mesh filter	F50-2.30.05AG
Suction cup F50-2 Nitrile-PVC, 5×1/8" NPSF female	F50-2.30.05AF
Suction cup F50-2 Nitrile-PVC, 5×1/8" NPSF female, with dual flow control valve	F50-2.30.05DF

Description	Part no.
Suction cup F50-2 Nitrile-PVC, for fitting with cone valve	31.50.241P
Suction cup F50-2 Nitrile-PVC, G1/4" male, with mesh filter	F50-2.30.05AB
Suction cup F50-2 Nitrile-PVC, G1/4" male, with mesh filter and dual flow control valve	F50-2.30.05DB
Suction cup F50-2 Nitrile-PVC, G3/8" male, with mesh filter	F50-2.30.05AD
Suction cup F50-2 Nitrile-PVC, G3/8" male, with mesh filter and dual flow control valve	F50-2.30.05DD
Suction cup F50-2 Nitrile-PVC, NPT3/8" male, with mesh filter	F50-2.30.05AE
Suction cup F50-2 Silicone	F50-2.20
Suction cup F50-2 Silicone FCM	F50-2.21
Suction cup F50-2 Silicone FCM, 1/4" NPT male, with mesh filter	F50-2.21.05AC
Suction cup F50-2 Silicone FCM, 1/8" NPSF female, with mesh filter	F50-2.21.05AG
Suction cup F50-2 Silicone FCM, G1/4" male, with mesh filter	F50-2.21.05AB
Suction cup F50-2 Silicone, 1/4" NPT male, with dual flow control valve	F50-2.20.05DC
Suction cup F50-2 Silicone, 1/4" NPT male, with mesh filter	F50-2.20.05AC
Suction cup F50-2 Silicone, 1/8" NPSF female	F50-2.20.05AA
Suction cup F50-2 Silicone, 1/8" NPSF female, PA	F50-2.20.05CA
Suction cup F50-2 Silicone, 1/8" NPSF female, with cone valve	F50-2.20.05UV
Suction cup F50-2 Silicone, 1/8" NPSF female, with dual flow control valve	F50-2.20.05DA
Suction cup F50-2 Silicone, 1/8" NPSF female, with mesh filter	F50-2.20.05AG
Suction cup F50-2 Silicone, 5x1/8" NPSF female	F50-2.20.05AF
Suction cup F50-2 Silicone, 5x1/8" NPSF female, with dual flow control valve	F50-2.20.05DF
Suction cup F50-2 Silicone, for fitting with cone valve	31.50.241S

Description	Part no.
Suction cup F50-2 Silicone, G1/4" male, with mesh filter	F50-2.20.05AB
Suction cup F50-2 Silicone, G1/4" male, with mesh filter and dual flow control valve	F50-2.20.05DB
Suction cup F50-2 Silicone, G3/8" male, with mesh filter	F50-2.20.05AD
Suction cup F50-2 Silicone, G3/8" male, with mesh filter and dual flow control valve	F50-2.20.05DD
Suction cup F50-2 Silicone, NPT3/8" male, with dual flow control valve	F50-2.20.05DE
Suction cup F50-2 Silicone, NPT3/8" male, with mesh filter	F50-2.20.05AE
Suction cup F75P Polyurethane 30/60	F75P.4K
Suction cup F75P Polyurethane 30/60, 1/8" NPSF female, with mesh filter	F75P.4K.07NA
Suction cup F75P Polyurethane 30/60, 3/8" NPSF female	F75P.5K.N40W
Suction cup F75P Polyurethane 30/60, 3/8" NPSF female, with mesh filter	F75P.4K.07NE
Suction cup F75P Polyurethane 30/60, for thread insert	F75P.5K
Suction cup F75P Polyurethane 30/60, G1/2" female, with mesh filter	F75P.4K.07NF
Suction cup F75P Polyurethane 30/60, G3/8" female, with cone valve	F75P.4K.07VD
Suction cup F75P Polyurethane 30/60, G3/8" female, with mesh filter	F75P.4K.07ND
Suction cup F75P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	F75P.5K.G40M
Suction cup F75P Polyurethane 60	F75P.4E
Suction cup F75P Polyurethane 60, 1/8" NPSF female, with mesh filter	F75P.4E.07NA
Suction cup F75P Polyurethane 60, 3/8" NPSF female	F75P.5E.N40W
Suction cup F75P Polyurethane 60, 3/8" NPSF female, with mesh filter	F75P.4E.07NE
Suction cup F75P Polyurethane 60, for thread insert	F75P.5E
Suction cup F75P Polyurethane 60, G1/2" female, with mesh filter	F75P.4E.07NF

Description	Part no.
Suction cup F75P Polyurethane 60, G3/8" female, with cone valve	F75P.4E.07VD
Suction cup F75P Polyurethane 60, G3/8" female, with mesh filter	F75P.4E.07ND
Suction cup F75P Polyurethane 60, thread insert G3/8" male, with mesh filter	F75P.5E.G40M
Suction cup F110P Polyurethane 30/60	F110P.4K
Suction cup F110P Polyurethane 30/60, 3/8" NPSF female	F110P.5K.N40W
Suction cup F110P Polyurethane 30/60, 3/8" NPSF female, with mesh filter	F110P.4K.11NB
Suction cup F110P Polyurethane 30/60, for thread insert	F110P.5K
Suction cup F110P Polyurethane 30/60, G1/2" female, with cone valve	F110P.4K.11VC
Suction cup F110P Polyurethane 30/60, G1/2" female, with mesh filter	F110P.4K.11NC
Suction cup F110P Polyurethane 30/60, G3/8" female, with mesh filter	F110P.4K.11NA
Suction cup F110P Polyurethane 30/60, thread insert G3/8" with mesh filter	F110P.5K.G40M
Suction cup F110P Polyurethane 60	F110P.4E
Suction cup F110P Polyurethane 60, 3/8" NPSF female	F110P.5E.N40W
Suction cup F110P Polyurethane 60, 3/8" NPSF female, with mesh filter	F110P.4E.11NB
Suction cup F110P Polyurethane 60, for thread insert	F110P.5E
Suction cup F110P Polyurethane 60, G1/2" female, with cone valve	F110P.4E.11VC
Suction cup F110P Polyurethane 60, G1/2" female, with mesh filter	F110P.4E.11NC
Suction cup F110P Polyurethane 60, G3/8" female, with mesh filter	F110P.4E.11NA
Suction cup F110P Polyurethane 60, thread insert G3/8", with mesh filter	F110P.5E.G40M
Suction cup F15MF Thermoelastic polyurethane	F15MF.40
Suction cup F15MF Thermoelastic polyurethane, M5 male	F15MF.40.01AC

Description	Part no.
Suction cup F20MF Thermoelastic polyurethane	F20MF.40
Suction cup F20MF Thermoelastic polyurethane, M5 female	F20MF.40.02AA
Suction cup F20MF Thermoelastic polyurethane, G1/8" male, with mesh filter	F20MF.40.02AB
Suction cup F20MF Thermoelastic polyurethane, 1/8" NPT male with mesh filter	F20MF.40.02AC
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 female	F20MF.40.02AD
Suction cup F20MF Thermoelastic polyurethane, 5×M5 female	F20MF.40.02AE
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 female, with mesh filter	F20MF.40.02AF
Suction cup F20MF Thermoelastic polyurethane, G1/8" male, with mesh filter and dual flow control valve	F20MF.40.02DB
Suction cup F20MF Thermoelastic polyurethane, G1/8" male / M5 fem., with dual flow control valve	F20MF.40.02DD
Suction cup F20MF Thermoelastic polyurethane, 5×M5 female, with dual flow control valve	F20MF.40.02DE
Suction cup F25MF Thermoelastic polyurethane	F25MF.40
Suction cup F25MF Thermoelastic polyurethane, M5 female	F25MF.40.02AA
Suction cup F25MF Thermoelastic polyurethane, M5 female, with dual flow control valve	F25MF.40.02DA
Suction cup F25MF Thermoelastic polyurethane, G1/8" male, with mesh filter	F25MF.40.02AB
Suction cup F25MF Thermoelastic polyurethane, G1/8" male, with mesh filter and dual flow control valve	F25MF.40.02DB
Suction cup F25MF Thermoelastic polyurethane, G1/8" male/M5 female, with mesh filter	F25MF.40.02AF
Suction cup F25MF Thermoelastic polyurethane, 5×M5 female	F25MF.40.02AE
Suction cup F25MF Thermoelastic polyurethane, 1/8" NPT male, with mesh filter	F25MF.40.02AC
Suction cup F25MF Thermoelastic polyurethane, G1/8" male/M5 female	F25MF.40.02AD
Suction cup F30MF Thermoelastic polyurethane	F30MF.40
Suction cup F30MF Thermoelastic polyurethane, 1/8" NPT male, with mesh filter	F30MF.40.02AC

Description	Part no.
Suction cup F30MF Thermoelastic polyurethane, 5×M5 female	F30MF.40.02AE
Suction cup F30MF Thermoelastic polyurethane, 5×M5 female, with dual flow control valve	F30MF.40.02DE
Suction cup F30MF Thermoelastic polyurethane, G1/8" male, with mesh filter	F30MF.40.02AB
Suction cup F30MF Thermoelastic polyurethane, G1/8" male, with mesh filter and dual flow control valve	F30MF.40.02DB
Suction cup F30MF Thermoelastic polyurethane, G1/8" male/M5 female	F30MF.40.02AD
Suction cup F30MF Thermoelastic polyurethane, G1/8" male/M5 female, with mesh filter	F30MF.40.02AF
Suction cup F30MF Thermoelastic polyurethane, M5 female	F30MF.40.02AA
Suction cup F30MF Thermoelastic polyurethane, M5 female, with dual flow control valve	F30MF.40.02DA
Suction cup F40MF Thermoelastic polyurethane	F40MF.40
Suction cup F40MF Thermoelastic polyurethane	F40MF.40
Suction cup F40MF Thermoelastic polyurethane, 1/4" NPT male, with dual flow control valve	F40MF.40.04DC
Suction cup F40MF Thermoelastic polyurethane, 1/4" NPT male, with mesh filter	F40MF.40.04AC
Suction cup F40MF Thermoelastic polyurethane, 1/8" NPSF female	F40MF.40.04AA
Suction cup F40MF Thermoelastic polyurethane, 1/8" NPSF female, with dual flow control valve	F40MF.40.04DA
Suction cup F40MF Thermoelastic polyurethane, 5×1/8" NPSF female	F40MF.40.04AF
Suction cup F40MF Thermoelastic polyurethane, G1/4" male, with mesh filter	F40MF.40.04AB
Suction cup F40MF Thermoelastic polyurethane, G1/4" male, with mesh filter and dual flow control valve	F40MF.40.04DB
Suction cup F40MF Thermoelastic polyurethane, G3/8" male, with mesh filter	F40MF.40.04AD
Suction cup F40MF Thermoelastic polyurethane, G3/8" male, with mesh filter and dual flow control valve	F40MF.40.04DD
Suction cup F40MF Thermoelastic polyurethane, NPT3/8" male, with mesh filter	F40MF.40.04AE
Suction cup F40MF Thermoelastic polyurethane, 1/8" NPSF female	F40MF.40.04AG

Description	Part no.
Suction cup F50MF Thermoelastic polyurethane	F50MF.40
Suction cup F50MF Thermoelastic polyurethane, 1/4" NPT male, with dual flow control valve	F50MF.40.05DC
Suction cup F50MF Thermoelastic polyurethane, 1/4" NPT male, with mesh filter	F50MF.40.05AC
Suction cup F50MF Thermoelastic polyurethane, 1/8" NPSF female	F50MF.40.05AA
Suction cup F50MF Thermoelastic polyurethane, G1/4" male, with mesh filter	F50MF.40.05AB
Suction cup F50MF Thermoelastic polyurethane, G1/4" male, with mesh filter and dual flow control valve	F50MF.40.05DB
Suction cup F50MF Thermoelastic polyurethane, G3/8" male, with mesh filter	F50MF.40.05AD
Suction cup F50MF Thermoelastic polyurethane, NPT3/8" male, with mesh filter	F50MF.40.05AE
Suction cup F50MF Thermoelastic polyurethane, 1/8" NPSF female, with mesh filter	F50MF.40.05AG
XLF150 Extra Large Flat cup, G1/2" female	XLF150.30.62UA
XLF200 Extra Large Flat cup, G1/2" female	XLF200.30.63UA
XLF250 Extra Large Flat cup, G1/2" female	XLF250.30.63UA
XLF300 Extra Large Flat cup, G1/2" female	XLF300.30.64UA

Flat Concave family (FC)



The friction cups in flat concave shape and in the material DURAFLEX® suction cups have been developed to meet the strict demands of the automotive industry and designed for flat and curved surfaces. A typical application is the feeding of sheet metal into a press tool. The FCF-P design is especially suitable for oily surfaces, slightly domed and flat surfaces, e.g., such as those encountered when handling metal sheets in press lines. The suction cups have support cleats that prevent thin objects from being disfigured.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
FC20P	1.01	2.70	3.60	1.01	2.02	2.70
FC25P	1.80	4.50	6.07	2.02	2.70	4.05
FC35P	2.47/2.47*	8.09/7.64*	11.5/11.0*	6.07/6.07*	11.5/9.22*	13.9/11.5*
FC50P	6.29/6.29**	17.3/17.3**	23.2/23.4**	11.0/11.7**	18.4/20.9**	22.5/25.0**
FC75P	16.4/16.4**	35.3/37.8**	48.3/50.6**	24.1/20.9**	45.0/50.6**	51.7/57.3**
FC100P	30.8/34.2**	63.8/73.7**	84.8/100.3**	39.6/25.2**	71.5/59.3**	94.4/85.9**
FC150P	61.6/63.8**	145.5/161.0**	207.3/209.5**	77.1/48.3**	172.0/127.7**	202.8/194.0**
FCF25P	—	4.27/4.27***	6.29/6.52***	—	1.57/1.12***	2.25/1.62***
FCF35P	—	9.44/7.64***	13.0/11.2***	—	6.74/5.85***	9.44/7.19***
FCF50P	—	17.5/16.2***	23.8/22.7***	—	17.3/11.7***	23.6/15.7***
FCF75P	—	38.4/36.6***	53.1/51.3***	—	37.3/23.4***	47.4/31.2***

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
FCF100P	—	78.0/53.1***	110.2/67.0***	—	75.8/31.2***	108.8/46.1***
FCF125P	—	106.8/91.0***	146.1/99.4***	—	100.0/43.6***	135.3/53.1***

* PU50°/PU60°, ** PU40°/PU60°, *** Dry metal sheet/Oily metal sheet.







GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
FC20P	0.86	0.37	0.98	0.07	0.06
FC25P	1.12	0.43	1.77	0.16	0.18
FC35P	1.38	0.59	1.26	0.22	0.31
FC50P	1.97	1.32	2.09	0.20	0.61
FC75P	2.95	0.94	3.07	0.26	1.83
FC100P	3.94	1.06	4.33	0.40	4.88
FC150P	5.91	1.59	6.50	0.56	15.26
FCF25P	0.98	1.10	1.06	—	0.34
FCF35P	1.38	1.14–1.88*	1.57	0.08	0.31
FCF50P	1.97	1.22–1.96*	1.97	0.12	0.61
FCF75P	2.95	1.22–1.61*	3.94	0.16	1.83
FCF100P	3.94	1.42–1.77*	5.91	0.24	4.27
FCF125P	4.96	1.65–2.02*	5.91	0.31	6.10

* Height range includes fittings.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material						
FC20P	PU50°	●	●	●	●	●	●
FC25P	PU50°	●	●	●	●	●	●
FC35P	PU50°	●	●	●	●	●	●
FC50P	PU40°	●	●	●	●	●	●
FC50P	PU60°	●	●	●	●	●	●
FC75P	PU40°	●	●	●	●	●	●
FC75P	PU60°	●	●	●	●	●	●
FC100P	PU40°	●	●	●	●	●	●
FC100P	PU60°	●	●	●	●	●	●
FC150P	PU40°	●	●	●	●	●	●
FC150P	PU60°	●	●	●	●	●	●
FCF25P	PU55°/PU60°		●				●
FCF35P	PU55°/PU60°		●				●
FCF50P	PU55°/PU60°		●				●
FCF75P	PU55°/PU60°		●				●
FCF100P	PU55°/PU60°		●				●
FCF125P	PU55°/PU60°		●				●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Oily sheet metal	Dry sheet metal	Mark free
FC20P		●	●
FC25P		●	●
FC35P		●	●
FC50P		●	●
FC75P		●	●
FC100P		●	●
FC150P		●	●
FCF25P	●		
FCF35P	●		
FCF50P	●		
FCF75P	●		
FCF100P	●		
FCF125P	●		

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup FC20P Polyurethane 50	FC20P.4D
Suction cup FC20P Polyurethane 50, 1/8" NPT male, with dual flow control valve	FC20P.4D.02DC
Suction cup FC20P Polyurethane 50, 1/8" NPT male, with mesh filter	FC20P.4D.02AC
Suction cup FC20P Polyurethane 50, 5×M5 female	FC20P.4D.02AE

Description	Part no.
Suction cup FC20P Polyurethane 50, 5×M5 female, with dual flow control valve	FC20P.4D.02DE
Suction cup FC20P Polyurethane 50, G1/8" male / M5 female	FC20P.4D.02AD
Suction cup FC20P Polyurethane 50, G1/8" male / M5 female, with dual flow control valve	FC20P.4D.02DD
Suction cup FC20P Polyurethane 50, G1/8" male / M5 female, with mesh filter	FC20P.4D.02AF
Suction cup FC20P Polyurethane 50, G1/8" male, with dual flow control valve	FC20P.4D.02DB
Suction cup FC20P Polyurethane 50, G1/8" male, with mesh filter	FC20P.4D.02AB
Suction cup FC20P Polyurethane 50, M5 female	FC20P.4D.02AA
Suction cup FC20P Polyurethane 50, M5 female, with dual flow control valve	FC20P.4D.02DA
Suction cup FC25P Polyurethane 50	FC25P.4D
Suction cup FC25P Polyurethane 50, 1/8" NPT male, with dual flow control valve	FC25P.4D.02DC
Suction cup FC25P Polyurethane 50, 1/8" NPT male, with mesh filter	FC25P.4D.02AC
Suction cup FC25P Polyurethane 50, 5×M5 female	FC25P.4D.02AE
Suction cup FC25P Polyurethane 50, 5×M5 female, with dual flow control valve	FC25P.4D.02DE
Suction cup FC25P Polyurethane 50, G1/8" male / M5 female	FC25P.4D.02AD
Suction cup FC25P Polyurethane 50, G1/8" male / M5 female, with dual flow control valve	FC25P.4D.02DD
Suction cup FC25P Polyurethane 50, G1/8" male / M5 female, with mesh filter	FC25P.4D.02AF
Suction cup FC25P Polyurethane 50, G1/8" male, with dual flow control valve	FC25P.4D.02DB
Suction cup FC25P Polyurethane 50, G1/8" male, with mesh filter	FC25P.4D.02AB
Suction cup FC25P Polyurethane 50, M5 female	FC25P.4D.02AA
Suction cup FC25P Polyurethane 50, M5 female, with dual flow control valve	FC25P.4D.02DA
Suction cup FC35P Polyurethane 50	FC35P.4D

Description	Part no.
Suction cup FC35P Polyurethane 50, 1/4" NPT male, with mesh filter	FC35P.4D.04AC
Suction cup FC35P Polyurethane 50, 1/8" NPSF female	FC35P.4D.04AA
Suction cup FC35P Polyurethane 50, 1/8" NPSF female, with dual flow control valve	FC35P.4D.04DA
Suction cup FC35P Polyurethane 50, 1/8" NPSF female, with mesh filter	FC35P.4D.04AG
Suction cup FC35P Polyurethane 50, G1/4" male, with mesh filter	FC35P.4D.04AB
Suction cup FC35P Polyurethane 50, G1/4" male, with mesh filter and dual flow control valve	FC35P.4D.04DB
Suction cup FC35P Polyurethane 50, G3/8" male, with mesh filter	FC35P.4D.04AD
Suction cup FC35P Polyurethane 60	FC35P.4E
Suction cup FC35P Polyurethane 60, 1/4" NPT male, with dual flow control valve	FC35P.4E.04DC
Suction cup FC35P Polyurethane 60, 1/4" NPT male, with mesh filter	FC35P.4E.04AC
Suction cup FC35P Polyurethane 60, 1/8" NPSF female	FC35P.4E.04AA
Suction cup FC35P Polyurethane 60, 1/8" NPSF female, with mesh filter	FC35P.4E.04AG
Suction cup FC35P Polyurethane 60, 5x1/8" NPSF female	FC35P.4E.04AF
Suction cup FC35P Polyurethane 60, G1/4" male, with mesh filter	FC35P.4E.04AB
Suction cup FC35P Polyurethane 60, G3/8" male, with mesh filter	FC35P.4E.04AD
Suction cup FC35P Polyurethane 60, G3/8" male, with mesh filter and dual flow control valve	FC35P.4E.04DD
Suction cup FC35P Polyurethane 60, NPT3/8" male, with dual flow control valve	FC35P.4E.04DE
Suction cup FC35P Polyurethane 60, NPT3/8" male, with mesh filter	FC35P.4E.04AE
Suction cup FC50P Polyurethane 40, G3/8" male - 1/8" NPSF female	FC50P.4C.05UB
Suction cup FC50P Polyurethane 60, G3/8" male - 1/8" NPSF female	FC50P.4E.05UB
Suction cup FC75P Polyurethane 40, 3/8" NPSF female	FC75P.5C.N40W

Description	Part no.
Suction cup FC75P Polyurethane 40, for thread insert	01.06.948
Suction cup FC75P Polyurethane 40, G3/8" male - 1/8" NPSF female	FC75P.4C.07UF
Suction cup FC75P Polyurethane 40, thread insert G3/8" with mesh filter	FC75P.5C.G40M
Suction cup FC75P Polyurethane 60, 3/8" NPSF female	FC75P.5E.N40W
Suction cup FC75P Polyurethane 60, for thread insert	01.07.302
Suction cup FC75P Polyurethane 60, G3/8" male - 1/8" NPSF female	FC75P.4E.07UF
Suction cup FC75P Polyurethane 60, thread insert G3/8" with mesh filter	FC75P.5E.G40M
Suction cup FC100P Polyurethane 40	FC100P.4C
Suction cup FC100P Polyurethane 40, 1/8" NPSF female, with mesh filter	FC100P.4C.07NA
Suction cup FC100P Polyurethane 40, 3/8" NPSF female	FC100P.5C.N40W
Suction cup FC100P Polyurethane 40, 3/8" NPSF female, with mesh filter	FC100P.4C.07NE
Suction cup FC100P Polyurethane 40, for thread insert	FC100P.5C
Suction cup FC100P Polyurethane 40, G1/2" female, with mesh filter	FC100P.4C.07NF
Suction cup FC100P Polyurethane 40, thread insert G3/8" male, with mesh filter	FC100P.5C.G40M
Suction cup FC100P Polyurethane 60	FC100P.4E
Suction cup FC100P Polyurethane 60, 1/8" NPSF female, with mesh filter	FC100P.4E.07NA
Suction cup FC100P Polyurethane 60, 1/8" NPSF female, with mesh filter	FC100P.4C.07ND
Suction cup FC100P Polyurethane 60, 3/8" NPSF female	FC100P.5E.N40W
Suction cup FC100P Polyurethane 60, 3/8" NPSF female, with mesh filter	FC100P.4E.07NE
Suction cup FC100P Polyurethane 60, for thread insert	FC100P.5E
Suction cup FC100P Polyurethane 60, G1/2" female, with mesh filter	FC100P.4E.07NF

Description	Part no.
Suction cup FC100P Polyurethane 60, G3/8" female, with mesh filter	FC100P.4E.07ND
Suction cup FC100P Polyurethane 60, thread insert G3/8" male, with mesh filter	FC100P.5E.G40M
Suction cup FC150P Polyurethane 40	FC150P.4C
Suction cup FC150P Polyurethane 40, 3/8" NPSF female, with mesh filter	FC150P.4C.11NB
Suction cup FC150P Polyurethane 40, G1/2" female, with mesh filter	FC150P.4C.11NC
Suction cup FC150P Polyurethane 40, G3/8" female, with mesh filter	FC150P.4C.11NA
Suction cup FC150P Polyurethane 60	FC150P.4E
Suction cup FC150P Polyurethane 60, 3/8" NPSF female, with mesh filter	FC150P.4E.11NB
Suction cup FC150P Polyurethane 60, G1/2" female, with mesh filter	FC150P.4E.11NC
Suction cup FC150P Polyurethane 60, G3/8" female, with mesh filter	FC150P.4E.11NA
Suction cup FCF25P Polyurethane 55/60, 3/8" NPT female	FCF25P.4R.N51W
Suction cup FCF25P Polyurethane 55/60, G1/4" female	FCF25P.4R.G75W
Suction cup FCF25P Polyurethane 55/60, G3/8" female	FCF25P.4R.G71W
Suction cup FCF25P Polyurethane 55/60, G3/8" female plastic	FCF25P.4R.G76WC
Suction cup FCF25P Polyurethane 55/60, G3/8" male, 1/8" NPSF female	FCF25P.4R.G68W
Suction cup FCF25P Polyurethane 55/60, T-slot	FCF25P.4R.T1W
Suction cup FCF35P Polyurethane 55/60, 3/8" NPT female	FCF35P.4R.04UN
Suction cup FCF35P Polyurethane 55/60, G1/4" female	FCF35P.4R.G75W
Suction cup FCF35P Polyurethane 55/60, G3/8" female	FCF35P.4R.04UA
Suction cup FCF35P Polyurethane 55/60, G3/8" female plastic	FCF35P.4R.G76WC
Suction cup FCF35P Polyurethane 55/60, G3/8" female, 17 mm thread	FCF35P.4R.G67W

Description	Part no.
Suction cup FCF35P Polyurethane 55/60, G3/8" male, with mesh filter	FCF35P.4R.04UF
Suction cup FCF35P Polyurethane 55/60, M10×1.5 male	FCF35P.4R.M10M
Suction cup FCF35P Polyurethane 55/60, T-slot, with mesh filter	FCF35P.4R.T1M
Suction cup FCF50P Polyurethane 55/60, 3/8" NPT female	FCF50P.4R.05UN
Suction cup FCF50P Polyurethane 55/60, G1/4" female	FCF50P.4R.G75W
Suction cup FCF50P Polyurethane 55/60, G3/8" female	FCF50P.4R.05UA
Suction cup FCF50P Polyurethane 55/60, G3/8" female plastic	FCF50P.4R.G74WC
Suction cup FCF50P Polyurethane 55/60, G3/8" female, 17 mm thread	FCF50P.4R.G66W
Suction cup FCF50P Polyurethane 55/60, G3/8" male, with mesh filter	FCF50P.4R.05UF
Suction cup FCF50P Polyurethane 55/60, M10×1.5 male	FCF50P.4R.M10M
Suction cup FCF50P Polyurethane 55/60, T-slot, with mesh filter	FCF50P.4R.T1M
Suction cup FCF75P Polyurethane 55/60, 3/8" NPT female	FCF75P.5R.N47W
Suction cup FCF75P Polyurethane 55/60, G1/4" female	FCF75P.4R.G75W
Suction cup FCF75P Polyurethane 55/60, G3/8" female	FCF75P.5R.G45W
Suction cup FCF75P Polyurethane 55/60, G3/8" female, 17 mm thread	FCF75P.5R.G65W
Suction cup FCF75P Polyurethane 55/60, G3/8" female, plastic thread	FCF75P.5R.G56WC
Suction cup FCF75P Polyurethane 55/60, G3/8" male, with mesh filter	FCF75P.5R.G45M
Suction cup FCF75P Polyurethane 55/60, M10×1.5 male	FCF75P.5R.M10M
Suction cup FCF75P Polyurethane 55/60, T-slot, with mesh filter	FCF75P.4R.T1M
Suction cup FCF100P Polyurethane 55/60 G3/8" male, with mesh filter	FCF100P.5R.G40M
Suction cup FCF100P Polyurethane 55/60, 3/8" NPT female	FCF100P.5R.N48W

Description	Part no.
Suction cup FCF100P Polyurethane 55/60, G1/4" female	FCF100P.4R.G75W
Suction cup FCF100P Polyurethane 55/60, G3/8" female	FCF100P.5R.G46W
Suction cup FCF100P Polyurethane 55/60, G3/8" female, 17 mm thread	FCF100P.5R.G62W
Suction cup FCF100P Polyurethane 55/60, M10×1.5 male	FCF100P.5R.M10M
Suction cup FCF100P Polyurethane 55/60, T-slot, with mesh filter	FCF100P.4R.T1M
Suction cup FCF125P Polyurethane 55/60, 3/8" NPT female	FCF125P.5R.N48W
Suction cup FCF125P Polyurethane 55/60, G1/4" female	FCF125P.4R.G75W
Suction cup FCF125P Polyurethane 55/60, G3/8" female	FCF125P.5R.G46W
Suction cup FCF125P Polyurethane 55/60, G3/8" female, 17 mm thread	FCF125P.5R.G62W
Suction cup FCF125P Polyurethane 55/60, G3/8" female, plastic thread	FCF125P.5RC.G56WC
Suction cup FCF125P Polyurethane 55/60, G3/8" male, with mesh filter	FCF125P.5R.G40M
Suction cup FCF125P Polyurethane 55/60, M10×1.5 male	FCF125P.5R.M10M
Suction cup FCF125P Polyurethane 55/60, T-slot, with mesh filter	FCF125P.4R.T1M

Bellows family (B)



The bellows family is suitable for height differences and slightly uneven or curved surfaces. Several short bellows cups in one lifting device can handle objects with height differences and varying shapes. The bellows also provide a slight lifting movement to separate thin items. This family is available, among other material in FDA compliant material, or the durable DURAFLEX® as Mark Free or even for oily surfaces.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
B5	0.07	0.18	0.22	—	—	—
B8	0.18	0.36	0.56	—	—	—
B10-2	0.34	0.76	1.10	—	—	—
B15-2	0.65	1.33	2.00	—	—	—
B20	1.33	2.20	3.15	—	—	—
B30	2.70	4.95	6.07	—	—	—
B30-2	2.70	4.95	6.07	—	—	—
B40	4.95	8.77	11.02	—	—	—
B50	7.42	14.6	18.4	—	—	—
B50-2	7.42	14.6	18.4	—	—	—
B75	16.6	37.5	50.8	—	—	—

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
B75-2	16.6	37.5	50.8	—	—	—
B110	30.8	77.1	103.6	—	—	—
B110-2	30.8	77.1	103.6	—	—	—
B150	66.1	154.2	198.5	—	—	—
B75P	13.7/18.7*	33.5/44.1*	45.4/57.3*	9.89/27.2*	21.6/51.5*	25.6/67.0*
B10XP	0.7/0.58*	1.03/0.85*	1.24/1.01*	0.22/0.22*	0.56/0.45*	0.67/0.56*
B15XP	1.35/1.12*	2.25/2.02*	2.7/2.47*	0.56/0.56*	1.12/1.12*	2.02/1.8*
B20XP	1.96/1.75*	4.43/3.37*	5.17/4.50*	1.57/0.79	2.47/1.57*	3.37/2.25*
B25XP	2.70/2.18*	6.07/4.27*	6.74/4.95*	2.25/1.80*	2.92/2.70*	4.05/3.37*
B35XP	4.27/3.82*	10.8/8.77*	14.8/11.2*	3.82/3.37*	7.42/6.74*	11.2/8.99*
B52XP	9.55/8.09*	24.5/18.9*	33.7/22.9*	8.77/6.74*	15.7/13.5*	20.2/19.1*
B75XP	19.3/16.9*	49.9/39.6*	69.0/51.3*	18.0/13.5*	45.0/33.7*	51.7/40.5*
B110XP	45/42.7*	98.9/85.4*	112/106*	42.7/38.2*	85.4/78.7*	103/96.7*
B15MF	0.90	1.80	2.70	1.01	1.57	2.25
B20MF	1.01	3.48	4.72	1.42	2.47	4.27
B30MF	2.70	8.99	12.3	3.26	7.19	9.22
B40MF	4.05	12.81	16.2	3.06	8.99	10.6
B50MF	6.74	20.91	30.6	5.17	14.2	21.8
BF80P	16.4/22.0**	35.3/50.6**	44.1/66.1**	12.1/15.3**	19.8/28.6**	26.3/37.3**
BF110P	28.8/36.2*	51.5/75.1*	50.6/65.9*	23.8/27.7*	47.2/51.9*	55.3/68.6*

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
BFF30P	—	5.40/5.17***	6.07/6.74***	—	2.47/1.24***	3.03/1.75***
BFF40P	—	9.67/10.1***	12.6/13.5***	—	13.5/7.87***	18.2/10.1***
BFF60P	—	17.3/18.4***	25.2/23.8***	—	20.2/17.1***	27.4/20.9***
BFF80P	—	39.6/39.1***	53.1/46.5***	—	45.2/24.7***	54.0/36.0***
BFF110P	—	62.7/63.8***	84.8/77.6***	—	67.0/52.8***	77.8/56.9***
BFF80TP	—	39.6/39.1	53.1/46.5	—	45.2/24.7	54/36
BFF110TP	—	62.7/63.8	84.8/77.6	—	67/52.8	77.8/56.9
BFFT50P	—	23.4/23.6	32.6/32.8	—	13.7/27.4	19.1/34.8
BFFT70P	—	38.7/37.1	49.5/47.4	—	39.6/24.7	55.1/33.3
BFFT90P	—	41.4/41.4	51.3/51.7	—	38.4/61.4	81.8/52.2

* PU30°/PU60° / PU60°, ** PU30°/PU50° / PU60°, *** Dry metal sheet/Oily metal sheet.

GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
B5	0.22	0.36	0.06	0.06	0.003
B8	0.35	0.47	0.07	0.14	0.01
B10-2	0.43	0.65	0.16	0.18	0.03
B15-2	0.62	0.78	0.20	0.26	0.07
B20	0.87	0.75	0.39	0.39	0.16
B30	1.34	1.02	0.59	0.59	0.61
B30-2	1.34	1.03	0.59	0.59	0.61








	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
B40	1.69	1.10	0.79	0.47	0.92
B50	2.09	1.39	1.18	0.75	1.95
B50-2	2.09	1.39	1.18	0.75	1.95
B75	3.07	1.47	1.57	0.94	6.71
B75-2	3.07	1.46	1.57	0.94	6.71
B110	4.53	2.14	2.36	1.38	18.92
B110-2	4.53	2.14	2.36	1.38	18.92
B150	6.10	2.81	2.95	1.77	39.67
B75P	3.11	1.47	3.54	0.79	6.71
B10XP	0.43	0.55	0.16/0.24**	0.12	0.01
B15XP	0.63	0.58	0.22/0.39**	0.13	0.02
B20XP	0.83	0.41	0.22/0.35**	0.18	0.06
B25XP	1.02	0.53	0.43/0.35**	0.22	0.10
B35XP	1.46	0.73	0.69/0.63**	0.37	0.27
B52XP	2.09	1.06	1.14/0.98**	0.44	0.81
B75XP	3.05	1.35	2.36/1.97**	0.63	2.61
B110XP	4.48	1.91	3.54/3.15**	0.92	7.51
B15MF	0.63	0.77	0.43	0.08	0.07
B20MF	0.91	0.75	0.43	0.31	0.23
B30MF	1.34	1.02	0.65	0.47	0.61








	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
B40MF	1.69	1.10	0.87	0.43	0.92
B50MF	2.24	1.38	1.02	0.51	1.95
BF80P	3.31	1.73	1.97	0.59	2.44
BF110P	4.53	2.09	2.17/2.76*	0.94	6.71
BFF30P	1.18	1.18	0.59	0.20	0.31
BFF40P	1.77	1.26–2.03***	0.91	0.28	0.61
BFF60P	2.40	1.42–2.18***	1.38	0.39	1.22
BFF80P	3.35	1.81–2.20***	1.97	0.55	3.05
BFF110P	4.53	2.09–2.85***	3.74	0.83	6.71
BFF80TP	3.36	1.52–2.20***	1.97	0.55	—
BFF110TP	4.53	2.09–2.85	3.74	0.83	—
BFFT50P	2.09	1.15–1.84	3.35	0.43	0.90
BFFT70P	2.87	1.25–1.76	3.74	0.55	2.22
BFFT90P	3.66	1.61–2.38	5.12	0.83	5.10

* PU30° / PU30°/PU60°, ** PU30°/PU60° / PU60°, *** Height range includes fittings

AVAILABLE MATERIALS AND INDUSTRIES








An explanation of the industry icons is available on the cover fold out.

Cup	Material								MSF
B5	Chloroprene, CR	●				●		●	●
B5	Conductive silicone, CSIL				●				
B5	HNBR	●					●	●	

Cup	Material								MSF
B5	Semi-conductive EPDM				●				
B5	Silicone, SIL	●	●						
B5	Silicone FDA EU, SIL FDA	●	●						
B8	Chloroprene, CR	●				●		●	●
B8	Conductive silicone, CSIL				●				
B8	HNBR	●					●	●	
B8	Silicone, SIL	●	●						
B8	Silicone FDA EU, SIL FDA	●	●						
B10-2	Chloroprene, CR	●				●		●	●
B10-2	HNBR	●					●	●	
B10-2	Silicone, SIL	●	●						
B10-2	Silicone FDA EU, SIL FDA	●	●						
B15-2	Chloroprene, CR	●				●		●	●
B15-2	HNBR	●					●	●	
B15-2	Silicone, SIL	●	●						
B15-2	Silicone FDA EU, SIL FDA	●	●						
B20	HNBR	●					●	●	
B20	Silicone FDA EU, SIL FDA	●	●						
B30-2	HNBR	●					●	●	
B30-2	Silicone FDA EU, SIL FDA	●	●						

Cup	Material								MSF
B40	HNBR	●					●	●	
B40	Silicone FDA EU, SIL FDA	●	●						
B50	HNBR	●					●	●	
B50	Silicone FDA EU, SIL FDA	●	●						
B50-2	Silicone FDA EU, SIL FDA	●	●						
B75	HNBR	●					●	●	
B75	Nitrile-PVC, NPV	●				●		●	●
B75	Silicone, SIL	●	●						
B75	Silicone FDA EU, SIL FDA	●	●						
B75-2	Nitrile-PVC, NPV	●				●		●	●
B75-2	Silicone, SIL	●	●						
B75-2	Silicone FDA EU, SIL FDA	●	●						
B110	HNBR	●					●	●	
B110	Nitrile-PVC, NPV	●				●		●	●
B110	Silicone, SIL	●	●						
B110	Silicone FDA EU, SIL FDA	●	●						
B110-2	Nitrile-PVC, NPV	●				●		●	●
B110-2	Silicone, SIL	●	●						
B110-2	Silicone FDA EU, SIL FDA	●	●						
B150	Nitrile-PVC, NPV	●				●		●	●

Cup	Material								MSF
B150	Silicone, SIL	●	●						
B150	Silicone FDA EU, SIL FDA	●	●						
B75P	PU30°/PU60°	●		●					
B75P	PU60°	●		●	●	●		●	●
B10XP	PU30°/PU60°	●		●					
B10XP	PU60°	●		●	●	●		●	●
B15XP	PU30°/PU60°	●		●					
B15XP	PU60°	●		●	●	●		●	●
B20XP	PU30°/PU60°	●		●					
B20XP	PU60°	●		●	●	●		●	●
B25XP	PU30°/PU60°	●		●					
B25XP	PU60°	●		●	●	●		●	●
B35XP	PU30°/PU60°	●		●					
B35XP	PU60°	●		●	●	●		●	●
B52XP	PU30°/PU60°	●		●					
B52XP	PU60°	●		●	●	●		●	●
B75XP	PU30°/PU60°	●		●					
B75XP	PU60°	●		●	●	●		●	●
B110XP	PU30°/PU60°	●		●					
B110XP	PU60°	●		●	●	●		●	●

Cup	Material								MSF
B15MF	TPE-U				●			●	
B20MF	TPE-U				●			●	
B30MF	TPE-U				●			●	
B40MF	TPE-U				●			●	
B50MF	TPE-U				●			●	
BF80P	PU30°/PU50°	●		●	●	●		●	●
BF80P	PU60°	●		●	●	●		●	●
BF110P	PU30°/PU60°	●		●	●	●		●	●
BF110P	PU60°	●		●	●	●		●	●
BFF30P	PU55°/PU560°			●					●
BFF40P	PU55°/PU560°			●					●
BFF60P	PU55°/PU560°			●					●
BFF80P	PU55°/PU560°			●					●
BFF110P	PU55°/PU560°			●					●
BFF80TP	PU55°/60°/30°			●					●
BFF110TP	PU55°/60°/30°			●					●
BFFT50P	PU60°/60°/30°			●					●
BFFT70P	PU60°/60°/30°			●					●
BFFT90P	PU60°/60°/30°			●					●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Oily sheet metal	Dry sheet metal	Corrugated / cardboard	FDA EU-standard compliant	Glass handling	Electronic / semi-conductor	High/low temp cup (plastic)	Mark Free	Plastic injection molded parts
B5		●		●	●	●	●	●	●
B8		●		●	●	●	●	●	●
B20		●		●	●		●	●	●
B30		●							●
B40		●		●	●		●	●	●
B50		●		●	●		●	●	●
B75		●		●	●		●	●	●
B110		●		●				●	
B150		●		●					●
B10-2		●		●	●		●	●	●
B15-2		●		●	●		●	●	●
B30-2		●		●	●		●	●	●
B50-2		●		●					●
B75-2		●		●					●
B110-2		●		●					●
B10XP		●	●		●				●
B15XP		●	●		●				●

	Oily sheet metal	Dry sheet metal	Corrugated / cardboard	FDA EU-standard compliant	Glass handling	Electronic / semi-conductor	High/low temp cup (plastic)	Mark Free	Plastic injection molded parts
B20XP		●	●		●				●
B25XP		●	●		●				●
B35XP		●	●		●				●
B52XP		●	●		●				●
B75XP		●	●		●				●
B110XP		●	●		●				●
B75P		●						●	●
B15MF								●	
B20MF								●	
B30MF								●	
B40MF								●	
B50MF								●	
BF80P		●			●			●	
BF110P		●			●			●	
BFF30P	●								
BFF40P	●								
BFF60P	●								
BFF80P	●								

	Oily sheet metal	Dry sheet metal	Corrugated / cardboard	FDA EU-standard compliant	Glass handling	Electronic / semi-conductor	High/low temp cup (plastic)	Mark Free	Plastic injection molded parts
BFF110P	●								
BFF80TP	●	●						●	
BFF110TP	●	●						●	
BFFT50P	●	●						●	
BFFT70P	●	●						●	
BFFT90P	●	●						●	

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup B5 Chloroprene	B5.10
Suction cup B5 Chloroprene, M5 male	B5.10.01AB
Suction cup B5 Conductive silicone	B5.25
Suction cup B5 Conductive silicone, M5 male	B5.25.01AB
Suction cup B5 HNBR	B5.47
Suction cup B5 HNBR, M5 male	B5.47.01AB
Suction cup B5 Semi-conductive EPDM	B5.50
Suction cup B5 Semi-conductive EPDM, M5 male	B5.50.01AB
Suction cup B5 Silicone	B5.20
Suction cup B5 Silicone FCM	B5.21

Description	Part no.
Suction cup B5 Silicone FCM, M5 male	B5.21.01AB
Suction cup B5 Silicone, M5 male	B5.20.01AB
Suction cup B8 Chloroprene	B8.10
Suction cup B8 Chloroprene, M5 male	B8.10.01AB
Suction cup B8 Conductive silicone	B8.25
Suction cup B8 Conductive silicone, M5 male	B8.25.01AB
Suction cup B8 HNBR	B8.47
Suction cup B8 HNBR, M5 male	B8.47.01AB
Suction cup B8 Silicone	B8.20
Suction cup B8 Silicone FCM	B8.21
Suction cup B8 Silicone FCM, M5 male	B8.21.01AB
Suction cup B8 Silicone, M5 male	B8.20.01AB
Suction cup B20 Chloroprene	B20.10
Suction cup B20 Chloroprene, 1/8" NPT male, with mesh filter	B20.10.02AC
Suction cup B20 Chloroprene, 5xM5 female	B20.10.02AE
Suction cup B20 Chloroprene, G1/8" male, with mesh filter	B20.10.02AB
Suction cup B20 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	B20.10.02DB
Suction cup B20 Chloroprene, G1/8" male/M5 female	B20.10.02AD
Suction cup B20 Chloroprene, G1/8" male/M5 female, PA	B20.10.02CD
Suction cup B20 Chloroprene, G1/8" male/M5 female, with dual flow control valve	B20.10.02DD
Suction cup B20 Chloroprene, G1/8" male/M5 female, with mesh filter	B20.10.02AF

Description	Part no.
Suction cup B20 Chloroprene, M5 female	B20.10.02AA
Suction cup B20 Chloroprene, M5 female, with dual flow control valve	B20.10.02DA
Suction cup B20 HNBR	B20.47
Suction cup B20 HNBR, 1/8" NPT male, with mesh filter	B20.47.02AC
Suction cup B20 HNBR, 1/8" NPT male, with mesh filter and dual flow control valve	B20.47.02DC
Suction cup B20 HNBR, 5xM5 female	B20.47.02AE
Suction cup B20 HNBR, G1/8" male, with mesh filter	B20.47.02AB
Suction cup B20 HNBR, G1/8" male, with mesh filter and dual flow control valve	B20.47.02DB
Suction cup B20 HNBR, G1/8" male/M5 female	B20.47.02AD
Suction cup B20 HNBR, G1/8" male/M5 female, with dual flow control valve	B20.47.02DD
Suction cup B20 HNBR, G1/8" male/M5 female, with mesh filter	B20.47.02AF
Suction cup B20 HNBR, M5 female	B20.47.02AA
Suction cup B20 HNBR, M5 female, with dual flow control valve	B20.47.02DA
Suction cup B20 Silicone	B20.20
Suction cup B20 Silicone FCM	B20.21
Suction cup B20 Silicone FCM, 1/8" NPT male, with mesh filter	B20.21.02AC
Suction cup B20 Silicone FCM, G1/8" male, with mesh filter	B20.21.02AB
Suction cup B20 Silicone FCM, G1/8" male/M5 female, with mesh filter	B20.21.02AF
Suction cup B20 Silicone, 5xM5 female	B20.20.02AE
Suction cup B20 Silicone, 5xM5 female, with dual flow control valve	B20.20.02DE
Suction cup B20 Silicone, G1/8" male, with mesh filter	B20.20.02AB

Description	Part no.
Suction cup B20 Silicone, G1/8" male, with mesh filter and dual flow control valve	B20.20.02DB
Suction cup B20 Silicone, G1/8" male/M5 female	B20.20.02AD
Suction cup B20 Silicone, G1/8" male/M5 female, PA	B20.20.02CD
Suction cup B20 Silicone, G1/8" male/M5 female, with dual flow control valve	B20.20.02DD
Suction cup B20 Silicone, G1/8" male/M5 female, with mesh filter	B20.20.02AF
Suction cup B20 Silicone, M5 female	B20.20.02AA
Suction cup B20 Silicone, M5 female, with dual flow control valve	B20.20.02DA
Suction cup B30 Chloroprene	B30.10
Suction cup B30 Chloroprene, 1/8" NPT male, with dual flow control valve	B30.10.02DC
Suction cup B30 Chloroprene, 1/8" NPT male, with mesh filter	B30.10.02AC
Suction cup B30 Chloroprene, 5xM5 female	B30.10.02AE
Suction cup B30 Chloroprene, 5xM5 female, with dual flow control valve	B30.10.02DE
Suction cup B30 Chloroprene, G1/8" male, with dual flow control valve	B30.10.02DB
Suction cup B30 Chloroprene, G1/8" male, with mesh filter	B30.10.02AB
Suction cup B30 Chloroprene, G1/8" male/M5 female	B30.10.02AD
Suction cup B30 Chloroprene, G1/8" male/M5 female, with dual flow control valve	B30.10.02DD
Suction cup B30 Chloroprene, G1/8" male/M5 female, with mesh filter	B30.10.02AF
Suction cup B30 Chloroprene, M5 female	B30.10.02AA
Suction cup B30 Chloroprene, M5 female, with dual flow control valve	B30.10.02DA
Suction cup B30 Silicone	B30.20
Suction cup B30 Silicone, 1/8" NPT male, with dual flow control valve	B30.20.02DC

Description	Part no.
Suction cup B30 Silicone, 1/8" NPT male, with mesh filter	B30.20.02AC
Suction cup B30 Silicone, 5xM5 female	B30.20.02AE
Suction cup B30 Silicone, 5xM5 female, with dual flow control valve	B30.20.02DE
Suction cup B30 Silicone, G1/8" male, with dual flow control valve	B30.20.02DB
Suction cup B30 Silicone, G1/8" male, with mesh filter	B30.20.02AB
Suction cup B30 Silicone, G1/8" male/M5 female	B30.20.02AD
Suction cup B30 Silicone, G1/8" male/M5 female, with dual flow control valve	B30.20.02DD
Suction cup B30 Silicone, G1/8" male/M5 female, with mesh filter	B30.20.02AF
Suction cup B30 Silicone, M5 female	B30.20.02AA
Suction cup B30 Silicone, M5 female, with dual flow control valve	B30.20.02DA
Suction cup B40 Chloroprene	B40.10
Suction cup B40 Chloroprene, 1/4" NPT male, with mesh filter	B40.10.04AC
Suction cup B40 Chloroprene, 1/8" NPSF female	B40.10.04AA
Suction cup B40 Chloroprene, 1/8" NPSF female, PA	B40.10.04CA
Suction cup B40 Chloroprene, 1/8" NPSF female, with dual flow control valve	B40.10.04DA
Suction cup B40 Chloroprene, 1/8" NPSF female, with mesh filter	B40.10.04AG
Suction cup B40 Chloroprene, 5x1/8" NPSF female	B40.10.04AF
Suction cup B40 Chloroprene, G1/4" male, with mesh filter	B40.10.04AB
Suction cup B40 Chloroprene, G1/4" male, with mesh filter and dual flow control valve	B40.10.04DB
Suction cup B40 Chloroprene, G3/8" male, with mesh filter	B40.10.04AD

Description	Part no.
Suction cup B40 Chloroprene, G3/8" male, with mesh filter and dual flow control valve	B40.10.04DD
Suction cup B40 Chloroprene, NPT3/8" male, with dual flow control valve	B40.10.04DE
Suction cup B40 Chloroprene, NPT3/8" male, with mesh filter	B40.10.04AE
Suction cup B40 HNBR	B40.37
Suction cup B40 HNBR, 1/4" NPT male, with dual flow control valve	B40.37.04DC
Suction cup B40 HNBR, 1/4" NPT male, with mesh filter	B40.37.04AC
Suction cup B40 HNBR, 1/8" NPSF female	B40.37.04AA
Suction cup B40 HNBR, 1/8" NPSF female, with dual flow control valve	B40.37.04DA
Suction cup B40 HNBR, 1/8" NPSF female, with mesh filter	B40.37.04AG
Suction cup B40 HNBR, 5x1/8" NPSF female	B40.37.04AF
Suction cup B40 HNBR, 5x1/8" NPSF female with dual flow control valve	B40.37.04DF
Suction cup B40 HNBR, G1/4" male, with dual flow control valve	B40.37.04DB
Suction cup B40 HNBR, G1/4" male, with mesh filter	B40.37.04AB
Suction cup B40 HNBR, G3/8" male, with dual flow control valve	B40.37.04DD
Suction cup B40 HNBR, G3/8" male, with mesh filter	B40.37.04AD
Suction cup B40 HNBR, NPT3/8" male, with dual flow control valve	B40.37.04DE
Suction cup B40 HNBR, NPT3/8" male, with mesh filter	B40.37.04AE
Suction cup B40 Silicone	B40.20
Suction cup B40 Silicone FCM	B40.21
Suction cup B40 Silicone FCM, 1/4" NPT male, with mesh filter	B40.21.04AC
Suction cup B40 Silicone FCM, 1/8" NPSF female, with mesh filter	B40.21.04AG

Description	Part no.
Suction cup B40 Silicone FCM, G1/4" male, with mesh filter	B40.21.04AB
Suction cup B40 Silicone, 1/4" NPT male, with mesh filter	B40.20.04AC
Suction cup B40 Silicone, 1/8" NPSF female	B40.20.04AA
Suction cup B40 Silicone, 1/8" NPSF female PA	B40.20.04CA
Suction cup B40 Silicone, 1/8" NPSF female, with dual flow control valve	B40.20.04DA
Suction cup B40 Silicone, 1/8" NPSF female, with mesh filter	B40.20.04AG
Suction cup B40 Silicone, 5x1/8" NPSF female	B40.20.04AF
Suction cup B40 Silicone, G1/4" male, with mesh filter	B40.20.04AB
Suction cup B40 Silicone, G1/4" male, with mesh filter and dual flow control valve	B40.20.04DB
Suction cup B40 Silicone, G3/8" male, with mesh filter	B40.20.04AD
Suction cup B40 Silicone, NPT3/8" male, with mesh filter	B40.20.04AE
Suction cup B50 HNBR	B50.37
Suction cup B50 HNBR, 1/4" NPT male, with dual flow control valve	B50.37.05DC
Suction cup B50 HNBR, 1/4" NPT male, with mesh filter	B50.37.05AC
Suction cup B50 HNBR, 1/8" NPSF female	B50.37.05AA
Suction cup B50 HNBR, 1/8" NPSF female, with dual flow control valve	B50.37.05DA
Suction cup B50 HNBR, 1/8" NPSF female, with mesh filter	B50.37.05AG
Suction cup B50 HNBR, 5x1/8" NPSF female	B50.37.05AF
Suction cup B50 HNBR, 5x1/8" NPSF female, with dual flow control valve	B50.37.05DF
Suction cup B50 HNBR, G1/4" male, with dual flow control valve	B50.37.05DB
Suction cup B50 HNBR, G1/4" male, with mesh filter	B50.37.05AB

Description	Part no.
Suction cup B50 HNBR, G3/8" male, with dual flow control valve	B50.37.05DD
Suction cup B50 HNBR, G3/8" male, with mesh filter	B50.37.05AD
Suction cup B50 HNBR, NPT3/8" male, with dual flow control valve	B50.37.05DE
Suction cup B50 HNBR, NPT3/8" male, with mesh filter	B50.37.05AE
Suction cup B50 Nitrile-PVC	B50.30
Suction cup B50 Nitrile-PVC, 1/4" NPT male, with dual flow control valve	B50.30.05DC
Suction cup B50 Nitrile-PVC, 1/4" NPT male, with mesh filter	B50.30.05AC
Suction cup B50 Nitrile-PVC, 1/8" NPSF female	B50.30.05AA
Suction cup B50 Nitrile-PVC, 1/8" NPSF female, PA	B50.30.05CA
Suction cup B50 Nitrile-PVC, 1/8" NPSF female, with dual flow control valve	B50.30.05DA
Suction cup B50 Nitrile-PVC, 1/8" NPSF female, with mesh filter	B50.30.05AG
Suction cup B50 Nitrile-PVC, 5x1/8" NPSF female	B50.30.05AF
Suction cup B50 Nitrile-PVC, G1/4" male, with mesh filter	B50.30.05AB
Suction cup B50 Nitrile-PVC, G1/4" male, with mesh filter and dual flow control valve	B50.30.05DB
Suction cup B50 Nitrile-PVC, G3/8" male, with mesh filter	B50.30.05AD
Suction cup B50 Nitrile-PVC, G3/8" male, with mesh filter and dual flow control valve	B50.30.05DD
Suction cup B50 Nitrile-PVC, NPT3/8" male, with mesh filter	B50.30.05AE
Suction cup B50 Silicone	B50.20
Suction cup B50 Silicone FCM	B50.21
Suction cup B50 Silicone FCM, 1/4" NPT male, with mesh filter	B50.21.05AC
Suction cup B50 Silicone FCM, 1/8" NPSF female, with mesh filter	B50.21.05AG

Description	Part no.
Suction cup B50 Silicone FCM, G1/4" male, with mesh filter	B50.21.05AB
Suction cup B50 Silicone, 1/4" NPT male, with dual flow control valve	B50.20.05DC
Suction cup B50 Silicone, 1/4" NPT male, with mesh filter	B50.20.05AC
Suction cup B50 Silicone, 1/8" NPSF female	B50.20.05AA
Suction cup B50 Silicone, 1/8" NPSF female, with dual flow control valve	B50.20.05DA
Suction cup B50 Silicone, 1/8" NPSF female, with mesh filter	B50.20.05AG
Suction cup B50 Silicone, 1/8" NPSF female, PA	B50.20.05CA
Suction cup B50 Silicone, 5x1/8" NPSF female	B50.20.05AF
Suction cup B50 Silicone, G1/4" male, with mesh filter	B50.20.05AB
Suction cup B50 Silicone, G1/4" male, with mesh filter and dual flow control valve	B50.20.05DB
Suction cup B50 Silicone, G3/8" male, with mesh filter	B50.20.05AD
Suction cup B50 Silicone, G3/8" male, with mesh filter and dual flow control valve	B50.20.05DD
Suction cup B50 Silicone, NPT3/8" male, with mesh filter	B50.20.05AE
Suction cup B75 HNBR	B75.37
Suction cup B75 HNBR with washer	B75.37.W
Suction cup B75 HNBR, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	B75.37.07UH
Suction cup B75 HNBR, 1/8" NPSF female Al, with mesh filter	B75.37.07UA
Suction cup B75 HNBR, 1/8" NPSF female, with mesh filter	B75.37.07NA
Suction cup B75 HNBR, 3/8" NPSF female Al, with mesh filter	B75.37.07UB
Suction cup B75 HNBR, 3/8" NPSF female, with mesh filter	B75.37.07NE
Suction cup B75 HNBR, G1/2" female Al, with mesh filter	B75.37.07UD

Description	Part no.
Suction cup B75 HNBR, G1/2" female, with mesh filter	B75.37.07NF
Suction cup B75 HNBR, G3/8" female, with mesh filter	B75.37.07ND
Suction cup B75 Nitrile-PVC	B75.30
Suction cup B75 Nitrile-PVC with washer	B75.30.W
Suction cup B75 Nitrile-PVC, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	B75.30.07UH
Suction cup B75 Nitrile-PVC, 1/8" NPSF female Al, with mesh filter	B75.30.07UA
Suction cup B75 Nitrile-PVC, 3/8" NPSF female Al, with mesh filter	B75.30.07UB
Suction cup B75 Nitrile-PVC, 3/8" NPSF female, with mesh filter	B75.30.07NE
Suction cup B75 Nitrile-PVC, G1/2" female Al, with mesh filter	B75.30.07UD
Suction cup B75 Nitrile-PVC, G1/2" female, with mesh filter	B75.30.07NF
Suction cup B75 Nitrile-PVC, G3/8" female, with mesh filter	B75.30.07ND
Suction cup B75 Nitrile-PVC, 1/8" NPSF female, with mesh filter	B75.30.07NA
Suction cup B75 Silicone	B75.20
Suction cup B75 Silicone FCM	B75.21
Suction cup B75 Silicone FCM, 3/8" NPSF female, with mesh filter	B75.21.07NE
Suction cup B75 Silicone FCM, G3/8" female, with mesh filter	B75.21.07ND
Suction cup B75 Silicone with washer	B75.20.W
Suction cup B75 Silicone, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	B75.20.07UH
Suction cup B75 Silicone, 1/8" NPSF female Al, with mesh filter	B75.20.07UA
Suction cup B75 Silicone, 1/8" NPSF female, with mesh filter	B75.20.07NA
Suction cup B75 Silicone, 3/8" NPSF female Al, with mesh filter	B75.20.07UB

Description	Part no.
Suction cup B75 Silicone, 3/8" NPSF female, with mesh filter	B75.20.07NE
Suction cup B75 Silicone, G1/2" female Al, with mesh filter	B75.20.07UD
Suction cup B75 Silicone, G1/2" female, with mesh filter	B75.20.07NF
Suction cup B75 Silicone, G3/8" female, with mesh filter	B75.20.07ND
Suction cup B110 HNBR	B110.37
Suction cup B110 HNBR with washer	B110.37.W
Suction cup B110 HNBR, 3/8" NPSF female, with mesh filter	B110.37.11NB
Suction cup B110 HNBR, G1/2" female, with mesh filter	B110.37.11NC
Suction cup B110 HNBR, G3/8" female, with mesh filter	B110.37.11NA
Suction cup B110 Nitrile-PVC	B110.30.W
Suction cup B110 Nitrile-PVC	B110.30
Suction cup B110 Nitrile-PVC, 3/8" NPSF female, with mesh filter	B110.30.11NB
Suction cup B110 Nitrile-PVC, G1/2" female Al, with mesh filter	B110.30.11UA
Suction cup B110 Nitrile-PVC, G1/2" female, with mesh filter	B110.30.11NC
Suction cup B110 Nitrile-PVC, G3/8" female, with mesh filter	B110.30.11NA
Suction cup B110 Silicone	B110.20.W
Suction cup B110 Silicone	B110.20
Suction cup B110 Silicone FCM	B110.21
Suction cup B110 Silicone FCM, 3/8" NPSF female, with mesh filter	B110.21.11NB
Suction cup B110 Silicone FCM, G1/2" female, with mesh filter	B110.21.11NC
Suction cup B110 Silicone, 3/8" NPSF female, with mesh filter	B110.20.11NB

Description	Part no.
Suction cup B110 Silicone, G1/2" female Al, with mesh filter	B110.20.11UA
Suction cup B110 Silicone, G1/2" female, with mesh filter	B110.20.11NC
Suction cup B110 Silicone, G3/8" female, with mesh filter	B110.20.11NA
Suction cup B150 Nitrile-PVC	B150.30.W
Suction cup B150 Nitrile-PVC	B150.30
Suction cup B150 Nitrile-PVC, G1/2" female Al, with mesh filter	B150.30.15UA
Suction cup B150 Nitrile-PVC, G1/2" female, with mesh filter	B150.30.15NA
Suction cup B150 Nitrile-PVC, G3/4" female, with mesh filter	B150.30.15NB
Suction cup B150 Silicone	B150.20.W
Suction cup B150 Silicone	B150.20
Suction cup B150 Silicone FCM	B150.21
Suction cup B150 Silicone FCM, G1/2" female, with mesh filter	B150.21.15NA
Suction cup B150 Silicone, G1/2" female Al, with mesh filter	B150.20.15UA
Suction cup B150 Silicone, G1/2" female, with mesh filter	B150.20.15NA
Suction cup B150 Silicone, G3/4" female, with mesh filter	B150.20.15NB
Suction cup B10-2 Chloroprene	B10-2.10
Suction cup B10-2 Chloroprene, M5 male	B10-2.10.01AC
Suction cup B10-2 HNBR	B10-2.47
Suction cup B10-2 HNBR, M5 male	B10-2.47.01AC
Suction cup B10-2 Silicone	B10-2.20
Suction cup B10-2 Silicone FCM	B10-2.21

Description	Part no.
Suction cup B10-2 Silicone FCM, M5 male	B10-2.21.01AC
Suction cup B10-2 Silicone, M5 male	B10-2.20.01AC
Suction cup B15-2 Chloroprene	B15-2.10
Suction cup B15-2 Chloroprene, M5 male	B15-2.10.01AC
Suction cup B15-2 HNBR	B15-2.47
Suction cup B15-2 HNBR, M5 male	B15-2.47.01AC
Suction cup B15-2 Silicone	B15-2.20
Suction cup B15-2 Silicone FCM	B15-2.21
Suction cup B15-2 Silicone FCM, M5 male	B15-2.21.01AC
Suction cup B15-2 Silicone, M5 male	B15-2.20.01AC
Suction cup B30-2 Chloroprene	B30-2.10
Suction cup B30-2 Chloroprene, 1/4" NPT male, with dual flow control valve	B30-2.10.04DC
Suction cup B30-2 Chloroprene, 1/4" NPTmale, with mesh filter	B30-2.10.04AC
Suction cup B30-2 Chloroprene, 1/8" NPSF female	B30-2.10.04AA
Suction cup B30-2 Chloroprene, 1/8" NPSF female, PA	B30-2.10.04CA
Suction cup B30-2 Chloroprene, 1/8" NPSF female, with dual flow control valve	B30-2.10.04DA
Suction cup B30-2 Chloroprene, 1/8" NPSF female, with mesh filter	B30-2.10.04AG
Suction cup B30-2 Chloroprene, 5x1/8" NPSF female	B30-2.10.04AF
Suction cup B30-2 Chloroprene, G1/4" male, with mesh filter	B30-2.10.04AB
Suction cup B30-2 Chloroprene, G1/4" male, with mesh filter dual flow control valve	B30-2.10.04DB
Suction cup B30-2 Chloroprene, G3/8" male, with mesh filter and dual flow control valve	B30-2.10.04DD

Description	Part no.
Suction cup B30-2 Chloroprene, G3/8" male, with mesh filter	B30-2.10.04AD
Suction cup B30-2 Chloroprene, NPT3/8" male, with mesh filter	B30-2.10.04AE
Suction cup B30-2 HNBR	B30-2.37
Suction cup B30-2 HNBR, 1/4" NPT male, with dual flow control valve	B30-2.37.04DC
Suction cup B30-2 HNBR, 1/4" NPT male, with mesh filter	B30-2.37.04AC
Suction cup B30-2 HNBR, 1/8" NPSF female	B30-2.37.04AA
Suction cup B30-2 HNBR, 1/8" NPSF female, with dual flow control valve	B30-2.37.04DA
Suction cup B30-2 HNBR, 1/8" NPSF female, with mesh filter	B30-2.37.04AG
Suction cup B30-2 HNBR, 5x1/8" NPSF female	B30-2.37.04AF
Suction cup B30-2 HNBR, 5x1/8" NPSF female, with dual flow control valve	B30-2.37.04DF
Suction cup B30-2 HNBR, G1/4" Male, with dual flow control valve	B30-2.37.04DB
Suction cup B30-2 HNBR, G1/4" male, with mesh filter	B30-2.37.04AB
Suction cup B30-2 HNBR, G3/8" male, with dual flow control valve	B30-2.37.04DD
Suction cup B30-2 HNBR, G3/8" male, with mesh filter	B30-2.37.04AD
Suction cup B30-2 HNBR, NPT3/8" male, with dual flow control valve	B30-2.37.04DE
Suction cup B30-2 HNBR, NPT3/8" male, with mesh filter	B30-2.37.04AE
Suction cup B30-2 Silicone	B30-2.20
Suction cup B30-2 Silicone FCM	B30-2.21
Suction cup B30-2 Silicone FCM, 1/4" NPT male, with mesh filter	B30-2.21.04AC
Suction cup B30-2 Silicone FCM, 1/8" NPSF female, with mesh filter	B30-2.21.04AG
Suction cup B30-2 Silicone FCM, G1/4" male, with mesh filter	B30-2.21.04AB

Description	Part no.
Suction cup B30-2 Silicone, 1/4" NPT male, with mesh filter	B30-2.20.04AC
Suction cup B30-2 Silicone, 1/8" NPSF female	B30-2.20.04AA
Suction cup B30-2 Silicone, 1/8" NPSF female, PA	B30-2.20.04CA
Suction cup B30-2 Silicone, 1/8" NPSF female, with dual flow control valve	B30-2.20.04DA
Suction cup B30-2 Silicone, 1/8" NPSF female, with mesh filter	B30-2.20.04AG
Suction cup B30-2 Silicone, 5x1/8" NPSF female	B30-2.20.04AF
Suction cup B30-2 Silicone, 5x1/8" NPSF female, with dual flow control valve	B30-2.20.04DF
Suction cup B30-2 Silicone, G1/4" male, with mesh filter	B30-2.20.04AB
Suction cup B30-2 Silicone, G1/4" male, with mesh filter and dual flow control valve	B30-2.20.04DB
Suction cup B30-2 Silicone, G3/8" male, with mesh filter	B30-2.20.04AD
Suction cup B30-2 Silicone, G3/8" male, with mesh filter and dual flow control valve	B30.2.20.04DD
Suction cup B30-2 Silicone, NPT3/8" male, with mesh filter	B30-2.20.04AE
Suction cup B50-2 Nitrile-PVC with filter	B50-2.30
Suction cup B50-2 Nitrile-PVC with filter, 1/8" NPSF female, PA	B50-2.30.05CA
Suction cup B50-2 Nitrile-PVC with filter, 1/8" NPSF female, with dual flow control valve	B50-2.30.05DA
Suction cup B50-2 Nitrile-PVC with filter, 1/8" NPSF female, with mesh filter	B50-2.30.05AG
Suction cup B50-2 Nitrile-PVC with filter, 5x1/8" NPSF female	B50-2.30.05AF
Suction cup B50-2 Nitrile-PVC with filter, G1/4" male, with dual flow control valve and mesh filter	B50-2.30.05DB
Suction cup B50-2 Nitrile-PVC with filter, G1/4" male, with mesh filter	B50-2.30.05AB
Suction cup B50-2 Nitrile-PVC with filter, G3/8" male, with mesh filter	B50-2.30.05AD
Suction cup B50-2 Nitrile-PVC, 1/4" NPT male, with mesh filter	B50-2.30.05AC

Description	Part no.
Suction cup B50-2 Nitrile-PVC, 1/8" NPSF female	B50-2.30.05AA
Suction cup B50-2 Nitrile-PVC, NPT3/8" male, with mesh filter	B50-2.30.05AE
Suction cup B50-2 Silicone FCM with filter	B50-2.21
Suction cup B50-2 Silicone FCM with filter, 1/4" NPT male, with mesh filter	B50-2.21.05AC
Suction cup B50-2 Silicone FCM with filter, 1/8" NPSF female, with mesh filter	B50-2.21.05AG
Suction cup B50-2 Silicone FCM with filter, G1/4" male, with mesh filter	B50-2.21.05AB
Suction cup B50-2 Silicone with filter	B50-2.20
Suction cup B50-2 Silicone with filter, 1/8" NPSF female, PA	B50-2.20.05CA
Suction cup B50-2 Silicone with filter, 1/8" NPSF female, with dual flow control valve	B50-2.20.05DA
Suction cup B50-2 Silicone with filter, 1/8" NPSF female, with mesh filter	B50-2.20.05AG
Suction cup B50-2 Silicone with filter, 5x1/8" NPSF female	B50-2.20.05AF
Suction cup B50-2 Silicone with filter, G1/4" male, with mesh filter	B50-2.20.05AB
Suction cup B50-2 Silicone with filter, G3/8" male, with mesh filter	B50-2.20.05AD
Suction cup B50-2 Silicone, 1/4" NPT male, with mesh filter	B50-2.20.05AC
Suction cup B50-2 Silicone, 1/8" NPSF female	B50-2.20.05AA
Suction cup B50-2 Silicone, NPT3/8" male, with mesh filter	B50-2.20.05AE
Suction cup B75-2 Nitrile-PVC with filter	B75-2.30
Suction cup B75-2 Nitrile-PVC with filter, 3/8" NPSF female, with mesh filter	B75-2.30.07NE
Suction cup B75-2 Nitrile-PVC with filter, G1/2" female, with mesh filter	B75-2.30.07NF
Suction cup B75-2 Nitrile-PVC with filter, G3/8" female, with mesh filter	B75-2.30.07ND
Suction cup B75-2 Nitrile-PVC with filter, 1/8" NPSF female, with mesh filter	B75-2.30.07NA

Description	Part no.
Suction cup B75-2 Nitrile-PVC, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	B75-2.30.07UH
Suction cup B75-2 Nitrile-PVC, 1/8" NPSF female Al, with mesh filter	B75-2.30.07UA
Suction cup B75-2 Nitrile-PVC, 3/8" NPSF female Al, with mesh filter	B75-2.30.07UB
Suction cup B75-2 Nitrile-PVC, G1/2" female Al, with mesh filter	B75-2.30.07UD
Suction cup B75-2 Nitrile-PVC, with filter & washer	B75-2.30.W
Suction cup B75-2 Silicone FCM with filter	B75-2.21
Suction cup B75-2 Silicone FCM with filter, G3/8" female, with mesh filter	B75-2.21.07ND
Suction cup B75-2 Silicone FCM, 3/8" NPSF female, with mesh filter	B75-2.21.07NE
Suction cup B75-2 Silicone with filter	B75-2.20
Suction cup B75-2 Silicone with filter, 1/8" NPSF female, with mesh filter	B75-2.20.07NA
Suction cup B75-2 Silicone with filter, 3/8" NPSF female, with mesh filter	B75-2.20.07NE
Suction cup B75-2 Silicone with filter, G3/8" female, with mesh filter	B75-2.20.07ND
Suction cup B75-2 Silicone, 1/4" NPT female Al, with mesh filter & 10-32 addl. conn.	B75-2.20.07UH
Suction cup B75-2 Silicone, 1/8" NPSF female Al, with mesh filter	B75-2.20.07UA
Suction cup B75-2 Silicone, 3/8" NPSF female Al, with mesh filter	B75-2.20.07UB
Suction cup B75-2 Silicone, G1/2" female Al, with mesh filter	B75-2.20.07UD
Suction cup B75-2 Silicone, G1/2" female, with mesh filter	B75-2.20.07NF
Suction cup B75-2 Silicone, with filter & washer	B75-2.20.W
Suction cup B75P Polyurethane 30/60	B75P.4K
Suction cup B75P Polyurethane 30/60, 1/8" NPSF female, with mesh filter	B75P.4K.07NA
Suction cup B75P Polyurethane 30/60, 3/8" NPSF female	B75P.5K.N40W

Description	Part no.
Suction cup B75P Polyurethane 30/60, 3/8" NPSF female, with mesh filter	B75P.4K.07NE
Suction cup B75P Polyurethane 30/60, for thread insert	B75P.5K
Suction cup B75P Polyurethane 30/60, G1/2" female, with mesh filter	B75P.4K.07NF
Suction cup B75P Polyurethane 30/60, G3/8" female, with mesh filter	B75P.4K.07ND
Suction cup B75P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	B75P.5K.G40M
Suction cup B75P Polyurethane 60	B75P.4E
Suction cup B75P Polyurethane 60, 1/8" NPSF female, with mesh filter	B75P.4E.07NA
Suction cup B75P Polyurethane 60, 3/8" NPSF female	B75P.5E.N40W
Suction cup B75P Polyurethane 60, 3/8" NPSF female, with mesh filter	B75P.4E.07NE
Suction cup B75P Polyurethane 60, for thread insert	B75P.5E
Suction cup B75P Polyurethane 60, G1/2" female, with mesh filter	B75P.4E.07NF
Suction cup B75P Polyurethane 60, G3/8" female, with mesh filter	B75P.4E.07ND
Suction cup B75P Polyurethane 60, thread insert G3/8" male with mesh filter	B75P.5E.G40M
Suction cup B110-2 Nitrile-PVC	B110-2.30
Suction cup B110-2 Nitrile-PVC with filter	B110-2.30.W
Suction cup B110-2 Nitrile-PVC with filter, 3/8" NPSF female, with mesh filter	B110-2.30.11NB
Suction cup B110-2 Nitrile-PVC with filter, G1/2" female, with mesh filter	B110-2.30.11NC
Suction cup B110-2 Nitrile-PVC with filter, G3/8" female, with mesh filter	B110-2.30.11NA
Suction cup B110-2 Nitrile-PVC, G1/2" female Al, with mesh filter	B110-2.30.11UA
Suction cup B110-2 Silicone	B110-2.20
Suction cup B110-2 Silicone FCM with filter	B110-2.21

Description	Part no.
Suction cup B110-2 Silicone FCM with filter, G1/2" female, with mesh filter	B110-2.21.11NC
Suction cup B110-2 Silicone FCM, 3/8"NPSF female, with mesh filter	B110-2.21.11NB
Suction cup B110-2 Silicone with filter	B110-2.20.W
Suction cup B110-2 Silicone with filter, 3/8" NPSF female, with mesh filter	B110-2.20.11NB
Suction cup B110-2 Silicone with filter, G1/2" female, with mesh filter	B110-2.20.11NC
Suction cup B110-2 Silicone with filter, G3/8" female, with mesh filter	B110-2.20.11NA
Suction cup B110-2 Silicone, G1/2" female AI, with mesh filter	B110-2.20.11UA
Suction cup B10XP Polyurethane 30/60	B10XP.4K
Suction cup B10XP Polyurethane 30/60, M5 male	B10XP.4K.01AC
Suction cup B10XP Polyurethane 60	B10XP.4E
Suction cup B10XP Polyurethane 60, M5 male	B10XP.4E.01AC
Suction cup B15XP Polyurethane 30/60	B15XP.4K
Suction cup B15XP Polyurethane 30/60, M5 male	B15XP.4K.01AC
Suction cup B15XP Polyurethane 60	B15XP.4E
Suction cup B15XP Polyurethane 60, M5 male	B15XP.4E.01AC
Suction cup B20XP Polyurethane 30/60	B20XP.4K
Suction cup B20XP Polyurethane 30/60, 1/8" NPT male with mesh filter	B20XP.4K.02AC
Suction cup B20XP Polyurethane 30/60, 5xM5 female	B20XP.4K.02AE
Suction cup B20XP Polyurethane 30/60, G1/8" male / M5 female, with mesh filter	B20XP.4K.02AF
Suction cup B20XP Polyurethane 30/60, G1/8" male with mesh filter	B20XP.4K.02AB
Suction cup B20XP Polyurethane 30/60, M5 female	B20XP.4K.02AA

Description	Part no.
Suction cup B20XP Polyurethane 60	B20XP.4E
Suction cup B20XP Polyurethane 60, 1/8" NPT male with mesh filter	B20XP.4E.02AC
Suction cup B20XP Polyurethane 60, 5xM5 female	B20XP.4E.02AE
Suction cup B20XP Polyurethane 60, G1/8" male / M5 female, with mesh filter	B20XP.4E.02AF
Suction cup B20XP Polyurethane 60, G1/8" male, with mesh filter	B20XP.4E.02AB
Suction cup B20XP Polyurethane 60, M5 female	B20XP.4E.02AA
Suction cup B25XP Polyurethane 30/60	B25XP.4K
Suction cup B25XP Polyurethane 30/60, 1/8" NPT male with mesh filter	B25XP.4K.02AC
Suction cup B25XP Polyurethane 30/60, G1/8" male / M5 female with mesh filter	B25XP.4K.02AF
Suction cup B25XP Polyurethane 30/60, G1/8" male / M5 female with mesh filter	B25XP.4K.02AE
Suction cup B25XP Polyurethane 30/60, G1/8" male with mesh filter	B25XP.4K.02AB
Suction cup B25XP Polyurethane 30/60, M5 female	B25XP.4K.02AA
Suction cup B25XP Polyurethane 60	B25XP.4E
Suction cup B25XP Polyurethane 60, 1/8" NPT male with mesh filter	B25XP.4E.02AC
Suction cup B25XP Polyurethane 60, 5xM5 female	B25XP.4E.02AE
Suction cup B25XP Polyurethane 60, G1/8" male / M5 female with mesh filter	B25XP.4E.02AF
Suction cup B25XP Polyurethane 60, G1/8" male, with mesh filter	B25XP.4E.02AB
Suction cup B25XP Polyurethane 60, M5 female	B25XP.4E.02AA
Suction cup B35XP Polyurethane 30/60	B35XP.4K
Suction cup B35XP Polyurethane 30/60, 1/4" NPT male with mesh filter	B35XP.4K.04AC
Suction cup B35XP Polyurethane 30/60, 1/8" NPSF female, with mesh filter	B35XP.4K.04AG

Description	Part no.
Suction cup B35XP Polyurethane 30/60, 3/8" NPT male with mesh filter	BX35P.4K.04AE
Suction cup B35XP Polyurethane 30/60, G1/8" male with mesh filter	B35XP.4K.04AI
Suction cup B35XP Polyurethane 30/60, G3/8" male with mesh filter	B35XP.4K.04AD
Suction cup B35XP Polyurethane 30/60, G1/4" male with mesh filter	B35XP.4K.04AB
Suction cup B35XP Polyurethane 60	B35XP.4E
Suction cup B35XP Polyurethane 60, 1/4" NPT male with mesh filter	B35XP.4E.04AC
Suction cup B35XP Polyurethane 60, 1/8" NPSF female, with mesh filter	B35XP.4E.04AG
Suction cup B35XP Polyurethane 60, 3/8" NPT male with mesh filter	B35XP.4E.04AE
Suction cup B35XP Polyurethane 60, G1/4" male with mesh filter	B35XP.4E.04AB
Suction cup B35XP Polyurethane 60, G1/8" male with mesh filter	B35XP.4E.04AI
Suction cup B35XP Polyurethane 60, G3/8" male with mesh filter	B35XP.4E.04AD
Suction cup B52XP Polyurethane 30/60	B52XP.4K
Suction cup B52XP Polyurethane 30/60, 1/4" NPT male with mesh filter	B52XP.4K.05AC
Suction cup B52XP Polyurethane 30/60, 1/8" NPSF female, with mesh filter	B52XP.4K.05AG
Suction cup B52XP Polyurethane 30/60, 3/8" NPT male with mesh filter	B52XP.4K.05AE
Suction cup B52XP Polyurethane 30/60, 5x1/8" NPSF female	B52XP.4K.05AF
Suction cup B52XP Polyurethane 30/60, G1/4" male with mesh filter	B52XP.4K.05AB
Suction cup B52XP Polyurethane 30/60, G1/8" male with mesh filter	B52XP.4K.05AI
Suction cup B52XP Polyurethane 30/60, G3/8" male with mesh filter	B52XP.4K.05AD
Suction cup B52XP Polyurethane 60	B52XP.4E
Suction cup B52XP Polyurethane 60, 1/4" NPT male with mesh filter	B52XP.4E.05AC

Description	Part no.
Suction cup B52XP Polyurethane 60, 1/8" NPSF female, with mesh filter	B52XP.4E.05AA
Suction cup B52XP Polyurethane 60, 3/8" NPT male with mesh filter	B52XP.4E.05AE
Suction cup B52XP Polyurethane 60, 5x1/8" NPSF female	B52XP.4E.05AF
Suction cup B52XP Polyurethane 60, G1/4" male with mesh filter	B52XP.4E.05AB
Suction cup B52XP Polyurethane 60, G1/8" male with mesh filter	B52XP.4E.05AI
Suction cup B52XP Polyurethane 60, G3/8" male with mesh filter	B52XP.4E.05AD
Suction cup B75XP Polyurethane 30/60 , G3/8" male / 1/8" NPSF female	B75XP.4K.07UF
Suction cup B75XP Polyurethane 30/60 ,thread insert G1/4" male	B75XP.5K.G59
Suction cup B75XP Polyurethane 30/60 ,thread insert G1/8" male	B75XP.5K.G60
Suction cup B75XP Polyurethane 30/60 ,thread insert G3/8" male	B75XP.5K.G40W
Suction cup B75XP Polyurethane 30/60, 3/8" NPSF female, with mesh filter	B75XP.5K.N40W
Suction cup B75XP Polyurethane 30/60, for thread insert	B75XP.5K
Suction cup B75XP Polyurethane 60 , G3/8" male / 1/8" NPSF female	B75XP.4E.07UF
Suction cup B75XP Polyurethane 60 ,thread insert G1/4" male	B75XP.5E.G59
Suction cup B75XP Polyurethane 60 ,thread insert G3/8" male	B75XP.5E.G40W
Suction cup B75XP Polyurethane 60 thread insert G1/8" male	B75XP.5E.G60
Suction cup B75XP Polyurethane 60, 3/8" NPSF female, with mesh filter	B75XP.5E.N40W
Suction cup B75XP Polyurethane 60, for thread insert	B75XP.5E
Suction cup B110XP Polyurethane 30/60	B110XP.5K
Suction cup B110XP Polyurethane 30/60 ,thread insert G3/8" male	B110XP.5K.G40W
Suction cup B110XP Polyurethane 30/60, 3/8" NPSF female, with mesh filter	B110XP.5K.N40W

Description	Part no.
Suction cup B110XP Polyurethane 60	B110XP.5E
Suction cup B110XP Polyurethane 60 ,thread insert G3/8" male	B110XP.5E.G40W
Suction cup B110XP Polyurethane 60, 3/8" NPSF female, with mesh filter	B110XP.5E.N40W
Suction cup B15MF Thermoelastic polyurethane	B15MF.40
Suction cup B15MF Thermoelastic polyurethane, M5 male	B15MF.40.01AC
Suction cup B20MF Thermoelastic polyurethane	B20MF.40
Suction cup B20MF Thermoelastic polyurethane, 1/8" NPT male, with mesh filter	B20MF.40.02AC
Suction cup B20MF Thermoelastic polyurethane, 5xM5 female	B20MF.40.02AE
Suction cup B20MF Thermoelastic polyurethane, 5xM5 female, with dual flow control valve	B20MF.40.02DE
Suction cup B20MF Thermoelastic polyurethane, G1/8" male, with dual flow control valve and mesh filter	B20MF.40.02DB
Suction cup B20MF Thermoelastic polyurethane, G1/8" male, with mesh filter	B20MF.40.02AB
Suction cup B20MF Thermoelastic polyurethane, G1/8" male/M5 fem., with dual flow control valve	B20MF.40.02DD
Suction cup B20MF Thermoelastic polyurethane, G1/8" male/M5 female	B20MF.40.02AD
Suction cup B20MF Thermoelastic polyurethane, G1/8" male/M5 female, with mesh filter	B20MF.40.02AF
Suction cup B20MF Thermoelastic polyurethane, M5 female	B20MF.40.02AA
Suction cup B20MF Thermoelastic polyurethane, M5 female, with dual flow control valve	B20MF.40.02DA
Suction cup B30MF Thermoelastic polyurethane	B30MF.40
Suction cup B30MF Thermoelastic polyurethane, 1/4" NPT male, with mesh filter	B30MF.40.04AC
Suction cup B30MF Thermoelastic polyurethane, 1/8" NPSF female	B30MF.40.04AA
Suction cup B30MF Thermoelastic polyurethane, 1/8" NPSF female, with dual flow control valve	B30MF.40.04DA
Suction cup B30MF Thermoelastic polyurethane, 1/8" NPSF female, with mesh filter	B30MF.40.04AG

Description	Part no.
Suction cup B30MF Thermoelastic polyurethane, 5x1/8" NPSF female	B30MF.40.04AF
Suction cup B30MF Thermoelastic polyurethane, G1/4" male, with mesh filter	B30MF.40.04AB
Suction cup B30MF Thermoelastic polyurethane, G3/8" male, with mesh filter	B30MF.40.04AD
Suction cup B40MF Thermoelastic polyurethane	B40MF.40
Suction cup B40MF Thermoelastic polyurethane, 1/4" NPT male, with mesh filter	B40MF.40.04AC
Suction cup B40MF Thermoelastic polyurethane, 1/8" NPSF female	B40MF.40.04AA
Suction cup B40MF Thermoelastic polyurethane, 1/8" NPSF female, with dual flow control valve	B40MF.40.04DA
Suction cup B40MF Thermoelastic polyurethane, 1/8" NPSF female, with mesh filter	B40MF.40.04AG
Suction cup B40MF Thermoelastic polyurethane, 5x1/8" NPSF female	B40MF.40.04AF
Suction cup B40MF Thermoelastic polyurethane, G1/4" male, with mesh filter	B40MF.40.04AB
Suction cup B40MF Thermoelastic polyurethane, G1/4" male, with mesh filter and dual flow control valve	B40MF.40.04DB
Suction cup B40MF Thermoelastic polyurethane, G3/8" male, with mesh filter	B40MF.40.04AD
Suction cup B40MF Thermoelastic polyurethane, G3/8" male, with mesh filter and dual flow control valve	B40MF.40.04DD
Suction cup B40MF Thermoelastic polyurethane, NPT3/8" male, with mesh filter	B40MF.40.04AE
Suction cup B50MF Thermoelastic polyurethane	B50MF.40
Suction cup B50MF Thermoelastic polyurethane, 1/4" NPT male, with mesh filter	B50MF.40.05AC
Suction cup B50MF Thermoelastic polyurethane, 1/8" NPSF female	B50MF.40.05AA
Suction cup B50MF Thermoelastic polyurethane, 1/8" NPSF female, with dual flow control valve	B50MF.40.05DA
Suction cup B50MF Thermoelastic polyurethane, 1/8" NPSF female, with mesh filter	B50MF.40.05AG
Suction cup B50MF Thermoelastic polyurethane, 5x1/8" NPSF female	B50MF.40.05AF
Suction cup B50MF Thermoelastic polyurethane, G1/4" male, with dual flow control valve and mesh filter	B50MF.40.05DB

Description	Part no.
Suction cup B50MF Thermoelastic polyurethane, G1/4" male, with mesh filter	B50MF.40.05AB
Suction cup B50MF Thermoelastic polyurethane, G3/8" male, with mesh filter	B50MF.40.05AD
Suction cup B50MF Thermoelastic polyurethane, NPT3/8" male, with mesh filter	B50MF.40.05AE
Suction cup BF80P Polyurethane 30/50, G3/8" female	BF80P.4H.08UA
Suction cup BF80P Polyurethane 30/50, 3/8" NPSF female	BF80P.4H.08UB
Suction cup BF80P Polyurethane 60, G3/8" female	BF80P.4E.08UA
Suction cup BF80P Polyurethane 60, 3/8" NPSF female	BF80P.4E.08UB
Suction cup BF80P Polyurethane 30/50, G3/8" male	BF80P.4H.08UD
Suction cup BF80P Polyurethane 30/50, G3/8" male with mesh filter	BF80P.4H.08UG
Suction cup BF80P Polyurethane 60, G3/8" male with mesh filter	BF80P.4E.08UG
Suction cup BF80P Polyurethane 60, G3/8" male	BF80P.4E.08UD
Suction cup BF110P Polyurethane 30/60 with O-ring	BF110P.5K
Suction cup BF110P Polyurethane 30/60, 3/8" NPSF female	BF110P.5K.N40W
Suction cup BF110P Polyurethane 30/60, thread insert G3/8" male with mesh filter	BF110P.5K.G40M
Suction cup BF110P Polyurethane 60, 3/8" NPSF female	BF110P.5E.N40W
Suction cup BF110P Polyurethane 60, thread insert G3/8" male with mesh filter	BF110P.5E.G40M
Suction cup BF110P Polyurethane 60, with O-ring	BF110P.5E
Suction cup BFF30P Polyurethane 55/60, 3/8" NPT female	BFF30P.4R.N50W
Suction cup BFF30P Polyurethane 55/60, G1/4" female	BFF30P.4R.G75W
Suction cup BFF30P Polyurethane 55/60, G3/8" female	BFF30P.4R.G71W
Suction cup BFF30P Polyurethane 55/60, G3/8" female plastic	BFF30P.4R.G73WC

Description	Part no.
Suction cup BFF30P Polyurethane 55/60, G3/8" male, 1/8" NPSF female	BFF30P.4R.G68W
Suction cup BFF30P Polyurethane 55/60, T-slot	BFF30P.4R.T1W
Suction cup BFF40P Polyurethane 55/60, 3/8" NPT female	BFF40P.4R.04UN
Suction cup BFF40P Polyurethane 55/60, G1/4" female	BFF40P.4R.G75W
Suction cup BFF40P Polyurethane 55/60, G3/8" female	BFF40P.4R.04UA
Suction cup BFF40P Polyurethane 55/60, G3/8" female, 17 mm thread	BFF40P.4R.G63W
Suction cup BFF40P Polyurethane 55/60, G3/8" female, plastic thread	BFF40P.5RC.G56WC
Suction cup BFF40P Polyurethane 55/60, G3/8" male, with mesh filter	BFF40P.4R.04UF
Suction cup BFF40P Polyurethane 55/60, M10x1.5 male	BFF40P.4R.M10M
Suction cup BFF40P Polyurethane 55/60, T-slot, with mesh filter	BFF40P.4R.T1M
Suction cup BFF60P Polyurethane 55/60, 3/8" NPT female	BFF60P.4R.06UN
Suction cup BFF60P Polyurethane 55/60, G1/4" female	BFF60P.4R.G75W
Suction cup BFF60P Polyurethane 55/60, G3/8" female	BFF60P.4R.06UA
Suction cup BFF60P Polyurethane 55/60, G3/8" female, 17 mm thread	BFF60P.4R.G64W
Suction cup BFF60P Polyurethane 55/60, G3/8" female, plastic thread	BFF60P.5RC.G56WC
Suction cup BFF60P Polyurethane 55/60, G3/8" male, with mesh filter	BFF60P.4R.06UF
Suction cup BFF60P Polyurethane 55/60, M10x1.5 male	BFF60P.4R.M10M
Suction cup BFF60P Polyurethane 55/60, T-slot, with mesh filter	BFF60P.4R.T1M
Suction cup BFF80P Polyurethane 55/60 G1/4" female with mesh filter	BFF80P.5R.G75MR
Suction cup BFF80P Polyurethane 55/60 G1/4" male with mesh filter	BFF80P.5R.G79MR
Suction cup BFF80P Polyurethane 55/60 G3/8" female plastic thread	BFF80P.5R.G56WC

Description	Part no.
Suction cup BFF80P Polyurethane 55/60 G3/8" female with mesh filter	BFF80P.5R.G77MR
Suction cup BFF80P Polyurethane 55/60 G3/8" female with mesh filter, 17 mm thread	BFF80P.5R.G78MR
Suction cup BFF80P Polyurethane 55/60 G3/8" male, 1/8" NPSF female, with mesh filter	BFF80P.5R.G69MR
Suction cup BFF80P Polyurethane 55/60 M10x1,5 male with mesh filter	BFF80P.5R.M10MR
Suction cup BFF80P Polyurethane 55/60 T-slot with mesh filter	BFF80P.5R.T2MR
Suction cup BFF80P Polyurethane 55/60. 3/8" NPT female with mesh filter	BFF80P.5R.N49MR
Suction cup BFF110P Polyurethane 55/60 G1/4" female with mesh filter	BFF110P.5R.G75MR
Suction cup BFF110P Polyurethane 55/60 G1/4" male with mesh filter	BFF110P.5R.G79MR
Suction cup BFF110P Polyurethane 55/60 G3/8" female plastic thread	BFF110P.5R.G57WC
Suction cup BFF110P Polyurethane 55/60 G3/8" female with mesh filter	BFF110P.5R.G77MR
Suction cup BFF110P Polyurethane 55/60 G3/8" female with mesh filter, 17 mm thread	BFF110P.5R.G78MR
Suction cup BFF110P Polyurethane 55/60 G3/8" male, 1/8" NPSF female, with mesh filter	BFF110P.5R.G69MR
Suction cup BFF110P Polyurethane 55/60 M10x1,5 male with mesh filter	BFF110P.5R.M10MR
Suction cup BFF110P Polyurethane 55/60 T-slot with mesh filter	BFF110P.5R.T2MR
Suction cup BFF110P Polyurethane 55/60. 3/8" NPT female with mesh filter	BFF110P.5R.N49MR
Suction cup BFF80TP Polyurethane 55/60/30 G1/4" female with mesh filter	BFF80TP.5S.G75MR
Suction cup BFF80TP Polyurethane 55/60/30 G1/4" male with mesh filter	BFF80TP.5S.G79MR
Suction cup BFF80TP Polyurethane 55/60/30 G3/8" female plastic thread	BFF80TP.5S.G56WC
Suction cup BFF80TP Polyurethane 55/60/30 G3/8" female with mesh filter	BFF80TP.5S.G77MR
Suction cup BFF80TP Polyurethane 55/60/30 G3/8" female with mesh filter, 17 mm thread	BFF80TP.5S.G78MR
Suction cup BFF80TP Polyurethane 55/60/30 G3/8" male, 1/8" NPSF female, with mesh filter	BFF80TP.5S.G69MR

Description	Part no.
Suction cup BFF80TP Polyurethane 55/60/30 M10x1,5 male with mesh filter	BFF80TP.5S.M10MR
Suction cup BFF80TP Polyurethane 55/60/30 T-slot with mesh filter	BFF80TP.5S.T2MR
Suction cup BFF80TP Polyurethane 55/60/30. 3/8" NPT female with mesh filter	BFF80TP.5S.N49MR
Suction cup BFF110TP Polyurethane 55/60/30 G1/4" female with mesh filter	BFF110TP.5S.G75MR
Suction cup BFF110TP Polyurethane 55/60/30 G1/4" male with mesh filter	BFF110TP.5S.G79MR
Suction cup BFF110TP Polyurethane 55/60/30 G3/8" female plastic thread	BFF110TP.5S.G57WC
Suction cup BFF110TP Polyurethane 55/60/30 G3/8" female with mesh filter	BFF110TP.5S.G77MR
Suction cup BFF110TP Polyurethane 55/60/30 G3/8" female with mesh filter, 17 mm thread	BFF110TP.5S.G78MR
Suction cup BFF110TP Polyurethane 55/60/30 G3/8" male, 1/8" NPSF female, with mesh filter	BFF110TP.5S.G69MR
Suction cup BFF110TP Polyurethane 55/60/30 M10x1,5 male with mesh filter	BFF110TP.5S.M10MR
Suction cup BFF110TP Polyurethane 55/60/30 T-slot with mesh filter	BFF110TP.5S.T2MR
Suction cup BFF110TP Polyurethane 55/60/30. 3/8" NPT female with mesh filter	BFF110TP.5S.N49MR
Suction cup BFFT50P Polyurethane 60/60/30 G1/4" male with mesh filter	02.07.698
Suction cup BFFT50P Polyurethane 60/60/30 G3/8" female with mesh filter, 17 mm thread	02.09.190
Suction cup BFFT50P Polyurethane 60/60/30 M10x1,5 male with mesh filter	02.07.666
Suction cup BFFT50P Polyurethane 60/60/30, 3/8" NPT female, with mesh filter	BFFT50P.5S.N49MR
Suction cup BFFT50P Polyurethane 60/60/30, G1/4" female, with mesh filter	BFFT50P.5S.G75MR
Suction cup BFFT50P Polyurethane 60/60/30, G3/8" female plastic	BFFT50P.5S.G68WC
Suction cup BFFT50P Polyurethane 60/60/30, G3/8" female, with mesh filter	BFFT50P.5S.G70MR
Suction cup BFFT50P Polyurethane 60/60/30, G3/8" male, 1/8" NPSF female, with mesh filter	BFFT50P.5S.G69MR
Suction cup BFFT50P Polyurethane 60/60/30, T-slot, with mesh filter	BFFT50P.5S.T2W

Description	Part no.
Suction cup BFFT70P Polyurethane 60/60/30 G1/4" male with mesh filter	02.07.699
Suction cup BFFT70P Polyurethane 60/60/30 G3/8" female with mesh filter 17 mm thread	02.09.191
Suction cup BFFT70P Polyurethane 60/60/30 M10x1,5 male with mesh filter	02.07.667
Suction cup BFFT70P Polyurethane 60/60/30, 3/8" NPT female, with mesh filter	BFFT70P.5S.N49MR
Suction cup BFFT70P Polyurethane 60/60/30, G1/4" female, with mesh filter	BFFT70P.5S.G75MR
Suction cup BFFT70P Polyurethane 60/60/30, G3/8" female plastic	BFFT70P.5S.G68WC
Suction cup BFFT70P Polyurethane 60/60/30, G3/8" female, with mesh filter	BFFT70P.5S.G70MR
Suction cup BFFT70P Polyurethane 60/60/30, G3/8" male, 1/8" NPSF female, with mesh filter	BFFT70P.5S.G69MR
Suction cup BFFT70P Polyurethane 60/60/30, T-slot, with mesh filter	BFFT70P.5S.T2W
Suction cup BFFT90P Polyurethane 60/60/30 G1/4" male with mesh filter	02.07.700
Suction cup BFFT90P Polyurethane 60/60/30 G3/8" female with mesh filter, 17 mm thread	02.09.192
Suction cup BFFT90P Polyurethane 60/60/30 M10x1,5 male with mesh filter	02.07.669
Suction cup BFFT90P Polyurethane 60/60/30, 3/8" NPT female, with mesh filter	BFFT90P.5S.N49MR
Suction cup BFFT90P Polyurethane 60/60/30, G1/4" female, with mesh filter	BFFT90P.5S.G75MR
Suction cup BFFT90P Polyurethane 60/60/30, G3/8" female plastic	BFFT90P.5S.G68WC
Suction cup BFFT90P Polyurethane 60/60/30, G3/8" female, with mesh filter	BFFT90P.5S.G70MR
Suction cup BFFT90P Polyurethane 60/60/30, G3/8" male, 1/8" NPSF female, with mesh filter	BFFT90P.5S.G69MR
Suction cup BFFT90P Polyurethane 60/60/30, T-slot, with mesh filter	BFFT90P.5S.T2W

Multibellows family (BX/BL)



This family is designed for height differences, slightly curved planes and uneven surfaces. Applications such as bag handling, cardboard, high temperature or if the need is specifically to touch a food item as they are also available in material that complies with the FDA (FDA 21 CFR 177.2600) and meets EU's regulation EU 1935/2004.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
BX10P	—	0.22	—	0.52	0.83	—	—	—	—	—
BX15P	—	0.45/0.45 ^A	—	0.90/1.35 ^A	1.01/1.35 ^A	—	—	—	—	—
BX20P	—	1.01/1.08 ^A	—	1.57/1.57 ^A	2.14/2.47 ^A	—	—	—	—	—
BX25P	—	1.80/2.02 ^A	—	2.92/3.15 ^A	4.05/4.05 ^A	—	1.12/1.57 ^A	—	2.25/2.47 ^A	2.7/3.37 ^A
BX35P	—	2.70/3.37 ^A	—	4.5/5.62 ^A	6.29/6.74 ^A	—	3.15/4.95 ^A	—	6.07/6.74 ^A	7.64/8.09 ^A
BX52P	—	7.19/8.32 ^A	—	12.6/13.3 ^A	16.9/18.0 ^A	—	6.29/6.07 ^A	—	9.89/11.0 ^A	12.1/12.6 ^A
BX75P	—	13.9/18.0 ^A	—	24.7/27.0 ^A	31.7/37.3 ^A	—	8.77/17.5 ^A	—	18.7/25.6 ^A	26.1/33.7 ^A
BX110P	—	35.5/40.7 ^A	—	68.8/95.8 ^A	77.8/95.3 ^A	—	18.7/35.5 ^A	—	58/54.9 ^A	58.5/65.9 ^A
BXF60P	—	—	—	19.8/18.4 ^C	27.4/25.9 ^C	—	—	—	10.6/9.7 ^C	11.2/10.3 ^C
BXF75P	—	—	—	25.9/26.3 ^C	34.6/34.4 ^C	—	—	—	16.4/16 ^C	17.8/17.1 ^C
BXF90P	—	—	—	38/37.8 ^C	51.9/50.6 ^C	—	—	—	18.9/20.7 ^C	20.7/23.2 ^C
BXF105P	—	—	—	48.8/53.5 ^C	63.4/70.6 ^C	—	—	—	23.6/28.1 ^C	25.6/29 ^C

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
BL20-2	—	0.07/0.72 ^B	—	0.14/1.39 ^B	—	—	—	—	—	—
BL30-2	—	0.14/1.44 ^B	—	0.36/3.60 ^B	—	—	—	—	—	—
BL40-2	—	0.25/2.47 ^B	—	0.49/4.95 ^B	—	—	—	—	—	—
BL50-2	—	0.38/3.82 ^B	—	0.97/9.67 ^B	—	—	—	—	—	—
BL30-3P	—	2.25	—	4.95	6.29	—	2.02	—	2.25	3.60
BL40-3P	—	4.50	—	9.67	12.4	—	2.92	—	5.40	8.09
BL50-3P	—	5.40	—	13.5	16.9	—	4.95	—	11.0	13.5
BL30-4	—	1.80 ^C	—	—	—	—	—	—	—	—
BL40-4	—	2.25	—	3.37	4.95	—	2.02	—	3.60	5.85
BL50-4	—	1.80	—	5.62	—	—	—	—	—	—
BL30-5	—	1.80	—	2.02	—	—	—	—	—	—
BL40-5	—	2.92	—	3.37	—	—	—	—	—	—
BL50-5	—	1.80	—	5.62	—	—	—	—	—	—
B-BL30-2	0.99	1.66	2.77	—	—	0.67	0.99	1.87	—	—
B-BL40-2	1.89	3.44	5.78	—	—	0.94	2.02	4.36	—	—
B-BL60-2	2.38	5.33	9.7	—	—	2.68	4.81	10.8	—	—
F-BX10	0.11	0.2	0.34	—	—	0.27	0.29	0.31	—	—
F-BX15	0.29	0.61	0.97	—	—	0.34	0.63	0.81	—	—
F-BX20	0.29	0.61	0.97	—	—	0.34	0.63	0.81	—	—
F-BX25	0.88	1.55	1.8	—	—	0.65	1.03	1.64	—	—

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
F-BX35	1.71	2.9	3.19	—	—	1.69	2.05	2.32	—	—

^a PU30°/PU60° / PU60°, ^b With reinforcement ring, ^c The suction cup is not intended for deeper vacuum levels than 6 -inHg.

^d Dry metal sheet/Oily metal sheet.

GENERAL SPECIFICATIONS








	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
BX10P	0.43	0.65	0.16/0.24*	0.18	0.03
BX15P	0.63	0.73	0.22/0.24*	0.22	0.06
BX20P	0.83	0.60	0.39/0.33*	0.30	0.07
BX25P	1.02	0.75	0.24/0.31*	0.33	0.18
BX35P	1.46	1.06	0.39	0.55	0.61
BX52P	2.09	1.54	1.26	0.75	1.83
BX75P	3.05	2.04	0.91	1.02	4.88
BX110P	4.48	2.91	2.17	1.54	14.04
BXF60P	2.36	2.07–2.84**	2.76	1.25	4.88
BXF75P	2.95	2.62–3.38**	4.33	1.58	6.41
BXF90P	3.54	2.99–3.50**	6.30	1.82	11.0
BXF105P	4.13	3.51–4.28**	9.06	2.19	17.3
BL20-2	0.79	0.90	0.16	0.51	0.24
BL30-2	1.18	1.28	0.31	0.79	0.61
BL40-2	1.57	1.67	0.43	1.30	1.65
BL50-2	1.97	2.09	0.51	1.34	3.23

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
BL30-3P	1.18	1.40	0.24	0.55	0.85
BL40-3P	1.57	1.67	0.51	0.83	1.65
BL50-3P	1.89	2.09	0.63	1.02	3.30
BL30-4	1.20	0.65	0.79	0.75	0.25
BL40-4	1.58	1.57	0.59	0.71	0.92
BL50-4	1.98	2.09	1.18	0.87	2.14
BL30-5	1.20	1.44	0.67	0.43	0.52
BL40-5	1.57	1.57	0.87	0.79	0.85
BL50-5	1.97	2.09	1.18	0.71	1.59
B-BL30-2	1.18	1.10	0.43	0.66	0.67
B-BL40-2	1.67	1.50	0.43	1.30	1.65
B-BL60-2	2.36	2.07	0.74	1.69	5.01
F-BX10	0.41	0.75	0.14	0.27	0.02
F-BX15	0.63	0.94	0.22	0.39	0.07
F-BX20	0.83	1.18	0.22	0.39	0.18
F-BX25	1.02	1.46	0.35	0.61	0.31
F-BX35	1.42	1.46	0.52	0.80	0.83

* PU30°/PU60° / PU60°. ** Height range includes fittings.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material								MSF
BX10P	PU30°/PU60°	●		●					
BX10P	PU60°	●		●	●	●		●	●
BX15P	PU30°/PU60°	●		●					
BX15P	PU60°	●		●	●	●		●	●
BX20P	PU30°/PU60°	●		●					
BX20P	PU60°	●		●	●	●		●	●
BX25P	PU30°/PU60°	●		●					
BX25P	PU60°	●		●	●	●		●	●
BX35P	PU30°/PU60°	●		●					
BX35P	PU60°	●		●	●	●		●	●
BX52P	PU30°/PU60°	●		●					
BX52P	PU60°	●		●	●	●		●	●
BX75P	PU30°/PU60°	●		●					
BX75P	PU60°	●		●	●	●		●	●
BX110P	PU30°/PU60°	●		●					
BX110P	PU60°	●		●	●	●		●	●
BXF60P	PU60°			●					●
BXF75P	PU60°			●					●
BXF90P	PU60°			●					●

Cup	Material								MSF
BXF105P	PU60°			●					●
BL20-2	Chloroprene, CR	●				●		●	●
BL20-2	HNBR	●					●	●	
BL20-2	Silicone, SIL	●	●						
BL20-2	Silicone FDA EU, SIL FDA	●	●						
BL30-2	Chloroprene, CR	●				●		●	●
BL30-2	Silicone, SIL	●	●						
BL30-2	Silicone FDA EU, SIL FDA	●	●						
BL40-2	Chloroprene, CR	●				●		●	●
BL40-2	Silicone, SIL	●	●						
BL40-2	Silicone FDA EU, SIL FDA	●	●						
BL50-2	Chloroprene, CR	●				●		●	●
BL50-2	Silicone, SIL	●	●						
BL50-2	Silicone FDA EU, SIL FDA	●	●						
BL30-3P	PU30°/PU70°	●		●					
BL40-3P	PU30°/PU70°	●		●					
BL50-3P	PU30°/PU70°	●		●					
BL30-4	Silicone, SIL	●	●						
BL30-4	Silicone FDA EU, SIL FDA	●	●						

Cup	Material								MSF
BL40-4	Silicone, SIL	●	●						
BL40-4	Silicone FDA EU, SIL FDA	●	●						
BL50-4	Silicone, SIL	●	●						
BL50-4	Silicone FDA EU, SIL FDA	●	●						
BL30-5	Silicone, SIL	●	●						
BL30-5	Silicone FDA EU, SIL FDA	●	●						
BL40-5	Silicone, SIL	●	●						
BL40-5	Silicone FDA EU, SIL FDA	●	●						
BL50-5	Silicone, SIL	●	●						
BL50-5	Silicone FDA EU, SIL FDA	●	●						
B-BL30-2	Silicone FDA EU detectable, SIL FDA DET	●	●						
B-BL40-2	Silicone FDA EU detectable, SIL FDA DET	●	●						
B-BL60-2	Silicone FDA EU detectable, SIL FDA DET	●	●						
F-BX10	Silicone FDA EU detectable, SIL FDA DET	●	●						
F-BX15	Silicone FDA EU detectable, SIL FDA DET	●	●						
F-BX20	Silicone FDA EU detectable, SIL FDA DET	●	●						
F-BX25	Silicone FDA EU detectable, SIL FDA DET	●	●						
F-BX35	Silicone FDA EU detectable, SIL FDA DET	●	●						

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit [piab.com](https://www.piab.com).

	Dry sheet metal	Bag handling	Corrugated / cardboard	Food contact materials (FDA & EU), non-detectable	Food contact materials (FDA & EU), detectable	Mark Free	Oily sheet metal	Plastic injection molded parts
BX10P	●		●			●		●
BX15P	●		●			●		●
BX20P	●		●			●		●
BX25P	●		●			●		●
BX35P	●		●			●		●
BX52P	●		●			●		●
BX75P	●		●			●		●
BX110P	●		●			●		●
BXF60P							●	
BXF75P							●	
BXF90P							●	
BXF105P							●	
BL20-2		●		●		●		
BL30-2		●		●				
BL40-2		●		●				
BL50-2		●		●				

	Dry sheet metal	Bag handling	Corrugated / cardboard	Food contact materials (FDA & EU), non-detectable	Food contact materials (FDA & EU), detectable	Mark Free	Oily sheet metal	Plastic injection molded parts
BL30-3P		●						
BL40-3P		●						
BL50-3P		●						
BL30-4		●		●				
BL40-4		●		●				
BL50-4		●		●				
BL30-5		●		●				
BL40-5		●		●				
BL50-5		●		●				
B-BL30-2					●			
B-BL40-2					●			
B-BL60-2					●			
F-BX10					●			
F-BX15					●			
F-BX20					●			
F-BX25					●			
F-BX35					●			

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup BX10P Polyurethane 30/60	BX10P.4K
Suction cup BX10P Polyurethane 30/60, M5 male	BX10P.4K.01AC
Suction cup BX10P Polyurethane 60	BX10P.4E
Suction cup BX10P Polyurethane 60, M5 male	BX10P.4E.01AC
Suction cup BX15P Polyurethane 30/60	BX15P.4K
Suction cup BX15P Polyurethane 30/60, M5 male	BX15P.4K.01AC
Suction cup BX15P Polyurethane 60	BX15P.4E
Suction cup BX15P Polyurethane 60, M5 male	BX15P.4E.01AC
Suction cup BX20P Polyurethane 30/60	BX20P.4K
Suction cup BX20P Polyurethane 30/60, 1/8" NPT male with mesh filter	BX20P.4K.02AC
Suction cup BX20P Polyurethane 30/60, 5xM5 female	BX20P.4K.02AE
Suction cup BX20P Polyurethane 30/60, G1/8" male	BX20P.4K.02AB
Suction cup BX20P Polyurethane 30/60, G1/8" male / M5 female	BX20P.4K.02AF
Suction cup BX20P Polyurethane 30/60, G1/8" male / M5 female, with dual flow control valve	BX20P.4K.02DD
Suction cup BX20P Polyurethane 30/60, M5 female	BX20P.4K.02AA
Suction cup BX20P Polyurethane 60	BX20P.4E
Suction cup BX20P Polyurethane 60, 1/8" NPT male with mesh filter	BX20P.4E.02AC
Suction cup BX20P Polyurethane 60, 5xM5 female	BX20P.4E.02AE
Suction cup BX20P Polyurethane 60, G1/8" male	BX20P.4E.02AB

Description	Part no.
Suction cup BX20P Polyurethane 60, G1/8" male / M5 female	BX20P.4E.02AF
Suction cup BX20P Polyurethane 60, M5 female	BX20P.4E.02AA
Suction cup BX25P Polyurethane 30/60	BX25P.4K
Suction cup BX25P Polyurethane 30/60 with filter, 1/8" NPT male with mesh filter	BX25P.4K.02AC.F
Suction cup BX25P Polyurethane 30/60 with filter, 1/8" NPT male, with dual flow control valve	BX25P.4K.02DC.F
Suction cup BX25P Polyurethane 30/60 with filter, 5xM5 female	BX25P.4K.02AE.F
Suction cup BX25P Polyurethane 30/60 with filter, G1/8" male / M5 female	BX25P.4K.02AD.F
Suction cup BX25P Polyurethane 30/60 with filter, G1/8" male / M5 female, with dual flow control valve	BX25P.4K.02DD.F
Suction cup BX25P Polyurethane 30/60 with filter, G1/8" male / M5 female, with mesh filter	BX25P.4K.02AF.F
Suction cup BX25P Polyurethane 30/60 with filter, G1/8" male with mesh filter	BX25P.4K.02AB.F
Suction cup BX25P Polyurethane 30/60 with filter, G1/8" male, with dual flow control valve	BX25P.4K.02DB.F
Suction cup BX25P Polyurethane 30/60 with filter, M5 female	BX25P.4K.02AA.F
Suction cup BX25P Polyurethane 30/60, with filter	BX25P.4K.F
Suction cup BX25P Polyurethane 60	BX25P.4E
Suction cup BX25P Polyurethane 60 with filter, 1/8" NPT male with mesh filter	BX25P.4E.02AC.F
Suction cup BX25P Polyurethane 60 with filter, 1/8" NPT male, with dual flow control valve	BX25P.4E.02DC.F
Suction cup BX25P Polyurethane 60 with filter, 5xM5 female	BX25P.4E.02AE.F
Suction cup BX25P Polyurethane 60 with filter, G1/8" male	BX25P.4E.02AB.F
Suction cup BX25P Polyurethane 60 with filter, G1/8" male / M5 female	BX25P.4E.02AD.F
Suction cup BX25P Polyurethane 60 with filter, G1/8" male / M5 female, with mesh filter	BX25P.4E.02AF.F

Description	Part no.
Suction cup BX25P Polyurethane 60 with filter, G1/8" male, with dual flow control valve	BX25P.4E.02DB.F
Suction cup BX25P Polyurethane 60 with filter, M5 female	BX25P.4E.02AA.F
Suction cup BX25P Polyurethane 60, with filter	BX25P.4E.F
Suction cup BX35P, Polyurethane 30/60	BX35P.4K
Suction cup BX35P Polyurethane 30/60 with filter, 1/4" NPT male, with dual flow control valve	BX35P.4K.04DC.F
Suction cup BX35P Polyurethane 30/60 with filter, 1/4" NPT male, with mesh filter	BX35P.4K.04AC.F
Suction cup BX35P Polyurethane 30/60 with filter, 1/8" NPSF female	BX35P.4K.04AA.F
Suction cup BX35P Polyurethane 30/60 with filter, 1/8" NPSF female, with mesh filter	BX35P.4K.04AG.F
Suction cup BX35P Polyurethane 30/60 with filter, 1/8" NPSF female, with dual flow control valve	BX35P.4K.04DA.F
Suction cup BX35P Polyurethane 30/60 with filter, 3/8" NPT male, with dual flow control valve	BX35P.4K.04DE.F
Suction cup BX35P Polyurethane 30/60 with filter, 3/8" NPT male, with mesh filter	BX35P.4K.04AE.F
Suction cup BX35P Polyurethane 30/60 with filter, G1/4" male, with dual flow control valve	BX35P.4K.04DB.F
Suction cup BX35P Polyurethane 30/60 with filter, G1/4" male, with mesh filter	BX35P.4K.04AB.F
Suction cup BX35P Polyurethane 30/60 with filter, G1/8" male, with mesh filter	BX35P.4K.04AI.F
Suction cup BX35P Polyurethane 30/60 with filter, G3/8" male, mesh filter, dual flow control valve	BX35P.4K.04DD.F
Suction cup BX35P Polyurethane 30/60 with filter, G3/8" male, with mesh filter	BX35P.4K.04AD.F
Suction cup BX35P Polyurethane 30/60, with filter	BX35P.4K.F
Suction cup BX35P, Polyurethane 60	BX35P.4E
Suction cup BX35P Polyurethane 60 with filter, 1/4" NPT male, with dual flow control valve	BX35P.4E.04DC.F
Suction cup BX35P Polyurethane 60 with filter, 1/4" NPT male, with mesh filter	BX35P.4E.04AC.F
Suction cup BX35P Polyurethane 60 with filter, 1/8" NPSF female	BX35P.4E.04AA.F

Description	Part no.
Suction cup BX35P Polyurethane 60 with filter, 1/8" NPSF female, with dual flow control valve	BX35P.4E.04DA.F
Suction cup BX35P Polyurethane 60 with filter, 1/8" NPSF female. with mesh filter	BX35P.4E.04AG.F
Suction cup BX35P Polyurethane 60 with filter, 3/8" NPT male, with dual flow control valve	BX35P.4E.04DE.F
Suction cup BX35P Polyurethane 60 with filter, 3/8" NPT male, with mesh filter	BX35P.4E.04AE.F
Suction cup BX35P Polyurethane 60 with filter, G1/4" male, with dual flow control valve	BX35P.4E.04DB.F
Suction cup BX35P Polyurethane 60 with filter, G1/4" male, with mesh filter	BX35P.4E.04AB.F
Suction cup BX35P Polyurethane 60 with filter, G1/8" male, with mesh filter	BX35P.4E.04AI.F
Suction cup BX35P Polyurethane 60 with filter, G3/8" male, with mesh filter	BX35P.4E.04AD.F
Suction cup BX35P Polyurethane 60 with filter, G3/8" male, with mesh filter and dual flow control valve	BX35P.4E.04DD.F
Suction cup BX35P Polyurethane 60, with filter	BX35P.4E.F
Suction cup BX52P Polyurethane 30/60	BX52P.4K
Suction cup BX52P Polyurethane 30/60 with filter, 1/4" NPT male, with dual flow control valve	BX52P.4K.05DC.F
Suction cup BX52P Polyurethane 30/60 with filter, 1/4" NPT male, with mesh filter	BX52P.4K.05AC.F
Suction cup BX52P Polyurethane 30/60 with filter, 1/8" NPSF female	BX52P.4K.05AA.F
Suction cup BX52P Polyurethane 30/60 with filter, 1/8" NPSF female, with mesh filter	BX52P.4K.05AG.F
Suction cup BX52P Polyurethane 30/60 with filter, 1/8" NPSF female, with dual flow control valve	BX52P.4K.05DA.F
Suction cup BX52P Polyurethane 30/60 with filter, 3/8" NPT male, with dual flow control valve	BX52P.4K.05DE.F
Suction cup BX52P Polyurethane 30/60 with filter, 3/8" NPT male, with mesh filter	BX52P.4K.05AE.F
Suction cup BX52P Polyurethane 30/60 with filter, 5x1/8" NPSF female	BX52P.4K.05AF.F
Suction cup BX52P Polyurethane 30/60 with filter, 5x1/8" NPSF female, with dual flow control valve	BX52P.4K.05DF.F

Description	Part no.
Suction cup BX52P Polyurethane 30/60 with filter, G1/4" male, with dual flow control valve	BX52P.4K.05DB.F
Suction cup BX52P Polyurethane 30/60 with filter, G1/4" male, with mesh filter	BX52P.4K.05AB.F
Suction cup BX52P Polyurethane 30/60 with filter, G1/8" male, with mesh filter	BX52P.4K.05AI.F
Suction cup BX52P Polyurethane 30/60 with filter, G3/8" male, with dual flow control valve	BX52P.4K.05DD.F
Suction cup BX52P Polyurethane 30/60 with filter, G3/8" male, with mesh filter	BX52P.4K.05AD.F
Suction cup BX52P Polyurethane 30/60, with filter	BX52P.4K.F
Suction cup BX52P Polyurethane 60	BX52P.4E
Suction cup BX52P Polyurethane 60 with filter, 1/4" NPT male, with dual flow control valve	BX52P.4E.05DC.F
Suction cup BX52P Polyurethane 60 with filter, 1/4" NPT male, with mesh filter	BX52P.4E.05AC.F
Suction cup BX52P Polyurethane 60 with filter, 1/8" NPSF female	BX52P.4E.05AA.F
Suction cup BX52P Polyurethane 60 with filter, 1/8" NPSF female, with mesh filter	BX52P.4E.05AG.F
Suction cup BX52P Polyurethane 60 with filter, 3/8" NPT male, with dual flow control valve	BX52P.4E.05DE.F
Suction cup BX52P Polyurethane 60 with filter, 3/8" NPT male, with mesh filter	BX52P.4E.05AE.F
Suction cup BX52P Polyurethane 60 with filter, 5x1/8" NPSF female	BX52P.4E.05AF.F
Suction cup BX52P Polyurethane 60 with filter, 5x1/8" NPSF female, with dual flow control valve	BX52P.4E.05DF.F
Suction cup BX52P Polyurethane 60 with filter, G1/4" male, with dual flow control valve	BX52P.4E.05DB.F
Suction cup BX52P Polyurethane 60 with filter, G1/4" male, with mesh filter	BX52P.4E.05AB.F
Suction cup BX52P Polyurethane 60 with filter, G1/8" male, with mesh filter	BX52P.4E.05AI.F
Suction cup BX52P Polyurethane 60 with filter, G3/8" male, with dual flow control valve	BX52P.4E.05DD.F
Suction cup BX52P Polyurethane 60 with filter, G3/8" male, with mesh filter	BX52P.4E.05AD.F
Suction cup BX52P Polyurethane 60, with filter	BX52P.4E.F

Description	Part no.
Suction cup BX75P Polyurethane 30/60 with filter, 3/8" NPSF female	BX75P.5K.N40W.F
Suction cup BX75P Polyurethane 30/60 with filter, for thread insert	BX75P.5K.F
Suction cup BX75P Polyurethane 30/60 with filter, G3/8" male / 1/8" NPSF female	BX75P.4K.07UF.F
Suction cup BX75P Polyurethane 30/60 with filter, thread insert G1/4" male	BX75P.5K.G59.F
Suction cup BX75P Polyurethane 30/60 with filter, thread insert G1/8" male	BX75P.5K.G60.F
Suction cup BX75P Polyurethane 30/60 with filter, thread insert G3/8" male	BX75P.5K.G40W.F
Suction cup BX75P Polyurethane 30/60, G3/8" male / 1/8" NPSF female	BX75P.4K.07UF
Suction cup BX75P Polyurethane 60 with filter, 3/8" NPSF female	BX75P.5E.N40W.F
Suction cup BX75P Polyurethane 60 with filter, for thread insert	BX75P.5E.F
Suction cup BX75P Polyurethane 60 with filter, thread insert G1/4" male	BX75P.5E.G59.F
Suction cup BX75P Polyurethane 60 with filter, thread insert G1/8" male	BX75P.5E.G60.F
Suction cup BX75P Polyurethane 60 with filter, thread insert G3/8" male	BX75P.5E.G40W.F
Suction cup BX110P Polyurethane 30/60	BX110P.5K
Suction cup BX110P Polyurethane 30/60 with filter, 3/8" NPSF female	BX110P.5K.N40W.F
Suction cup BX110P Polyurethane 30/60 with filter, thread insert G3/8" male	BX110P.5K.G40W.F
Suction cup BX110P Polyurethane 30/60, with filter	BX110P.5K.F
Suction cup BX110P Polyurethane 60 with filter, 3/8" NPSF female	BX110P.5E.N40W.F
Suction cup BX110P Polyurethane 60 with filter, thread insert G3/8" male	BX110P.5E.G40W.F
Suction cup BX110P Polyurethane 60, with filter	BX110P.5E.F
Suction cup BXF60P Polyurethane 60, 3/8" NPT female with mesh filter	BXF60P.5Y.N49MR
Suction cup BXF60P Polyurethane 60, G1/4" female with mesh filter	BXF60P.5Y.G75MR

Description	Part no.
Suction cup BXF60P Polyurethane 60, G1/4" male with mesh filter	BXF60P.5Y.G79MR
Suction cup BXF60P Polyurethane 60, G3/8" female plastic thread	BXF60P.5Y.G68WC
Suction cup BXF60P Polyurethane 60, G3/8" female with mesh filter	BXF60P.5Y.G77MR
Suction cup BXF60P Polyurethane 60, G3/8" female with mesh filter, 17 mm thread	BXF60P.5Y.G78MR
Suction cup BXF60P Polyurethane 60, G3/8" male with mesh filter	BXF60P.5Y.G69MR
Suction cup BXF60P Polyurethane 60, M10×1,5 male with mesh filter	BXF60P.5Y.M10MR
Suction cup BXF60P Polyurethane 60, T-slot with mesh filter	BXF60P.5Y.T2MR
Suction cup BXF75P Polyurethane 60, 3/8" NPT female with mesh filter	BXF75P.5Y.N49MR
Suction cup BXF75P Polyurethane 60, G1/4" female with mesh filter	BXF75P.5Y.G75MR
Suction cup BXF75P Polyurethane 60, G1/4" male with mesh filter	BXF75P.5Y.G79MR
Suction cup BXF75P Polyurethane 60, G3/8" female plastic thread	BXF75P.5Y.G68WC
Suction cup BXF75P Polyurethane 60, G3/8" female with mesh filter	BXF75P.5Y.G77MR
Suction cup BXF75P Polyurethane 60, G3/8" female with mesh filter, 17 mm thread	BXF75P.5Y.G78MR
Suction cup BXF75P Polyurethane 60, G3/8" male with mesh filter	BXF75P.5Y.G69MR
Suction cup BXF75P Polyurethane 60, M10×1,5 male with mesh filter	BXF75P.5Y.M10MR
Suction cup BXF75P Polyurethane 60, T-slot with mesh filter	BXF75P.5Y.T2MR
Suction cup BXF90P Polyurethane 60, 3/8" NPT female with mesh filter	BXF90P.5Y.N49MR
Suction cup BXF90P Polyurethane 60, G1/4" female with mesh filter	BXF90P.5Y.G75MR
Suction cup BXF90P Polyurethane 60, G1/4" male with mesh filter	BXF90P.5Y.G79MR
Suction cup BXF90P Polyurethane 60, G3/8" female plastic thread	BXF90P.5Y.G44WC
Suction cup BXF90P Polyurethane 60, G3/8" female with mesh filter	BXF90P.5Y.G77MR

Description	Part no.
Suction cup BXF90P Polyurethane 60, G3/8" female with mesh filter, 17 mm thread	BXF90P.5Y.G78MR
Suction cup BXF90P Polyurethane 60, G3/8" male with mesh filter	BXF90P.5Y.G69MR
Suction cup BXF90P Polyurethane 60, M10×1,5 male with mesh filter	BXF90P.5Y.M10MR
Suction cup BXF90P Polyurethane 60, T-slot with mesh filter	BXF90P.5Y.T2MR
Suction cup BXF105P Polyurethane 60, 3/8" NPT female with mesh filter	BXF105P.5Y.N49MR
Suction cup BXF105P Polyurethane 60, G1/4" female with mesh filter	BXF105P.5Y.G75MR
Suction cup BXF105P Polyurethane 60, G1/4" male with mesh filter	BXF105P.5Y.G79MR
Suction cup BXF105P Polyurethane 60, G3/8" female plastic thread	BXF105P.5Y.G44WC
Suction cup BXF105P Polyurethane 60, G3/8" female with mesh filter	BXF105P.5Y.G77MR
Suction cup BXF105P Polyurethane 60, G3/8" female with mesh filter, 17 mm thread	BXF105P.5Y.G78MR
Suction cup BXF105P Polyurethane 60, G3/8" male with mesh filter	BXF105P.5Y.G69MR
Suction cup BXF105P Polyurethane 60, M10×1,5 male with mesh filter	BXF105P.5Y.M10MR
Suction cup BXF105P Polyurethane 60, T-slot with mesh filter	BXF105P.5Y.T2MR
Suction cup BL20-2 Chloroprene	BL20-2.10
Suction cup BL20-2 Chloroprene, 1/8" NPT male, with mesh filter	BL20-2.10.02AC
Suction cup BL20-2 Chloroprene, 5xM5 female	BL20-2.10.02AE
Suction cup BL20-2 Chloroprene, G1/8" male, with mesh filter	BL20-2.10.02AB
Suction cup BL20-2 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	BL20-2.10.02DB
Suction cup BL20-2 Chloroprene, G1/8" male/M5 female	BL20-2.10.02AD
Suction cup BL20-2 Chloroprene, G1/8" male/M5 female, PA	BL20-2.10.02CD
Suction cup BL20-2 Chloroprene, G1/8" male/M5 female, with dual flow control valve	BL20-2.10.02DD

Description	Part no.
Suction cup BL20-2 Chloroprene, G1/8" male/M5 female, with mesh filter	BL20-2.10.02AF
Suction cup BL20-2 Chloroprene, M5 female	BL20-2.10.02AA
Suction cup BL20-2 HNBR	BL20-2.37
Suction cup BL20-2 HNBR, 1/8" NPT male, with mesh filter	BL20-2.47.02AC
Suction cup BL20-2 HNBR, 5xM5 female	BL20-2.47.02AE
Suction cup BL20-2 HNBR, 5xM5 female, with dual flow control valve	BL20-2.47.02DE
Suction cup BL20-2 HNBR, G1/8" male, with mesh filter	BL20-2.47.02AB
Suction cup BL20-2 HNBR, G1/8" male, with mesh filter and dual flow control valve	BL20-2.47.02DB
Suction cup BL20-2 HNBR, G1/8" male/M5 female	BL20-2.47.02AD
Suction cup BL20-2 HNBR, G1/8" male/M5 female, PA	BL20-2.47.02CD
Suction cup BL20-2 HNBR, G1/8" male/M5 female, with dual flow control valve	BL20-2.47.02DD
Suction cup BL20-2 HNBR, G1/8" male/M5 female, with mesh filter	BL20-2.47.02AF
Suction cup BL20-2 HNBR, M5 female	BL20-2.47.02AA
Suction cup BL20-2 HNBR, M5 female, with dual flow control valve	BL20-2.47.02DA
Suction cup BL20-2 Silicone	BL20-2.20
Suction cup BL20-2 Silicone FCM	BL20-2.21
Suction cup BL20-2 Silicone FCM, 1/8" NPT male, with mesh filter	BL20-2.21.02AC
Suction cup BL20-2 Silicone FCM, G1/8" male, with mesh filter	BL20-2.21.02AB
Suction cup BL20-2 Silicone FCM, G1/8" male/M5 female, with mesh filter	BL20-2.21.02AF
Suction cup BL20-2 Silicone, 1/8" NPT male, with mesh filter	BL20-2.20.02AC
Suction cup BL20-2 Silicone, 5xM5 female	BL20-2.20.02AE

Description	Part no.
Suction cup BL20-2 Silicone, G1/8" male, with mesh filter	BL20-2.20.02AB
Suction cup BL20-2 Silicone, G1/8" male, with mesh filter and dual flow control valve	BL20-2.20.02DB
Suction cup BL20-2 Silicone, G1/8" male/M5 female	BL20-2.20.02AD
Suction cup BL20-2 Silicone, G1/8" male/M5 female, PA	BL20-2.20.02CD
Suction cup BL20-2 Silicone, G1/8" male/M5 female, with mesh filter	BL20-2.20.02AF
Suction cup BL20-2 Silicone, M5 female	BL20-2.20.02AA
Suction cup BL20-2 Silicone, M5 female, with dual flow control valve	BL20-2.20.02DA
Suction cup BL30-2 Chloroprene	BL30-2.10
Suction cup BL30-2 Chloroprene, 1/4" NPT male, with mesh filter	BL30-2.10.04AC
Suction cup BL30-2 Chloroprene, 1/8" NPSF female	BL30-2.10.04AA
Suction cup BL30-2 Chloroprene, 1/8" NPSF female, PA	BL30-2.10.04CA
Suction cup BL30-2 Chloroprene, 1/8" NPSF female, with dual flow control valve	BL30-2.10.04DA
Suction cup BL30-2 Chloroprene, 1/8" NPSF female, with mesh filter	BL30-2.10.04AG
Suction cup BL30-2 Chloroprene, G1/4" male, with mesh filter	BL30-2.10.04AB
Suction cup BL30-2 Chloroprene, G1/4" male, with mesh filter and dual flow control valve	BL30-2.10.04DB
Suction cup BL30-2 Chloroprene, G3/8" male, with mesh filter	BL30-2.10.04AD
Suction cup BL30-2 Chloroprene, NPT3/8" male, with mesh filter	BL30-2.10.04AE
Suction cup BL30-2 Silicone	BL30-2.20
Suction cup BL30-2 Silicone FCM	BL30-2.21
Suction cup BL30-2 Silicone FCM, 1/4" NPT male, with mesh filter	BL30-2.21.04AC
Suction cup BL30-2 Silicone FCM, 1/8" NPSF female, with mesh filter	BL30-2.21.04AG

Description	Part no.
Suction cup BL30-2 Silicone FCM, G1/4" male, with mesh filter	BL30-2.21.04AB
Suction cup BL30-2 Silicone, 1/4" NPT male, with dual flow control valve	BL30-2.20.04DC
Suction cup BL30-2 Silicone, 1/4" NPT male, with mesh filter	BL30-2.20.04AC
Suction cup BL30-2 Silicone, 1/8" NPSF female	BL30-2.20.04AA
Suction cup BL30-2 Silicone, 1/8" NPSF female, PA	BL30-2.20.04CA
Suction cup BL30-2 Silicone, 1/8" NPSF female, with dual flow control valve	BL30-2.20.04DA
Suction cup BL30-2 Silicone, 1/8" NPSF female, with mesh filter	BL30-2.20.04AG
Suction cup BL30-2 Silicone, 5x1/8" NPSF female	BL30-2.20.04AF
Suction cup BL30-2 Silicone, G1/4" male, with mesh filter	BL30-2.20.04AB
Suction cup BL30-2 Silicone, G1/4" male, with mesh filter and dual flow control valve	BL30-2.20.04DB
Suction cup BL30-2 Silicone, G3/8" male, with mesh filter	BL30-2.20.04AD
Suction cup BL30-2 Silicone, NPT3/8" male, with mesh filter	BL30-2.20.04AE
Suction cup BL40-2 Chloroprene	BL40-2.10
Suction cup BL40-2 Chloroprene, 1/4" NPT male, with dual flow control valve	BL40-2.10.04DC
Suction cup BL40-2 Chloroprene, 1/4" NPT male, with mesh filter	BL40-2.10.04AC
Suction cup BL40-2 Chloroprene, 1/8" NPSF female	BL40-2.10.04AA
Suction cup BL40-2 Chloroprene, 1/8" NPSF female, PA	BL40-2.10.04CA
Suction cup BL40-2 Chloroprene, 1/8" NPSF female, with dual flow control valve	BL40-2.10.04DA
Suction cup BL40-2 Chloroprene, 5x1/8" NPSF female	BL40-2.10.04AF
Suction cup BL40-2 Chloroprene, 5x1/8" NPSF female, with dual flow control valve	BL40-2.10.04DF
Suction cup BL40-2 Chloroprene, G1/4" male, with mesh filter	BL40-2.10.04AB

Description	Part no.
Suction cup BL40-2 Chloroprene, G1/4" male, with mesh filter and dual flow control valve	BL40-2.10.04DB
Suction cup BL40-2 Chloroprene, G3/8" male, with mesh filter	BL40-2.10.04AD
Suction cup BL40-2 Chloroprene, G3/8" male, with mesh filter and dual flow control valve	BL40-2.10.04DD
Suction cup BL40-2 Chloroprene, NPT3/8" male, with dual flow control valve	BL40-2.10.04DE
Suction cup BL40-2 Chloroprene, NPT3/8" male, with mesh filter	BL40-2.10.04AE
Suction cup BL40-2 Silicone	BL40-2.20
Suction cup BL40-2 Silicone FCM	BL40-2.21
Suction cup BL40-2 Silicone FCM, 1/4" NPT male, with mesh filter	BL40-2.21.04AC
Suction cup BL40-2 Silicone FCM, 1/8" NPSF female, with mesh filter	BL40-2.21.04AG
Suction cup BL40-2 Silicone FCM, G1/4" male, with mesh filter	BL40-2.21.04AB
Suction cup BL40-2 Silicone, 1/4" NPT male, with dual flow control valve	BL40-2.20.04DC
Suction cup BL40-2 Silicone, 1/4" NPT male, with mesh filter	BL40-2.20.04AC
Suction cup BL40-2 Silicone, 1/8" NPSF female	BL40-2.20.04AA
Suction cup BL40-2 Silicone, 1/8" NPSF female, PA	BL40-2.20.04CA
Suction cup BL40-2 Silicone, 1/8" NPSF female, with dual flow control valve	BL40-2.20.04DA
Suction cup BL40-2 Silicone, 1/8" NPSF female, with mesh filter	BL40-2.20.04AG
Suction cup BL40-2 Silicone, 5x1/8" NPSF female	BL40-2.20.04AF
Suction cup BL40-2 Silicone, 5x1/8" NPSF female, with dual flow control valve	BL40-2.20.04DF
Suction cup BL40-2 Silicone, G1/4" male, with mesh filter	BL40-2.20.04AB
Suction cup BL40-2 Silicone, G1/4" male, with mesh filter and dual flow control valve	BL40-2.20.04DB
Suction cup BL40-2 Silicone, G3/8" male, with mesh filter	BL40-2.20.04AD

Description	Part no.
Suction cup BL40-2 Silicone, G3/8" male, with mesh filter and dual flow control valve	BL40-2.20.04DD
Suction cup BL40-2 Silicone, NPT3/8" male, with dual flow control valve	BL40-2.20.04DE
Suction cup BL40-2 Silicone, NPT3/8" male, with mesh filter	BL40-2.20.04AE
Suction cup BL40-2 Chloroprene, 1/8" NPSF female, with mesh filter	BL40-2.10.04AG
Suction cup BL50-2 Chloroprene	BL50-2.10
Suction cup BL50-2 Chloroprene, 1/4" NPT male, with mesh filter	BL50-2.10.05AC
Suction cup BL50-2 Chloroprene, 1/8" NPSF female	BL50-2.10.05AA
Suction cup BL50-2 Chloroprene, 1/8" NPSF female, PA	BL50-2.10.05CA
Suction cup BL50-2 Chloroprene, 1/8" NPSF female, with dual flow control valve	BL50-2.10.05DA
Suction cup BL50-2 Chloroprene, 1/8" NPSF female, with mesh filter	BL50-2.10.05AG
Suction cup BL50-2 Chloroprene, 5x1/8" NPSF female	BL50-2.10.05AF
Suction cup BL50-2 Chloroprene, G1/4" male, with mesh filter	BL50-2.10.05AB
Suction cup BL50-2 Chloroprene, G1/4" male, with mesh filter and dual flow control valve	BL50-2.10.05DB
Suction cup BL50-2 Chloroprene, G3/8" male, with mesh filter	BL50-2.10.05AD
Suction cup BL50-2 Chloroprene, G3/8" male, with mesh filter and dual flow control valve	BL50-2.10.05DD
Suction cup BL50-2 Silicone	BL50-2.20
Suction cup BL50-2 Silicone FCM	BL50-2.21
Suction cup BL50-2 Silicone FCM, 1/4" NPT male, with mesh filter	BL50-2.21.05AC
Suction cup BL50-2 Silicone FCM, 1/8" NPSF female, with mesh filter	BL50-2.21.05AG
Suction cup BL50-2 Silicone FCM, G1/4" male, with mesh filter	BL50-2.21.05AB
Suction cup BL50-2 Silicone, 1/4" NPT male, with dual flow control valve	BL50-2.20.05DC

Description	Part no.
Suction cup BL50-2 Silicone, 1/4" NPT male, with mesh filter	BL50-2.20.05AC
Suction cup BL50-2 Silicone, 1/8" NPSF female	BL50-2.20.05AA
Suction cup BL50-2 Silicone, 1/8" NPSF female, PA	BL50-2.20.05CA
Suction cup BL50-2 Silicone, 1/8" NPSF female, with dual flow control valve	BL50-2.20.05DA
Suction cup BL50-2 Silicone, 1/8" NPSF female, with mesh filter	BL50-2.20.05AG
Suction cup BL50-2 Silicone, G1/4" male, with mesh filter	BL50-2.20.05AB
Suction cup BL50-2 Silicone, G3/8" male, with mesh filter	BL50-2.20.05AD
Suction cup BL50-2 Silicone, NPT3/8" male, with mesh filter	BL50-2.20.05AE
Suction cup BL30-3P Polyurethane 30/70	BL30-3P.4L
Suction cup BL30-3P Polyurethane 30/70, G3/8" male	BL30-3P.4L.04AJ
Suction cup BL30-3P Polyurethane 30/70, 3/8" NPT male	BL30-3P.4L.04AL
Suction cup BL40-3P Polyurethane 30/70	BL40-3P.4L
Suction cup BL40-3P Polyurethane 30/70, 3/8" NPT male	BL40-3P.4L.04AL
Suction cup BL40-3P Polyurethane 30/70, G3/8" male	BL40-3P.4L.04AJ
Suction cup BL50-3P Polyurethane 30/70	BL50-3P.4L
Suction cup BL50-3P Polyurethane 30/70, G1/2" male	BL50-3P.4L.05AJ
Suction cup BL50-3P Polyurethane 30/70, 1/2" NPT male	BL50-3P.4L.05AL
Suction cup BL30-4 Silicone	BL30-4.20
Suction cup BL30-4 Silicone, G1/4" male	BL30-4.20.04AZ
Suction cup BL30-4 Silicone, 1/4" NPT male	BL30-4.20.04FC
Suction cup BL30-4 Silicone FCM	BL30-4.21

Description	Part no.
Suction cup BL30-4 Silicone FCM, G1/4" male	BL30-4.21.04AZ
Suction cup BL30-4 Silicone FCM, 1/4" NPT male	BL30-4.21.04FC
Suction cup BL40-4 Silicone	BL40-4.20
Suction cup BL40-4 Silicone, G3/8" male	BL40-4.20.04AJ
Suction cup BL40-4 Silicone, 3/8" NPT male	BL40-4.20.04AL
Suction cup BL40-4 Silicone FCM	BL40-4.21
Suction cup BL40-4 Silicone FCM, G3/8" male	BL40-4.21.04AJ
Suction cup BL40-4 Silicone FCM, 3/8" NPT male	BL40-4.21.04AL
Suction cup BL50-4 Silicone, G1/2" male	BL50-4.20.05AJ
Suction cup BL50-4 Silicone, 1/2" NPT male	BL50-4.20.05AL
Suction cup BL50-4 Silicone FCM	BL50-4.21
Suction cup BL50-4 Silicone FCM, G1/2" male	BL50-4.21.05AJ
Suction cup BL50-4 Silicone FCM, 1/2" NPT male	BL50-4.21.05AL
Suction cup BL30-5 Silicone	BL30-5.20
Suction cup BL30-5 Silicone FCM	BL30-5.21
Suction cup BL30-5 Silicone FCM, 1/4" NPT male	BL30-5.21.04FC
Suction cup BL30-5 Silicone FCM, G1/4" male	BL30-5.21.04AZ
Suction cup BL30-5 Silicone, 1/4" NPT male	FCF100P.5RC.G56WC
Suction cup BL30-5 Silicone, 1/4" NPT male	BL30-5.20.04FC
Suction cup BL30-5 Silicone, G1/4" male	BL30-5.20.04AZ
Suction cup BL40-5 Silicone	BL40-5.20

Description	Part no.
Suction cup BL40-5 Silicone, G3/8" male	BL40-5.20.04AJ
Suction cup BL40-5 Silicone, 3/8" NPT male	BL40-5.20.04AL
Suction cup BL40-5 Silicone FCM	BL40-5.21
Suction cup BL40-5 Silicone FCM, G3/8" male	BL40-5.21.04AJ
Suction cup BL40-5 Silicone FCM, 3/8" NPT male	BL40-5.21.04AL
Suction cup BL50-5 Silicone	BL50-5.20
Suction cup BL50-5 Silicone FCM	BL50-5.21
Suction cup BL50-5 Silicone FCM, 1/2" NPT male	BL50-5.21.05AL
Suction cup BL50-5 Silicone FCM, G1/2" male	BL50-5.21.05AJ
Suction cup BL50-5 Silicone, 1/2" NPT male	BL50-5.20.05AL
Suction cup BL50-5 Silicone, G1/2" male	BL50-5.20.05AJ
Suction cup B-BL30-2 Silicone, detectable, FCM	BBL30-2.DS40
Suction cup B-BL30-2 Silicone, 1/2" NPT male composite detectable, FCM	BBL30-2.DS40.NT12MDC.00
Suction cup B-BL30-2 Silicone, 1/2" NPT male SS detectable, FCM	BBL30-2.DS40.NT12MSS.00
Suction cup B-BL30-2 Silicone, 3/8" NPT male composite detectable, FCM	BBL30-2.DS40.NT38MDC.00
Suction cup B-BL30-2 Silicone, 3/8" NPT male SS detectable, FCM	BBL30-2.DS40.NT38MSS.00
Suction cup B-BL30-2 Silicone, G1/2" male composite detectable, FCM	BBL30-2.DS40.G12MDC.00
Suction cup B-BL30-2 Silicone, G1/2" male SS detectable, FCM	BBL30-2.DS40.G12MSS.00
Suction cup B-BL30-2 Silicone, G3/8" male composite detectable, FCM	BBL30-2.DS40.G38MDC.00
Suction cup B-BL30-2 Silicone, G3/8" male SS detectable, FCM	BBL30-2.DS40.G38MSS.00
Suction cup B-BL30-2 Silicone, with retainer clip, detectable FCM	BBL30-2DS40.RD9XDC.00

Description	Part no.
Suction cup B-BL40-2 Silicone, detectable, FCM	BBL40-2.DS40
Suction cup B-BL40-2 Silicone, 1/2" NPT male composite detectable, FCM	BBL40-2.DS40.NT12MDC.00
Suction cup B-BL40-2 Silicone, 1/2" NPT male SS detectable, FCM	BBL40-2.DS40.NT12MSS.00
Suction cup B-BL40-2 Silicone, 3/8" NPT male composite detectable, FCM	BBL40-2.DS40.NT38MDC.00
Suction cup B-BL40-2 Silicone, 3/8" NPT male SS detectable, FCM	BBL40-2.DS40.NT38MSS.00
Suction cup B-BL40-2 Silicone, G1/2" male composite detectable, FCM	BBL40-2.DS40.G12MDC.00
Suction cup B-BL40-2 Silicone, G1/2" male SS detectable, FCM	BBL40-2.DS40.G12MSS.00
Suction cup B-BL40-2 Silicone, G3/8" male composite detectable, FCM	BBL40-2.DS40.G38MDC.00
Suction cup B-BL40-2 Silicone, G3/8" male SS detectable, FCM	BBL40-2.DS40.G38MSS.00
Suction cup B-BL40-2 Silicone, with retainer clip, detectable, FCM	BBL40-2.DS40.RD9XDC.00
Suction cup B-BL60-2 Silicone, detectable, FCM	BBL60-2.DS40
Suction cup B-BL60-2 Silicone, 1/2" NPT male composite detectable, FCM	BBL60-2.DS40.NT12MDC.00
Suction cup B-BL60-2 Silicone, 1/2" NPT male SS detectable, FCM	BBL60-2.DS40.NT12MSS.00
Suction cup B-BL60-2 Silicone, 3/8" NPT male composite detectable, FCM	BBL60-2.DS40.NT38MDC.00
Suction cup B-BL60-2 Silicone, 3/8" NPT male SS detectable, FCM	BBL60-2.DS40.NT38MSS.00
Suction cup B-BL60-2 Silicone, G1/2" male SS detectable, FCM	BBL60-2.DS40.G12MSS.00
Suction cup B-BL60-2 Silicone, G1/2" male, composite detectable, FCM	BBL60-2.DS40.G12MDC.00
Suction cup B-BL60-2 Silicone, G3/8" male SS detectable, FCM	BBL60-2.DS40.G38MSS.00
Suction cup B-BL60-2 Silicone, G3/8" male, composite detectable, FCM	BBL60-2.DS40.G38MDC.00
Suction cup B-BL60-2 Silicone, with retainer clip, detectable, FCM	BBL60-2.DS40.RD9XDC.00
Suction cup F-BX10 Silicone detectable, FCM	FBX10.DS40

Description	Part no.
Suction cup F-BX10 Silicone 1/8" NPT male composite, detectable, FCM	FBX10.DS40.NT18MDC.00
Suction cup F-BX10 Silicone 1/8" NPT male SS, detectable, FCM	FBX10.DS40.NT18MSS.00
Suction cup F-BX10 Silicone G1/8" male composite, detectable, FCM	FBX10.DS40.G18MDC.00
Suction cup F-BX10 Silicone G1/8" male SS, detectable, FCM	FBX10.DS40.G18MSS.00
Suction cup F-BX10 Silicone M5 male composite, detectable, FCM	FBX10.DS40.M5MDC.00
Suction cup F-BX10 Silicone M5 male SS, detectable, FCM	FBX10.DS40.M5MSS.00
Suction cup F-BX15 Silicone detectable, FCM	FBX15.DS40
Suction cup F-BX15 Silicone 1/4" NPT male composite, detectable, FCM	FBX15.DS40.NT14MDC.00
Suction cup F-BX15 Silicone 1/4" NPT male SS, detectable, FCM	FBX15.DS40.NT14MSS.00
Suction cup F-BX15 Silicone 1/8" NPT male composite, detectable, FCM	FBX15.DS40.NT18MDC.00
Suction cup F-BX15 Silicone 1/8" NPT male SS, detectable, FCM	FBX15.DS40.NT18MSS.00
Suction cup F-BX15 Silicone G1/4" male composite, detectable, FCM	FBX15.DS40.G14MDC.00
Suction cup F-BX15 Silicone G1/4" male SS, detectable, FCM	FBX15.DS40.G14MSS.00
Suction cup F-BX15 Silicone G1/8" male composite, detectable, FCM	FBX15.DS40.G18MDC.00
Suction cup F-BX15 Silicone G1/8" male SS, detectable, FCM	FBX15.DS40.G18MSS.00
Suction cup F-BX20 Silicone detectable, FCM	FBX20.DS40
Suction cup F-BX20 Silicone 1/4" NPT male composite, detectable, FCM	FBX20.DS40.NT14MDC.00
Suction cup F-BX20 Silicone 1/4" NPT male SS, detectable, FCM	FBX20.DS40.NT14MSS.00
Suction cup F-BX20 Silicone 1/8" NPT male composite, detectable, FCM	FBX20.DS40.NT18MDC.00
Suction cup F-BX20 Silicone 1/8" NPT male SS, detectable, FCM	FBX20.DS40.NT18MSS.00
Suction cup F-BX20 Silicone G1/4" male composite, detectable, FCM	FBX20.DS40.G14MDC.00

Description	Part no.
Suction cup F-BX20 Silicone G1/4" male SS, detectable, FCM	FBX20.DS40.G14MSS.00
Suction cup F-BX20 Silicone G1/8" male composite, detectable, FCM	FBX20.DS40.G18MDC.00
Suction cup F-BX20 Silicone G1/8" male SS, detectable, FCM	FBX20.DS40.G18MSS.00
Suction cup F-BX25 Silicone detectable, FCM	FBX25.DS40
Suction cup F-BX25 Silicone 1/4" NPT male composite, detectable, FCM	FBX25.DS40.NT14MDC.00
Suction cup F-BX25 Silicone 1/4" NPT male SS, detectable, FCM	FBX25.DS40.NT14MSS.00
Suction cup F-BX25 Silicone 3/8" NPT male composite, detectable, FCM	FBX25.DS40.NT38MDC.00
Suction cup F-BX25 Silicone 3/8" NPT male SS, detectable, FCM	FBX25.DS40.NT38MSS.00
Suction cup F-BX25 Silicone G1/4" male composite, detectable, FCM	FBX25.DS40.G14MDC.00
Suction cup F-BX25 Silicone G1/4" male SS, detectable, FCM	FBX25.DS40.G14MSS.00
Suction cup F-BX25 Silicone G3/8" male composite, detectable, FCM	FBX25.DS40.G38MDC.00
Suction cup F-BX25 Silicone G3/8" male SS, detectable, FCM	FBX25.DS40.G38MSS.00
Suction cup F-BX35 Silicone detectable, FCM	FBX35.DS40
Suction cup F-BX35 Silicone 1/4" NPT male composite, detectable, FCM	FBX35.DS40.NT14MDC.00
Suction cup F-BX35 Silicone 1/4" NPT male SS, detectable, FCM	FBX35.DS40.NT14MSS.00
Suction cup F-BX35 Silicone 3/8" NPT male composite, detectable, FCM	FBX35.DS40.NT38MDC.00
Suction cup F-BX35 Silicone 3/8" NPT male SS, detectable, FCM	FBX35.DS40.NT38MSS.00

Deep family (D)



This family is designed for curved and irregular surfaces. Can lift even over corners and edges. This product is also available in material that is compliant by FDA (FDA 21 CFR 177.2600) and meets EU's regulation EU 1935/2004.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
D15-2	—	0.65	—	1.75	2.47	—	—	—	—	—
D20-2	—	1.33	—	3.37	4.05	—	—	—	—	—
D30-2	—	3.15	—	5.85	6.97	—	—	—	—	—
D50	—	8.09	—	17.54	22.03	—	—	—	—	—
P-D27	0.72	1.24	1.82	—	—	1.71	3.03	4.81	—	—
P-D36	1.01	1.93	4.27	—	—	2.74	3.78	6.36	—	—





GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
D15-2	0.63	0.65	0.24	0.12	0.05
D20-2	0.87	0.52	0.31	0.18	0.15
D30-2	1.26	0.76	0.51	0.20	0.31
D50	2.09	1.24	0.98	0.39	0.92

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
P-D27	1.06	1.24	1.10	–	0.40
P-D36	1.41	1.63	1.46	–	0.99

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material					MSF
D15-2	Chloroprene, CR	●		●	●	●
D15-2	Silicone, SIL	●	●			
D15-2	Silicone FDA EU, SIL FDA	●	●			
D20-2	Chloroprene, CR	●		●	●	●
D20-2	Silicone, SIL	●	●			
D20-2	Silicone FDA EU, SIL FDA	●	●			
D30-2	Chloroprene, CR	●		●	●	●
D30-2	Silicone, SIL	●	●			
D30-2	Silicone FDA EU, SIL FDA	●	●			
D50	Chloroprene, CR	●		●	●	●
D50	Silicone, SIL	●	●			
D50	Silicone FDA EU, SIL FDA	●	●			
P-D27	Silicone (SIL detectable FCM)	●	●			
P-D36	Silicone (SIL detectable FCM)	●	●			

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Dry sheet metal	FDA EU-standard compliant	Plastic injection molded parts
D15-2	●	●	●
D20-2	●	●	●
D30-2	●	●	●
D50	●	●	●
P-D27		●	
P-D36		●	

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup D15-2 Chloroprene, M5 male	D15-2.10.01AC
Suction cup D15-2 Silicone	D15-2.20
Suction cup D15-2 Silicone FCM	D15-2.21
Suction cup D15-2 Silicone FCM, M5 male	D15-2.21.01AC
Suction cup D15-2 Silicone, M5 male	D15-2.20.01AC
Suction cup D15-2 Silicone	D15-2.20
Suction cup D20-2 Chloroprene	D20-2.10
Suction cup D20-2 Chloroprene, 1/8" NPT male, with mesh filter	D20-2.10.02AC
Suction cup D20-2 Chloroprene, G1/8" male, with mesh filter	D20-2.10.02AB
Suction cup D20-2 Chloroprene, G1/8" male/M5 female	D20-2.10.02AD
Suction cup D20-2 Chloroprene, G1/8" male/M5 female, with mesh filter	D20-2.10.02AF

Description	Part no.
Suction cup D20-2 Chloroprene, M5 female	D20-2.10.02AA
Suction cup D20-2 Silicone	D20-2.20
Suction cup D20-2 Silicone FCM	D20-2.21
Suction cup D20-2 Silicone FCM, 1/8" NPT male, with mesh filter	D20-2.21.02AC
Suction cup D20-2 Silicone FCM, G1/8" male, with mesh filter	D20-2.21.02AB
Suction cup D20-2 Silicone FCM, G1/8" male/M5 female, with mesh filter	D20-2.21.02AF
Suction cup D20-2 Silicone, 1/8" NPT male, with dual flow control valve	D20-2.20.02DC
Suction cup D20-2 Silicone, G1/8" male, with mesh filter	D20-2.20.02AB
Suction cup D20-2 Silicone, G1/8" male/M5 female, PA	D20-2.20.02CD
Suction cup D20-2 Silicone, G1/8" male/M5 female, with mesh filter	D20-2.20.02AF
Suction cup D20-2 Silicone, M5 female	D20-2.20.02AA
Suction cup D20-2 Silicone, NPT 1/8 male, with mesh filter	D20-2.20.02AC
Suction cup D20-2 Silicone, M5 female, with dual flow control valve	D20-2.20.02DA
Suction cup D30-2 Chloroprene	D30-2.10
Suction cup D30-2 Chloroprene, 1/8" NPT male, with mesh filter	D30-2.10.02AC
Suction cup D30-2 Chloroprene, G1/8" male, with mesh filter	D30-2.10.02AB
Suction cup D30-2 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	D30-2.10.02DB
Suction cup D30-2 Chloroprene, G1/8" male/M5 female	D30-2.10.02AD
Suction cup D30-2 Chloroprene, G1/8" male/M5 female, with dual flow control valve	D30-2.10.02DD
Suction cup D30-2 Chloroprene, G1/8" male/M5 female, with mesh filter	D30-2.10.02AF
Suction cup D30-2 Chloroprene, M5 female	D30-2.10.02AA

Description	Part no.
Suction cup D30-2 Silicone	D30-2.20
Suction cup D30-2 Silicone FCM	D30-2.21
Suction cup D30-2 Silicone FCM, 1/8" NPT male, with mesh filter	D30-2.21.02AC
Suction cup D30-2 Silicone FCM, G1/8" male, with mesh filter	D30-2.21.02AB
Suction cup D30-2 Silicone FCM, G1/8" male/M5 female, with mesh filter	D30-2.21.02AF
Suction cup D30-2 Silicone, 1/8" NPT male, with dual flow control valve	D30-2.20.02DC
Suction cup D30-2 Silicone, 1/8" NPT male, with mesh filter	D30-2.20.02AC
Suction cup D30-2 Silicone, 5xM5 female	D30-2.20.02AE
Suction cup D30-2 Silicone, G1/8" male, with mesh filter	D30-2.20.02AB
Suction cup D30-2 Silicone, G1/8" male/M5 female	D30-2.20.02AD
Suction cup D30-2 Silicone, G1/8" male/M5 female, with mesh filter	D30-2.20.02AF
Suction cup D30-2 Silicone, M5 female	D30-2.20.02AA
Suction cup D30-2 Silicone, G1/8" male/M5 female, PA	D30-2.20.02CD
Suction cup D50 Chloroprene	D50.10
Suction cup D50 Chloroprene, 1/4" NPT male, with dual flow control valve	D50.10.05DC
Suction cup D50 Chloroprene, 1/8" NPSF female	D50.10.05AA
Suction cup D50 Chloroprene, 1/8" NPSF female, PA	D50.10.05CA
Suction cup D50 Chloroprene, 1/8" NPSF female, with mesh filter	D50.10.05AG
Suction cup D50 Chloroprene, G1/4" male, with mesh filter	D50.10.05AB
Suction cup D50 Chloroprene, G3/8" male, with mesh filter	D50.10.05AD
Suction cup D50 Silicone	D50.20

Description	Part no.
Suction cup D50 Silicone FCM	D50.21
Suction cup D50 Silicone FCM, 1/4" NPT male, with mesh filter	D50.21.05AC
Suction cup D50 Silicone FCM, 1/8" NPSF female, with mesh filter	D50.21.05AG
Suction cup D50 Silicone FCM, G1/4" male, with mesh filter	D50.21.05AB
Suction cup D50 Silicone, 1/4" NPT male, with mesh filter	D50.20.05AC
Suction cup D50 Silicone, 1/8" NPSF female	D50.20.05AA
Suction cup D50 Silicone, 1/8" NPSF female, with mesh filter	D50.20.05AG
Suction cup D50 Silicone, G1/4" male, with mesh filter	D50.20.05AB
Suction cup D50 Silicone, G3/8" male, with mesh filter	D50.20.05AD
Suction cup P-D27 Silicone detectable, FCM	PD27.DS40
Suction cup P-D27 Silicone 1/4" NPT male composite, detectable, FCM	PD27.DS40.NT14MDC.00
Suction cup P-D27 Silicone 1/4" NPT male SS, detectable, FCM	PD27.DS40.NT14MSS.00
Suction cup P-D27 Silicone 1/8" NPT male composite, detectable, FCM	PD27.DS40.NT18MDC.00
Suction cup P-D27 Silicone 1/8" NPT male SS, detectable, FCM	PD27.DS40.NT18MSS.00
Suction cup P-D27 Silicone G1/4" male composite, detectable, FCM	PD27.DS40.G14MDC.00
Suction cup P-D27 Silicone G1/4" male SS, detectable, FCM	PD27.DS40.G14MSS.00
Suction cup P-D27 Silicone G1/8" male composite, detectable, FCM	PD27.DS40.G18MDC.00
Suction cup P-D27 Silicone G1/8" male SS, detectable, FCM	PD27.DS40.G18MSS.00
Suction cup P-D36 Silicone detectable, FCM	PD36.DS40
Suction cup P-D36 Silicone 1/4" NPT male composite, detectable, FCM	PD36.DS40.NT14MDC.00
Suction cup P-D36 Silicone 1/4" NPT male SS, detectable, FCM	PD36.DS40.NT14MSS.00

Description	Part no.
Suction cup P-D36 Silicone 3/8" NPT male composite, detectable, FCM	PD36.DS40.NT38MDC.00
Suction cup P-D36 Silicone 3/8" NPT male SS, detectable, FCM	PD36.DS40.NT38MSS.00
Suction cup P-D36 Silicone G1/4" male composite, detectable, FCM	PD36.DS40.G14MDC.00
Suction cup P-D36 Silicone G1/4" male SS, detectable, FCM	PD36.DS40.G14MSS.00
Suction cup P-D36 Silicone G3/8" male SS, detectable, FCM	PD36.DS40.G38MSS.00
Suction cup P-D36 Silicone G3/8" male composite, detectable, FCM	PD36.DS40.G38MDC.00

Deep family (DC)



This family is designed for flat, convex or concave surfaces, e.g., such as those encountered when handling metal sheets in later stages of a press line. The suction cups have a thin design that easily follows the curved metal sheet. A special inner pattern gives maximum shear force grip even on oily/slippery surfaces. DURAFLEX® suction cups manufactured in a specially developed material that features the elasticity of rubber and wear resistance of polyurethane. The material does not leave any marks on the objects handled and has a fantastic elastic memory.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level		Lifting force parallel to the surface, lbf, at vacuum level	
	18 -inHg	27 -inHg	18 -inHg	27 -inHg
DCF65P	32.1/31.7	43.4/42.9	32.8/22.5	44.1/30.1
DCF90P	57.3/49.9	69.9/69.7	57.6/41.1	80.5/55.8
DCF110P	70.8/70.4	98/97.3	84.8/64.3	129/80.5


GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in*	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
DCF65P	2.66	1.11-1.88	3.74	0.35	1.46
DCF90P	3.64	1.35-2.04	5.12	0.51	3.51
DCF110P	4.43	1.60-2.35	6.02	0.63	6.72

* Height range includes fittings.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material		MSF
DCF65P	PU60°	●	●
DCF90P	PU60°	●	●
DCF110P	PU60°	●	●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Dry sheet metal	Oily sheet metal	Mark Free
DCF65P	●	●	●
DCF90P	●	●	●
DCF110P	●	●	●

FITTINGS

For a table of possible fittings to use go to page 214, for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup DCF65P Polyurethane 60 G1/4" male with mesh filter	DCF65P.5T.G79MR
Suction cup DCF65P Polyurethane 60 G3/8" female with mesh filter, 17 mm thread	DCF65P.5T.G78MR
Suction cup DCF65P Polyurethane 60 M10×1,5 male with mesh filter	DCF65P.5T.M10MR
Suction cup DCF65P Polyurethane 60, 3/8" NPT female, with mesh filter	DCF65P.4S.N49MR
Suction cup DCF65P Polyurethane 60, G1/4" female, with mesh filter	DCF65P.4S.G75MR
Suction cup DCF65P Polyurethane 60, G3/8" female plastic	DCF65P.4S.G68WC
Suction cup DCF65P Polyurethane 60, G3/8" female, with mesh filter	DCF65P.4S.G70MR
Suction cup DCF65P Polyurethane 60, G3/8" male, 1/8" NPSF female, with mesh filter	DCF65P.4S.G69MR

Description	Part no.
Suction cup DCF65P Polyurethane 60, T-slot, with mesh filter	DCF65P.4S.T2W
Suction cup DCF90P Polyurethane 60 G1/4" male with mesh filter	DCF90P.5T.G79MR
Suction cup DCF90P Polyurethane 60 G3/8" female with mesh filter, 17 mm thread	DCF90P.5T.G78MR
Suction cup DCF90P Polyurethane 60 M10×1,5 male with mesh filter	DCF90P.5T.M10MR
Suction cup DCF90P Polyurethane 60, 3/8" NPT female, with mesh filter	DCF90P.4S.N49MR
Suction cup DCF90P Polyurethane 60, G1/4" female, with mesh filter	DCF90P.4S.G75MR
Suction cup DCF90P Polyurethane 60, G3/8" female plastic	DCF90P.4S.G68WC
Suction cup DCF90P Polyurethane 60, G3/8" female, with mesh filter	DCF90P.4S.G70MR
Suction cup DCF90P Polyurethane 60, G3/8" male, 1/8" NPSF female, with mesh filter	DCF90P.4S.G69MR
Suction cup DCF90P Polyurethane 60, T-slot, with mesh filter	DCF90P.4S.T2W
Suction cup DCF110P Polyurethane 60 G1/4" male with mesh filter	DCF110P.5T.G79MR
Suction cup DCF110P Polyurethane 60 G3/8" female with mesh filter, 17 mm thread	DCF110P.5T.G78MR
Suction cup DCF110P Polyurethane 60 M10×1,5 male with mesh filter	DCF110P.5T.M10MR
Suction cup DCF110P Polyurethane 60, 3/8" NPT female, with mesh filter	DCF110P.4S.N49MR
Suction cup DCF110P Polyurethane 60, G1/4" female, with mesh filter	DCF110P.4S.G75MR
Suction cup DCF110P Polyurethane 60, G3/8" female plastic	DCF110P.4S.G68WC
Suction cup DCF110P Polyurethane 60, G3/8" female, with mesh filter	DCF110P.4S.G70MR
Suction cup DCF110P Polyurethane 60, G3/8" male, 1/8" NPSF female, with mesh filter	DCF110P.4S.G69MR
Suction cup DCF110P Polyurethane 60, T-slot, with mesh filter	DCF110P.4S.T2W

Universal family (U)



This family is designed for flat or slightly curved surfaces. They are available in a number of different materials such as DURAFLEX®, silicone and also a material that is compliant by FDA (FDA 21 CFR 177.2600) and meets EU's regulation EU 1935/2004.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
U2	0.01	0.02	0.03	—	—	—
U3	0.02	0.09	0.15	—	—	—
U4	0.04	0.20	0.29	0.04	0.18	0.22
U6	0.11	0.38	0.56	0.11	0.34	0.45
U8	0.22	0.65	0.88	0.22	0.65	0.76
U10	0.34	0.99	1.55	0.34	0.99	1.10
U15	0.79	1.89	2.47	0.79	1.21	1.33
U20	1.33	2.70	3.60	1.33	1.98	2.20
U30	2.70	5.62	6.74	1.75	2.20	2.47
U40-2	4.50	8.77	11.0	3.15	4.95	6.07
U50-2	7.87	16.4	20.7	4.50	8.32	9.89

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
U15-3	0.79	1.89	2.47	0.79	1.21	1.33
U20-2P	0.67/0.67/0.67*	2.36/2.59/3.15*	3.15/3.37/4.72*	0.34/0.34/0.67*	0.67/0.67/1.35*	1.35/1.35/1.80*

* PU40° / PU50° / PU60°.

GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
U2	0.10	0.14	0.16	0.0039	0.0002
U3	0.15	0.18	0.20	0.01	0.0003
U4	0.20	0.24	0.12	0.01	0.002
U6	0.28	0.28	0.20	0.01	0.003
U8	0.35	0.28	0.24	0.02	0.01
U10	0.43	0.41	0.31	0.02	0.01
U15	0.65	0.45	0.31	0.06	0.03
U20	0.87	0.31	0.51	0.10	0.06
U30	1.26	0.37	0.79	0.14	0.12
U40-2	1.61	0.51	1.18	0.18	0.34
U50-2	2.02	0.69	1.38	0.24	0.73
U15-3	0.65	0.45	0.31	0.06	0.03
U20-2P	0.34	0.55	0.04/0.35/0.47*	0.20	0.04

* PU40° / PU50° / PU60°.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material							MSF
U2	Conductive Silicone, CSIL			●				
U3	Conductive Silicone, CSIL			●				
U4	Chloroprene, CR	●			●		●	●
U4	Silicone, SIL	●	●					
U4	Silicone, SIL FDA EU	●	●					
U6	Chloroprene, CR	●			●		●	●
U6	HNBR	●				●	●	
U6	Silicone, SIL	●	●					
U6	Silicone, SIL FDA EU	●	●					
U8	Chloroprene, CR	●			●		●	●
U8	Silicone, SIL	●	●					
U8	Silicone, SIL FDA EU	●	●					
U10	Chloroprene, CR	●			●		●	●
U10	HNBR	●				●	●	
U10	Silicone, SIL	●	●					
U10	Silicone, SIL FDA EU	●	●					
U15	Chloroprene, CR	●			●		●	●
U15	HNBR	●				●	●	
U15	Silicone, SIL	●	●					
U15	Silicone, SIL FDA EU	●	●					

Cup	Material							MSF
U20	Chloroprene, CR	●			●		●	●
U20	HNBR	●				●	●	
U20	Silicone, SIL	●	●					
U20	Silicone, SIL FDA EU	●	●					
U30	Nitrile-PVC, NPV	●			●		●	●
U30	Silicone, SIL	●	●					
U30	Silicone, SIL FDA EU	●	●					
U40-2	Nitrile-PVC, NPV	●			●		●	●
U40-2	Silicone, SIL	●	●					
U40-2	Silicone, SIL FDA EU	●	●					
U50-2	Nitrile-PVC, NPV	●			●		●	●
U50-2	Silicone, SIL	●	●					
U50-2	Silicone, SIL FDA EU	●	●					
U15-3	Silicone, SIL	●	●					
U20-2P	PU40°	●						
U20-2P	PU50°	●						
U20-2P	PU60°	●						

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Dry sheet metal	FDA EU- standard compliant	Electronic / semiconductor	Plastic injection molded parts	Mark Free	High/low temp cup (plastic)	Glass handling	Bag opening/ thin paper - slip sheets/film
U2			●					
U3			●					
U4	●	●		●				
U6	●	●		●	●			
U8	●	●		●				
U10		●		●	●	●	●	
U15		●		●	●	●	●	
U20		●		●	●	●	●	
U30	●	●		●				
U40-2	●	●		●				
U50-2	●	●		●				
U15-3								●
U20-2P					●			●

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup U2 Conductive silicone	U2.25
Suction cup U2 Conductive silicone, M2.5 male	U2.25.01AA

Description	Part no.
Suction cup U3 Conductive silicone	U3.25
Suction cup U3 Conductive silicone, M2.5 male	U3.25.01AA
Suction cup U4 Chloroprene	U4.10
Suction cup U4 Chloroprene, M5 male	U4.10.01AB
Suction cup U4 Silicone	U4.20
Suction cup U4 Silicone FCM	U4.21
Suction cup U4 Silicone FCM, M5 male	U4.21.01AB
Suction cup U4 Silicone, M5 male	U4.20.01AB
Suction cup U6 Chloroprene	U6.10
Suction cup U6 Chloroprene, M5 male	U6.10.01AB
Suction cup U6 HNBR	U6.47
Suction cup U6 HNBR, M5 male	U6.47.01AB
Suction cup U6 Silicone	U6.20
Suction cup U6 Silicone FCM	U6.21
Suction cup U6 Silicone FCM, M5 male	U6.21.01AB
Suction cup U6 Silicone, M5 male	U6.20.01AB
Suction cup U8 Chloroprene	U8.10
Suction cup U8 Chloroprene, M5 male	U8.10.01AB
Suction cup U8 Silicone	U8.20
Suction cup U8 Silicone FCM	U8.21
Suction cup U8 Silicone FCM, M5 male	U8.21.01AB

Description	Part no.
Suction cup U8 Silicone, M5 male	U8.20.01AB
Suction cup U10 Chloroprene	U10.10
Suction cup U10 Chloroprene, M5 male	U10.10.01AC
Suction cup U10 HNBR	U10.47
Suction cup U10 HNBR, M5 male	U10.47.01AC
Suction cup U10 Silicone	U10.20
Suction cup U10 Silicone FCM	U10.21
Suction cup U10 Silicone FCM, M5 male	U10.21.01AC
Suction cup U10 Silicone, M5 male	U10.20.01AC
Suction cup U15 Chloroprene	U15.10
Suction cup U15 Chloroprene, M5 male	U15.10.01AC
Suction cup U15 HNBR	U15.47
Suction cup U15 HNBR, M5 male	U15.47.01AC
Suction cup U15 Silicone	U15.20
Suction cup U15 Silicone FCM	U15.21
Suction cup U15 Silicone FCM, M5 male	U15.21.01AC
Suction cup U15 Silicone, M5 male	U15.20.01AC
Suction cup U20 Chloroprene, 1/8" NPT male, with mesh filter	U20.10.02AC
Suction cup U20 Chloroprene, 5xM5 female	U20.10.02AE
Suction cup U20 Chloroprene, G1/8" male, with mesh filter	U20.10.02AB
Suction cup U20 Chloroprene, G1/8" male, with mesh filter and dual flow control valve	U20.10.02DB

Description	Part no.
Suction cup U20 Chloroprene, G1/8" male/M5 female	U20.10.02AD
Suction cup U20 Chloroprene, G1/8" male/M5 female, PA	U20.10.02CD
Suction cup U20 Chloroprene, G1/8" male/M5 female, with dual flow control valve	U20.10.02DD
Suction cup U20 Chloroprene, G1/8" male/M5 female, with mesh filter	U20.10.02AF
Suction cup U20 Chloroprene, M5 female	U20.10.02AA
Suction cup U20 Chloroprene, M5 female, with dual flow control valve	U20.10.02DA
Suction cup U20 HNBR	U20.47
Suction cup U20 HNBR, 1/8" NPT male, with mesh filter	U20.47.02AC
Suction cup U20 HNBR, 1/8" NPT male, with mesh filter and dual flow control valve	U20.47.02DC
Suction cup U20 HNBR, 5xM5 female	U20.47.02AE
Suction cup U20 HNBR, 5xM5 female, with dual flow control valve	U20.47.02DE
Suction cup U20 HNBR, G1/8" male, with mesh filter	U20.47.02AB
Suction cup U20 HNBR, G1/8" male, with mesh filter and dual flow control valve	U20.47.02DB
Suction cup U20 HNBR, G1/8" male/M5 female	U20.47.02AD
Suction cup U20 HNBR, G1/8" male/M5 female, with dual flow control valve	U20.47.02DD
Suction cup U20 HNBR, G1/8" male/M5 female, with mesh filter	U20.47.02AF
Suction cup U20 HNBR, M5 female	U20.47.02AA
Suction cup U20 HNBR, M5 female, with dual flow control valve	U20.47.02DA
Suction cup U20 Silicone	U20.20
Suction cup U20 Silicone FCM	U20.21
Suction cup U20 Silicone FCM, 1/8" NPT male, with mesh filter	U20.21.02AC

Description	Part no.
Suction cup U20 Silicone FCM, G1/8" male, with mesh filter	U20.21.02AB
Suction cup U20 Silicone FCM, G1/8" male/M5 female, with mesh filter	U20.21.02AF
Suction cup U20 Silicone, 1/8" NPT male, with mesh filter	U20.20.02AC
Suction cup U20 Silicone, 5xM5 female	U20.20.02AE
Suction cup U20 Silicone, 5xM5 female, with dual flow control valve	U20.20.02DE
Suction cup U20 Silicone, G1/8" male, with mesh filter	U20.20.02AB
Suction cup U20 Silicone, G1/8" male, with mesh filter and dual flow control valve	U20.20.02DB
Suction cup U20 Silicone, G1/8" male/M5 female	U20.20.02AD
Suction cup U20 Silicone, G1/8" male/M5 female, PA	U20.20.02CD
Suction cup U20 Silicone, G1/8" male/M5 female, with mesh filter	U20.20.02AF
Suction cup U20 Silicone, M5 female	U20.20.02AA
Suction cup U20 Silicone, M5 female, with dual flow control valve	U20.20.02DA
Suction cup U20-2P Polyurethane 40	U20-2P.4C
Suction cup U20-2P Polyurethane 40, 1/8" Male	U20-2P.4C.02AI
Suction cup U20-2P Polyurethane 50	U20-2P.4D
Suction cup U20-2P Polyurethane 50, 1/8" Male	U20-2P.4D.02AI
Suction cup U20-2P Polyurethane 60	U20-2P.4E
Suction cup U20-2P Polyurethane 60, 1/8" Male	U20-2P.4E.02AI
Suction cup U30 Nitrile-PVC	U30.30
Suction cup U30 Nitrile-PVC, 1/8" NPT male, with mesh filter	U30.30.02AC
Suction cup U30 Nitrile-PVC, G1/8" male / M5 female	U30.30.02AD

Description	Part no.
Suction cup U30 Nitrile-PVC, G1/8" male / M5 female, PA	U30.30.02CD
Suction cup U30 Nitrile-PVC, G1/8" male / M5 female, with dual flow control valve	U30.30.02DD
Suction cup U30 Nitrile-PVC, G1/8" male / M5 female, with mesh filter	U30.30.02AF
Suction cup U30 Nitrile-PVC, G1/8" male, with mesh filter	U30.30.02AB
Suction cup U30 Nitrile-PVC, G1/8" male, with mesh filter and dual flow control valve	U30.30.02DB
Suction cup U30 Nitrile-PVC, M5 female	U30.30.02AA
Suction cup U30 Silicone	U30.20
Suction cup U30 Silicone FCM	U30.21
Suction cup U30 Silicone FCM, 1/8" NPT male, with mesh filter	U30.21.02AC
Suction cup U30 Silicone FCM, G1/8" male / M5 female, with mesh filter	U30.21.02AF
Suction cup U30 Silicone FCM, G1/8" male, with mesh filter	U30.21.02AB
Suction cup U30 Silicone, 1/8" NPT male, with mesh filter	U30.20.02AC
Suction cup U30 Silicone, 5xM5 female, with mesh filter	U30.20.02AE
Suction cup U30 Silicone, G1/8" male / M5 female	U30.20.02AD
Suction cup U30 Silicone, G1/8" male / M5 female, with mesh filter	U30.20.02AF
Suction cup U30 Silicone, G1/8" male, with mesh filter	U30.20.02AB
Suction cup U30 Silicone, G1/8" male, with mesh filter and dual flow control valve	U30.20.02DB
Suction cup U30 Silicone, M5 female, with mesh filter	U30.20.02AA
Suction cup U40-2 Nitrile-PVC	U40-2.30
Suction cup U40-2 Nitrile-PVC, 1/4" NPT male, with mesh filter	U40-2.30.04AC
Suction cup U40-2 Nitrile-PVC, 1/8" NPSF female	U40-2.30.04AA

Description	Part no.
Suction cup U40-2 Nitrile-PVC, 1/8" NPSF female, with mesh filter	U40-2.30.04AG
Suction cup U40-2 Nitrile-PVC, G1/4" male, with mesh filter	U40-2.30.04AB
Suction cup U40-2 Nitrile-PVC, G1/4" male, with mesh filter and dual flow control valve	U40-2.30.04DB
Suction cup U40-2 Nitrile-PVC, G3/8" male, with dual flow control valve	U40-2.30.04DD
Suction cup U40-2 Silicone	U40-2.20
Suction cup U40-2 Silicone FCM	U40-2.21
Suction cup U40-2 Silicone FCM, 1/4" NPT male, with mesh filter	U40-2.21.04AC
Suction cup U40-2 Silicone FCM, 1/8" NPSF female, with mesh filter	U40-2.21.04AG
Suction cup U40-2 Silicone FCM, G1/4" male, with mesh filter	U40-2.21.04AB
Suction cup U40-2 Silicone, 1/4" NPT male, with mesh filter	U40-2.20.04AC
Suction cup U40-2 Silicone, 1/8" NPSF female	U40-2.20.04AA
Suction cup U40-2 Silicone, 1/8" NPSF female, PA	U40-2.20.04CA
Suction cup U40-2 Silicone, 1/8" NPSF female, with mesh filter	U40-2.20.04AG
Suction cup U40-2 Silicone, 5x1/8" NPSF female	U40-2.20.04AF
Suction cup U40-2 Silicone, G1/4" male, with mesh filter	U40-2.20.04AB
Suction cup U40-2 Silicone, G3/8" male, with mesh filter	U40-2.20.04AD
Suction cup U50-2 Nitrile-PVC	U50-2.30
Suction cup U50-2 Nitrile-PVC, 1/4" NPT male, with mesh filter	U50-2.30.05AC
Suction cup U50-2 Nitrile-PVC, 1/8" NPSF female	U50-2.30.05AA
Suction cup U50-2 Nitrile-PVC, 1/8" NPSF female, with mesh filter	U50-2.30.05AG
Suction cup U50-2 Nitrile-PVC, 5x1/8" NPSF female	U50-2.30.05AF

Description	Part no.
Suction cup U50-2 Nitrile-PVC, G1/4" male, with mesh filter	U50-2.30.05AB
Suction cup U50-2 Nitrile-PVC, G3/8" male, with mesh filter	U50-2.30.05AD
Suction cup U50-2 Nitrile-PVC, NPT3/8" male, with mesh filter	U50-2.30.05AE
Suction cup U50-2 Silicone	U50-2.20
Suction cup U50-2 Silicone FCM	U50-2.21
Suction cup U50-2 Silicone FCM, 1/4" NPT male, with mesh filter	U50-2.21.05AC
Suction cup U50-2 Silicone FCM, 1/8" NPSF female, with mesh filter	U50-2.21.05AG
Suction cup U50-2 Silicone FCM, G1/4" male, with mesh filter	U50-2.21.05AB
Suction cup U50-2 Silicone, 1/4" NPT male, with mesh filter	U50-2.20.05AC
Suction cup U50-2 Silicone, 1/8" NPSF female	U50-2.20.05AA
Suction cup U50-2 Silicone, 1/8" NPSF female, PA	U50-2.20.05CA
Suction cup U50-2 Silicone, 1/8" NPSF female, with dual flow control valve	U50-2.20.05DA
Suction cup U50-2 Silicone, 1/8" NPSF female, with mesh filter	U50-2.20.05AG
Suction cup U50-2 Silicone, G1/4" male, with mesh filter	U50-2.20.05AB
Suction cup U50-2 Silicone, G3/8" male, with mesh filter	U50-2.20.05AD
Suction cup U50-2 Silicone, G3/8" male, with mesh filter and dual flow control valve	U50-2.20.05DD
Suction cup U50-2 Silicone, NPT3/8" male, with mesh filter	U50-2.20.05AE
Suction cup U15-3 Silicone	U15-3.20
Suction cup U15-3 Silicone, M5 male	U15-3.20.01AC
Suction cup U20-2P Polyurethane 40	U20-2P.4C
Suction cup U20-2P Polyurethane 40, 1/8" Male	U20-2P.4C.02AI

Description	Part no.
Suction cup U20-2P Polyurethane 50	U20-2P.4D
Suction cup U20-2P Polyurethane 50, 1/8" Male	U20-2P.4D.02AI
Suction cup U20-2P Polyurethane 60	U20-2P.4E
Suction cup U20-2P Polyurethane 60, 1/8" Male	U20-2P.4E.02AI

Oval Bellows family (OB)



The oval suction cups are suitable for handling of long and narrow objects and surfaces when maximum lifting force is desired. Oval suction cups are specially suitable for irregular surfaces and when level compensation is desired. The oval bellows suction cup family has characteristics that are specially suited for handling of metal-sheet material.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
F-OB 10x30	0.31	0.54	1.17	—	—	0.34	0.52	1.03	—	—
F-OB 20x40	0.74	1.55	2.7	—	—	0.65	1.35	2.83	—	—
F-OB 30x60	1.8	3.87	6.99	—	—	1.82	3.01	6.18	—	—
OB20x60P	—	2.92	—	7.64	12.8	—	2.92	—	8.32	10.8
OB35x90P (PU30°/60°)	—	9.44	—	26.8	39.1	—	10.8	—	16.4	22.5
OB35x90P (PU60°)	—	9.44	—	26.3	41.6	—	7.19	—	19.1	25.0
OB50x140P (PU30°/60°)	—	13.0	—	52.8	82.3	—	24.7	—	58.5	78.5
OB50x140P (PU60°)	—	17.3	—	51.9	82.7	—	27.4	—	65.6	89.0
OB65x170P (PU30°/60°)	—	26.8	—	75.3	121.6	—	31.7	—	85.2	119.6
OB65x170P (PU60°)	—	29.2	—	69.7	119.8	—	38.2	—	98.9	134.9
OBF15x35P H	—	—	—	5.62/4.27*	6.97/5.4*	—	—	—	4.72/1.12*	5.62/1.35*

	Lifting force vertical to the surface, lbf, at vacuum level					Lifting force parallel to the surface, lbf, at vacuum level				
	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg	3 -inHg	6 -inHg	12 -inHg	18 -inHg	27 -inHg
OBF15×35P L	—	—	—	5.62/4.27*	6.97/5.4*	—	—	—	4.72/1.12*	5.62/1.35*
OBF15×65P	—	—	—	13.4/9.6*	23.58/19*	—	—	—	16.7/7.14*	29.1/13.2*
OBF30×60P	—	—	—	13.4/9.6*	18/14.5*	—	—	—	16.7/7.14*	22.2/10.1*
OBF35×90P	—	—	—	31.5/24.3*	45/35*	—	—	—	28.1/23.6*	40/34*
OBF50×140P	—	—	—	73.1/55.3*	99/84*	—	—	—	74/61*	93/78*
OBF65×170P	—	—	—	89.2/90.6*	128/113*	—	—	—	98/121*	139/149*
OBL40×90P (PU60°)	—	9.89	—	23.6	36.0	—	8.99	—	19.6	27.2
OBL40×90P (PU70°)	—	11.0	—	26.3	40.0	—	10.1	—	21.8	30.3

* Dry metal sheet/Oily metal sheet.

GENERAL SPECIFICATIONS







	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
F-OB 10x30	1.22x0.43	1.03	0.16	0.16	0.06
F-OB 20x40	1.61x0.82	1.42–1.62	0.35	0.30	0.31
F-OB 30x60	2.44x1.26	1.76–1.96	0.43	0.43	1.07
OB20x60P	2.44x0.93	0.93	0.28	0.18	1.46
OB35x90P	3.76x1.67	1.07	1.18	0.41	2.32
OB50x140P	5.75x2.32	1.36	0.91/1.02**	0.44	5.80
OB65x170P	6.97x2.99	1.63	1.50	0.63	10.68
OBF15×35P H	1.42–0.59	0.86–1.14*	0.79	0.11	0.08
OBF15×35P L	1.42–0.59	1.48–1.76*	0.79	0.11	0.08







	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
OBF15×65P	2.6–0.59	0.86–1.14*	0.79	0.11	0.16
OBF30×60P	2.36×1.18	1.27–1.72*	0.98	0.28	0.56
OBF35×90P	4.13×1.97	1.54–1.89*	1.18	0.43	2.20
OBF50×140P	6.18×2.64	1.85–2.20*	1.97	0.51	5.80
OBF65×170P	7.36×3.23	2.13–2.47*	1.97	0.59	12.2
OBL40×90P	3.65×1.77	2.48–2.87*	1.10	1.22	6.41

* Height range includes fittings, ** PU30°/PU60° / PU60°.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material							MSF
F-OB 10x30	Silicone (SIL non-detectable FCM)	●	●					
F-OB 10x30	Silicone (SIL detectable FCM)	●	●					
F-OB 20x40	Silicone (SIL non-detectable FCM)	●	●					
F-OB 20x40	Silicone (SIL detectable FCM)	●	●					
F-OB 30x60	Silicone (SIL non-detectable FCM)	●	●					
F-OB 30x60	Silicone (SIL detectable FCM)	●	●					
OB20x60P	PU60°	●		●	●	●	●	●
OB35x90P	PU30°/PU60°	●		●				
OB35x90P	PU60°	●		●	●	●	●	●
OB50x140P	PU30°/PU60°	●		●				
OB50x140P	PU60°	●		●	●	●	●	●

Cup	Material							MSF
OB65x170P	PU30°/PU60°	●		●				
OB65x170P	PU60°	●		●	●	●	●	●
OBF15x35P H	PU60°			●				●
OBF15x35P L	PU60°			●				●
OBF15x65P	PU60°			●				●
OBF30x60P	PU60°			●				●
OBF35x90P	PU55°/PU60°			●				●
OBF50x140P	PU55°/PU60°			●				●
OBF65x170P	PU55°/PU60°			●				●
OBL40x90P	PU60°	●		●	●	●	●	●
OBL40x90P	PU70°	●		●	●	●	●	●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Corrugated / cardboard	Glass handling	Mark Free	Oily sheet metal	FDA EU-standard compliant
F-OB 10x30					●
F-OB 20x40					●
F-OB 30x60					●
OB20x60P			●		
OB35x90P	●		●		
OB50x140P	●		●		

	Corrugated / cardboard	Glass handling	Mark Free	Oily sheet metal	FDA EU-standard compliant
OB65x170P	●		●		
OBF15x35P H			●	●	
OBF15x35P L			●	●	
OBF15x65P			●	●	
OBF30x60P			●	●	
OBF35x90P			●	●	
OBF50x140P			●	●	
OBF65x170P			●	●	
OBL40x90P		●	●		

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup F-OB 10x30 Silicone, G1/8" male SS, detectable, FCM	FOB10X30.DS40.G18MSS.00
Suction cup F-OB 10x30 Silicone, G1/8" male SS, FCM	FOB10X30.SF40.G18MSS.00
Suction cup F-OB 20x40 Silicone, G1/4" male SS, detectable, FCM	FOB20X40.DS40.G14MSS.00
Suction cup F-OB 20x40 Silicone, G1/4" male SS, FCM	FOB20X40.SF40.G14MSS.00
Suction cup F-OB 20x40 Silicone, G1/8" male SS, detectable, FCM	FOB20X40.DS40.G18MSS.00
Suction cup F-OB 20x40 Silicone, G1/8" male SS, FCM	FOB20X40.SF40.G18MSS.00
Suction cup F-OB 30x60 Silicone, G1/4" male SS, detectable FCM	FOB30X60.DS40.G14MSS.00
Suction cup F-OB 30x60 Silicone, G1/4" male SS, FCM	FOB30X60.SF40.G14MSS.00

Description	Part no.
Suction cup F-OB 30x60 Silicone, G1/8" male SS, detectable, FCM	FOB30X60.DS40.G18MSS.00
Suction cup F-OB 30x60 Silicone, G1/8" male SS, FCM	FOB30X60.SF40.G18MSS.00
Suction cup OB20x60P Polyurethane 60, G1/8" male	OB20X60P.5E.G31M
Suction cup OB35x90P Polyurethane 30/60	OB35x90P.5K
Suction cup OB35x90P Polyurethane 30/60, 3/8" NPSF female	OB35X90P.5K.N40W
Suction cup OB35x90P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	OB35X90P.5K.G40M
Suction cup OB35x90P Polyurethane 60	OB35x90P.5E
Suction cup OB35x90P Polyurethane 60, 3/8" NPSF female	OB35x90P.5E.N40W
Suction cup OB35x90P Polyurethane 60, thread insert G3/8" male, with mesh filter	OB35x90P.5E.G40M
Suction cup OB50x140P Polyurethane 30/60	OB50X140P.5K
Suction cup OB50x140P Polyurethane 30/60, 3/8" NPSF female	OB50X140P.5K.N40W
Suction cup OB50x140P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	OB50X140P.5K.G40M
Suction cup OB50x140P Polyurethane 60	OB50X140P.5E
Suction cup OB50x140P Polyurethane 60, 3/8" NPSF female	OB50X140P.5E.N40W
Suction cup OB50x140P Polyurethane 60, thread insert G3/8" male, with mesh filter	OB50X140P.5E.G40M
Suction cup OB65x170P Polyurethane 30/60	OB65X170P.5K
Suction cup OB65x170P Polyurethane 30/60, 3/8" NPSF female	OB65X170P.5K.N40W
Suction cup OB65x170P Polyurethane 30/60, thread insert G3/8" male, with mesh filter	OB65X170P.5K.G40M
Suction cup OB65x170P Polyurethane 60	OB65X170P.5E
Suction cup OB65x170P Polyurethane 60, 3/8" NPSF female	OB65X170P.5E.N40W
Suction cup OB65x170P Polyurethane 60, thread insert G3/8" male, with mesh filter	OB65X170P.5E.G40M

Description	Part no.
Suction cup OBF15×35P H Polyurethane 60, G1/4" female	OBF15x35PH.5X.G83W
Suction cup OBF15×35P H Polyurethane 60, G1/4" male	OBF15x35PH.5X.G84W
Suction cup OBF15×35P H Polyurethane 60, G3/8" female	OBF15x35PH.5X.G80W
Suction cup OBF15×35P H Polyurethane 60, G3/8" female plastic	OBF15x35PH.5X.G69WC
Suction cup OBF15×35P H Polyurethane 60, G3/8" male	OBF15x35PH.5X.G82W
Suction cup OBF15×35P H Polyurethane 60, G3/8" female, 17 mm thread	OBF15x35PH.5X.G81W
Suction cup OBF15×35P H Polyurethane 60, M10×1.5 male	OBF15x35PH.5X.M11W
Suction cup OBF15×35P H Polyurethane 60, NPT3/8" female	OBF15x35PH.5X.N50W
Suction cup OBF15×35P H Polyurethane 60, T-slot	OBF15x35PH.5X.T3W
Suction cup OBF15×35P L Polyurethane 60, G1/4" female	OBF15x35PL.5X.G83W
Suction cup OBF15×35P L Polyurethane 60, G1/4" male	OBF15x35PL.5X.G84W
Suction cup OBF15×35P L Polyurethane 60, G3/8" female	OBF15x35PL.5X.G80W
Suction cup OBF15×35P L Polyurethane 60, G3/8" female plastic	OBF15x35PL.5X.G69WC
Suction cup OBF15×35P L Polyurethane 60, G3/8" male	OBF15x35PL.5X.G82W
Suction cup OBF15×35P L Polyurethane 60, G3/8" female, 17 mm thread	OBF15x35PL.5X.G81W
Suction cup OBF15×35P L Polyurethane 60, M10×1.5 male	OBF15x35PL.5X.M11W
Suction cup OBF15×35P L Polyurethane 60, NPT3/8" female	OBF15x35PL.5X.N50W
Suction cup OBF15×35P L Polyurethane 60, T-slot	OBF15x35PL.5X.T3W
Suction cup OBF15×65P Polyurethane 60, G1/4" female	OBF15x65P.5X.G83W
Suction cup OBF15×65P Polyurethane 60, G1/4" male	OBF15x65P.5X.G84W
Suction cup OBF15×65P Polyurethane 60, G3/8" female	OBF15x65P.5X.G80W

Description	Part no.
Suction cup OBF15×65P Polyurethane 60, G3/8" female plastic	OBF15x65P.5X.G70WC
Suction cup OBF15×65P Polyurethane 60, G3/8" male	OBF15x65P.5X.G82W
Suction cup OBF15×65P Polyurethane 60, G3/8" female, 17 mm thread	OBF15x65P.5X.G81W
Suction cup OBF15×65P Polyurethane 60, M10×1.5 male	OBF15x65P.5X.M11W
Suction cup OBF15×65P Polyurethane 60, NPT3/8" female	OBF15x65P.5X.N50W
Suction cup OBF15×65P Polyurethane 60, T-slot	OBF15x65P.5X.T3W
Suction cup OBF30×60P Polyurethane 55/60/30 G3/8" female with mesh filter, 17 mm thread	OBF30x60P.5R.G78MR
Suction cup OBF30×60P Polyurethane 60, G1/4" female	OBF30x60P.4R.G75MR
Suction cup OBF30×60P Polyurethane 60, G1/4" male	OBF30x60P.5R.G79MR
Suction cup OBF30×60P Polyurethane 60, G3/8" female	OBF30x60P.5R.G77MR
Suction cup OBF30×60P Polyurethane 60, G3/8" female plastic	OBF30x60P.5R.G68WC
Suction cup OBF30×60P Polyurethane 60, G3/8" male	OBF30x60P.5R.G69MR
Suction cup OBF30×60P Polyurethane 60, M10×1.5 male	OBF30x60P.5R.M10MR
Suction cup OBF30×60P Polyurethane 60, NPT3/8" female	OBF30x60P.5R.N49MR
Suction cup OBF30×60P Polyurethane 60, T-slot with mesh filter	OBF30x60P.5R.T2MR
Suction cup OBF35×90P Polyurethane 55/60, 3/8" NPT female	OBF35x90P.5R.N48W
Suction cup OBF35×90P Polyurethane 55/60, G3/8" female	OBF35x90P.5R.G46W
Suction cup OBF35×90P Polyurethane 55/60, G3/8" female, 17 mm thread	OBF35x90P.5R.G62W
Suction cup OBF35×90P Polyurethane 55/60, G3/8" male, with mesh filter	OBF35x90P.5R.G40M
Suction cup OBF35×90P Polyurethane 55/60, M10×1.5 male	OBF35x90P.5R.M10M
Suction cup OBF50×140P Polyurethane 55/60, 3/8" NPT female	OBF50x140P.5R.N48W

Description	Part no.
Suction cup OBF50x140P Polyurethane 55/60, G3/8" female	OBF50x140P.5R.G46W
Suction cup OBF50x140P Polyurethane 55/60, G3/8" male, with mesh filter	OBF50x140P.5R.G40M
Suction cup OBF50x140P Polyurethane 55/60, M10x1.5 male	OBF50x140P.5R.M10M
Suction cup OBF65x170P Polyurethane 55/60, 3/8" NPT female	OBF65x170P.5R.N48W
Suction cup OBF65x170P Polyurethane 55/60, G3/8" female	OBF65x170P.5R.G46W
Suction cup OBF65x170P Polyurethane 55/60, G3/8" male, with mesh filter	OBF65x170P.5R.G40M
Suction cup OBF65x170P Polyurethane 55/60, M10x1.5 male	OBF65x170P.5R.M10M
Suction cup OBL40x90P Polyurethane 60, with 3 reinforcement plates and load support	OBL40x90P.4E.5CC30.S
Suction cup OBL40x90P Polyurethane 70, with 3 reinforcement plates and load support with G3/8" male, filter	OBL40x90P.5P.G40M.S

Oval Flat family (OF)



Oval suction cups are specially suitable for long and narrow objects. This program of oval suction cups has characteristics that are specially suited for handling of metal-sheet material.

LIFTING FORCES






	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
OF10x30P	0.90	2.47	3.82	1.35	2.70	3.82
OF15x45P	2.02	6.07	9.22	1.35	4.50	7.64
OF25x70P (PU40°)	5.40	14.8	24.1	10.3	20.2	23.6
OF25x70P (PU60°)	5.40	17.3	26.5	9.44	28.6	36.2
OF40x110P (PU40°)	15.5	45.6	65.9	27.0	51.7	66.5
OF40x110P (PU60°)	16.6	45.0	68.1	22.0	51.3	92.2
OF55x150P (PU40°)	29.4	82.3	118.5	34.8	78.7	102.3
OF55x150P (PU60°)	30.1	84.5	125.4	28.8	76.0	107.2
OF70x175P (PU40°)	42.7	119.1	176.5	38.2	98.9	141.6
OF70x175P (PU60°)	40.5	128.1	193.3	45.0	124.8	168.6

GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
OF10x30P	1.21x0.43	0.57	0.59	0.04	0.03
OF15x45P	1.77x0.59	0.68	1.18	0.04	0.06
OF25x70P	2.85x1.07	0.91	1.97	0.07	0.37
OF40x110P	4.45x1.69	0.69	3.03	0.12	1.28
OF55x150P	6.06x2.32	0.83	5.91	0.12	2.26
OF70x175P	7.09x2.95	0.98	5.12	0.22	4.88

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material						MSF
OF10x30P	PU50°	●	●	●	●	●	●
OF15x45P	PU50°	●	●	●	●	●	●
OF25x70P	PU40°	●	●	●	●	●	●
OF25x70P	PU60°	●	●	●	●	●	●
OF40x110P	PU40°	●	●	●	●	●	●
OF40x110P	PU60°	●	●	●	●	●	●
OF55x150P	PU40°	●	●	●	●	●	●
OF55x150P	PU60°	●	●	●	●	●	●
OF70x175P	PU40°	●	●	●	●	●	●
OF70x175P	PU60°	●	●	●	●	●	●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Dry sheet metal	Corrugated / cardboard	Mark Free	Plastic injection molded parts
OF10x30P			●	
OF15x45P			●	
OF25x70P	●	●	●	●
OF40x110P	●	●	●	●
OF55x150P	●	●	●	●
OF70x175P	●	●	●	●

FITTINGS

For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup OF10x30P Polyurethane 50, M5 male	OF10X30P.4D.13UA
Suction cup OF15x45P Polyurethane 50, G1/8" male	OF15X45P.5D.G31M
Suction cup OF25x70P Polyurethane 40, G3/8" male	OF25X70P.5C.G41M
Suction cup OF40x110P Polyurethane 40	OF40X110P.5C
Suction cup OF40x110P Polyurethane 40, 3/8" NPSF female	OF40X110P.5C.N40W
Suction cup OF40x110P Polyurethane 40, thread insert G3/8" male, with mesh filter	OF40X110P.5C.G40M
Suction cup OF40x110P Polyurethane 60	OF40X110P.5E
Suction cup OF40x110P Polyurethane 60, 3/8" NPSF female	OF40X110P.5E.N40W
Suction cup OF40x110P Polyurethane 60, thread insert G3/8" male, with mesh filter	OF40X110P.5E.G40M
Suction cup OF55x150P Polyurethane 40	OF55X150P.5C
Suction cup OF55x150P Polyurethane 40, 3/8" NPSF female	OF55X150P.5C.N40W

Description	Part no.
Suction cup OF55x150P Polyurethane 40, thread insert G3/8" male, with mesh filter	OF55X150P.5C.G40M
Suction cup OF55x150P Polyurethane 60	OF55X150P.5E
Suction cup OF55x150P Polyurethane 60, 3/8" NPSF female	OF55X150P.5E.N40W
Suction cup OF55x150P Polyurethane 60, thread insert G3/8" male, with mesh filter	OF55X150P.5E.G40M
Suction cup OF70x175P Polyurethane 40	OF70X175P.5C
Suction cup OF70x175P Polyurethane 40, 3/8" NPSF female	OF70X175P.5C.N40W
Suction cup OF70x175P Polyurethane 40, thread insert G3/8" male, with mesh filter	OF70X175P.5C.G40M
Suction cup OF70x175P Polyurethane 60	OF70X175P.5E
Suction cup OF70x175P Polyurethane 60, 3/8" NPSF female	OF70X175P.5E.N40W
Suction cup OF70x175P Polyurethane 60, thread insert G3/8" male, with mesh filter	OF70X175P.5E.G40M

Oval Concave family (OC)



Suitable for handling long oblong objects with flat or curved surfaces with thick durable lip. Some of these cups have support cleats that prevent thin objects from being disfigured.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
OC60x140	29.7	83.9	116.9	41.8	83.9	114.7
OC35x90P	11.0/11.0*	26.3/29.7*	38.4/38.4*	11.9/15.3*	25.2/36.2*	33.0/46.3*
OCF20x80P	—	16.9/18.4*	25.0/20.2*	—	17.5/7.87*	25.2/10.8*
OCF30x90P	—	25.0/25.9*	35.3/35.7*	—	24.1/11.5*	36.0/16.6*
OCF40x110P	—	40.0/41.6*	55.1/55.3*	—	37.5/12.1*	52.2/17.5*

* PU40° / PU60°.






GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
OC60x140	5.43x2.40	1.18	7.87	0.30	3.17
OC35x90P	3.70x1.46	0.57	—	0.12	1.22
OCF20x80P	3.31x0.94	1.06–1.69*	0.79	0.12	0.92
OCF30x90P	3.64x1.28	1.04–1.16*	0.98	0.16	1.04
OCF40x110P	4.45x1.69	1.28–1.40*	1.65	0.20	2.07

* Height range includes fittings.

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material						MSF
OC60×140	Nitrile, NBR	●			●	●	●
OC35×90P	PU40°	●	●				
OC35×90P	PU60°	●	●	●	●	●	●
OCF20×80P	PU55°/ PU60°		●				●
OCF30×90P	PU55°/ PU60°		●				●
OCF40×110P	PU55°/ PU60°		●				●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Oily metal sheet	Dry metal sheet	Mark Free
OC60x140		●	
OC35x90P			●
OCF20x80P	●		
OCF30x90P	●		
OCF40x110P	●		

FITTINGS

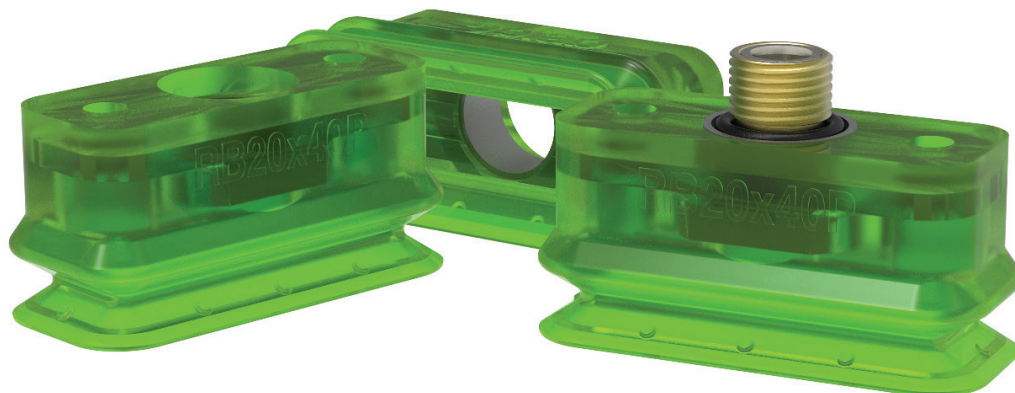
For a table of possible fittings to use go to page 214 for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup OC60x140 Nitrile, G3/8" female	OC60x140.35.61UA
Suction cup OC60x140 Nitrile, NPT3/8" female (flexible lip)	OC60x140.35.61UB
Suction cup OC35x90P Polyurethane 40	OC35x90P.5C
Suction cup OC35x90P Polyurethane 40, 3/8" NPSF female	OC35x90P.4C.39UB
Suction cup OC35x90P Polyurethane 40, adjustable thread insert G3/8" male with mesh filter	OC35x90P.5C.G41M
Suction cup OC35x90P Polyurethane 40, adjustable thread insert G3/8" male with mesh filter	OF25x70P.5E.G41M
Suction cup OC35x90P Polyurethane 40, G3/8" female	OC35x90P.4C.39UA
Suction cup OC35x90P Polyurethane 60, 3/8" NPSF female	OC35x90P.4E.39UB
Suction cup OC35x90P Polyurethane 60, adjustable thread insert G3/8" male with mesh filter	OC35x90P.5E.G41M
Suction cup OC35x90P Polyurethane 60, G3/8" female	OC35x90P.4E.39UA
Suction cup OCF20x50 Polyurethane 60, G1/4" female	OCF20x50P.5X.G75MR
Suction cup OCF20x50 Polyurethane 60, G1/4" male	OCF20x50P.5X.G79MR
Suction cup OCF20x50 Polyurethane 60, G3/8" female	OCF20x50P.5X.G77MR
Suction cup OCF20x50 Polyurethane 60, G3/8" female plastic	OCF20x50P.G68WC
Suction cup OCF20x50 Polyurethane 60, G3/8" female, 17 mm thread	OCF20x50P.5X.G78MR
Suction cup OCF20x50 Polyurethane 60, G3/8" male	OCF20x50P.5X.G69MR
Suction cup OCF20x50 Polyurethane 60, M10x1.5 male	OCF20x50P.5X.M10MR
Suction cup OCF20x50 Polyurethane 60, NPT3/8" female	OCF20x50P.5X.N49MR
Suction cup OCF20x50 Polyurethane 60, T-slot with mesh filter	OCF20x50P.5X.T2MR
Suction cup OCF20x80P Polyurethane 55/60, 3/8" NPT female	OCF20x80P.5R.N47W

Description	Part no.
Suction cup OCF20x80P Polyurethane 55/60, G3/8" female	OCF20x80P.5R.G45W
Suction cup OCF20x80P Polyurethane 55/60, G3/8" male	OCF20x80P.5R.G41M
Suction cup OCF30x90P Polyurethane 55/60, 3/8" NPT female	OCF30x90P.5R.N47W
Suction cup OCF30x90P Polyurethane 55/60, G3/8" female	OCF30x90P.5R.G45W
Suction cup OCF30x90P Polyurethane 55/60, G3/8" male	OCF30x90P.5R.G41M
Suction cup OCF40x110P Polyurethane 55/60, 3/8" NPT female	OCF40x110P.5R.N48W
Suction cup OCF40x110P Polyurethane 55/60, G3/8" female	OCF40x110P.5R.G46W
Suction cup OCF40x110P Polyurethane 55/60, G3/8" male	OCF40x110P.5R.G40M

Rectangular Bellows (RB)



The rectangular suction cups are recommended for handling of long and narrow objects and surfaces when maximum lifting force and grip are desired. They are especially suitable for products in plastic flow packs, such as candy bars. The suction cup material DURAFLEX® features the elasticity of rubber and excellent wear resistance of polyurethane.

LIFTING FORCES

	Lifting force vertical to the surface, lbf, at vacuum level			Lifting force parallel to the surface, lbf, at vacuum level		
	6 -inHg	18 -inHg	27 -inHg	6 -inHg	18 -inHg	27 -inHg
RB20×40P	3.37	5.85	8.99	4.72	7.42	12.8

GENERAL SPECIFICATIONS

	Outer diameter, in	Height, in	Min. curve radius, in	Max. vertical movement, in	Volume, in ³
RB20×40P	45.3×45.3	21,5	15	6	6.1

AVAILABLE MATERIALS AND INDUSTRIES

An explanation of the industry icons is available on the cover fold out.

Cup	Material						MSF
RB20×40P	PU60°	●	●	●	●	●	●

MATERIAL RESISTANCE

For more material information go to page 23.

APPLICATIONS

Table shows typical applications for the suction cup. For more detailed information, please visit piab.com.

	Bag opening/thin paper	Slip sheets/film
RB20×40P	●	●

FITTINGS

For a table of possible fittings to use go to page 214, for technical information on all fittings visit piab.com.

ORDERING INFORMATION

Description	Part no.
Suction cup RB20×40P Female insert fitting G1/4"	02.02.975
Suction cup RB20×40P Swivel fitting G1/8" male	02.06.190







Suction cup accessories



SUCTION CUP ACCESSORIES

Selection guide – Accessories	196
Mounting Elements	198
Level Compensators	201
Ball Joints	209
Suction Cup Valves	210
Suction Cup Fittings	214
Other	218

Selection guide – Accessories

Suction cup accessories	
	Mounting Elements
	Level compensators
	Ball joints
	Suction cup valves
	Fittings
	Other

Features and benefits

The mounting element program consists of mounting brackets, height adjusters and suction cup extensions. The parts are designed to fit together for different sizes and applications. The parts are easily mounted on several standard extruded profile systems, not just suitable for one brand of profile. All parts of the same size-category fit perfectly together and thereby create an easy-to-use, compact and flexible/adjustable mounting "assembly kit" for cups.

Adjust differences in levels, for example on lifting devices with several suction cups. There is then less demand for exact positioning of vacuum handling device. Level compensators will also provide a certain degree of shock and vibration absorption.

To avoid bending stress, a suction cup can be fitted with a ball joint.

Valves to minimize the energy consumption. Gives a flexibility on number of objects to be handled.

A variety of fittings for suction cups.

Angle adaptors, t-slot adaptors etc.

Mounting Elements



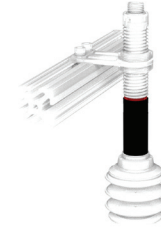
Mounting bracket MB

- Mounting brackets suitable for extruded profile systems.
- Level compensators and height adjusters with external thread in sizes M12, M16, M20 and M25 are ideal for clamping on the mounting brackets.
- Facilitates the installation of a suction cup and positioning in X-direction.
- Long and short versions available.



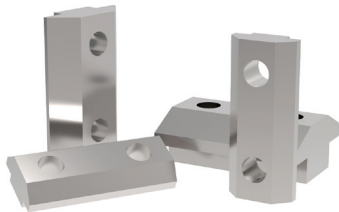
Height adjuster HA

- Facilitates the positioning (y-direction) of a suction cup.
- Provides an adjustable height extension between a mounting bracket (MB) and a suction cup.
- Can be used with a suction cup / rod extension to further elongate the cup position.
- Key handle to avoid rotation when connecting vacuum ports.



Suction cup extension SE

- Solid rod extension with air/vacuum channel.
- For mounting a suction cup.
- Available in several sizes.
- Can be used with a height adjuster (HA) or level compensator (LC).



T-slot nut kit

- T-slot nut fits the most common mounting profiles on the market.
- Adapted to the Piab mounting bracket assortment.

TECHNICAL DATA

Description	Load, vertical, max.	Load, torque, max.	Load, horizontal, max.	Action range/ Stroke
Mounting bracket MB12S, MB16S, MB20S	45.0 lbf	5.16 lb ft	–	–
Mounting bracket MB12L, MB16L, MB20L	45.0 lbf	5.16 lb ft	–	–
Mounting bracket MB25S, MB25L	67.4 lbf	11.1 lb ft	–	–
Height adjuster HA12	9.89 lbf	–	6.97 lbf	1.97 in
Height adjuster HA16	19.6 lbf	–	13.7 lbf	1.97 in
Height adjuster HA20	48.1 lbf	–	33.7 lbf	1.97 in
Suction cup extension 50, G3/8" male x G3/8" female	157 lbf	–	89.9 lbf	–
Suction cup extension SE12	9.89 lbf	–	6.97 lbf	–
Suction cup extension SE16	19.6 lbf	–	13.7 lbf	–
Suction cup extension SE20	48.1 lbf	–	33.7 lbf	–

ORDERING INFORMATION

Description	Part no.
Mounting bracket MB12L	02.00.455
Mounting bracket MB12S	02.00.449
Mounting bracket MB16L	02.00.454
Mounting bracket MB16S	02.00.450
Mounting bracket MB20L	02.00.456
Mounting bracket MB20S	02.00.451
Mounting bracket MB25L	02.00.457

Description	Part no.
Mounting bracket MB25S	02.00.452
Height adjuster HA12	02.00.461
Height adjuster HA16	02.00.462
Height adjuster HA20	02.00.463
Height adjuster HA25	01.21.122
Suction cup extension SE12	02.00.458
Suction cup extension SE16	02.00.459
Suction cup extension SE20	02.00.460
T-slot nut kit for mounting bracket-6, 8, 10 mm nut	02.05.794

Level Compensators



Level compensator LC

- Adjust differences in levels, for example on lifting devices with several suction cups.
- Less demand for exact positioning of vacuum handling device.
- Provides a certain degree of shock and vibration absorption.
- Allows for soft placement of cups on sensitive or thin objects.
- Non-rotational design, suitable for use with oval suction cups.
- Wide range of thread connections and stroke lengths.



Level compensators

- Adjust differences in levels, for example on lifting devices with several suction cups on a frame.
- A level compensator is often advantageous since it places less demand on exact vertical positioning, for example on a handling robot.
- The level compensator provides a certain degree of shock absorption.



Level compensator LC30

- Tailor made for the Vacuum Gripper System, VGST™, but can also be used together with other Piab products.
- Developed for use with standard profile systems.
- Easy installation with the option of fine adjustments and positioning of the suction cup.
- Non-rotational for use with, for example, oval suction cups. Can easily be made rotational.
- Quiet and reliable level compensation with load protection and shock absorption.

TECHNICAL DATA

Description	Load, vertical, max.	Spring force	Action range/ Stroke	Thread
Level compensator LC12-F0510 / LC12-M0510	–	0.43–0.92 lbf	0.39 in	M5
Level compensator LC12-F0525 / LC12-M0525	–	0.45–1.12 lbf	0.98 in	M5
Level compensator LC16-F1820 / LC16-M1820	–	0.81–2.02 lbf	0.79 in	G1/8"
Level compensator LC16-F1835 / LC16-M1835	–	0.97–2.14 lbf	1.38 in	G1/8"
Level compensator LC20-F1425 / LC20-M1425	–	0.92–2.47 lbf	0.98 in	G1/4"
Level compensator LC20-F1450 / LC20-M1450	–	0.97–2.56 lbf	1.97 in	G1/4"

Description	Load, vertical, max.	Spring force	Action range/ Stroke	Thread
Level compensator LC25-F3840 / LC25-M3840	–	1.26–3.71 lbf	1.57 in	G3/8"
Level compensator LC25-F3880 / LC25-M3880	–	1.35–3.82 lbf	3.15 in	G3/8"
Level compensator G1/2" with stiffer spring	110 lbf	20.2–33.7 lbf	0.59 in	G1/2"
Level compensator M5	6.61 lbf	0.45–1.12 lbf	0.28 in	M5
Level compensator G1/8"	55.1 lbf	0.67–2.11 lbf	0.79 in	G1/8"
Level compensator G1/2"	110 lbf	5.4–8.32 lbf	0.59 in	G1/2"
Level compensator LC30	157 lbf	1.12–9.44 lbf	1.18 in	G3/8"

ORDERING INFORMATION

Description	Part no.
Level compensator LC12-F0510, M5 female, stroke 10	01.27.103
Level compensator LC12-F0525, M5 female, stroke 25	01.27.105
Level compensator LC12-M0510, M5 male, stroke 10	01.27.104
Level compensator LC12-M0525, M5 male, stroke 25	01.27.106
Level compensator LC16-F1820, G1/8" female, stroke 20	01.24.951
Level compensator LC16-F1835, G1/8" female, stroke 35	01.24.953
Level compensator LC16-M1820, G1/8" male, stroke 20	01.24.952
Level compensator LC16-M1835, G1/8" male, stroke 35	01.24.954
Level compensator LC20-F1425, G1/4" female, stroke 25	01.24.955
Level compensator LC20-F1450, G1/4" female, stroke 50	01.24.957
Level compensator LC20-M1425, G1/4" male, stroke 25	01.24.956
Level compensator LC20-M1450, G1/4" male, stroke 50	01.24.958

Description	Part no.
Level compensator LC25-F3840, G3/8" female, stroke 40	01.24.959
Level compensator LC25-F3880, G3/8" female, stroke 80	01.24.961
Level compensator LC25-M3840, G3/8" male, stroke 40	01.24.960
Level compensator LC25-M3880, G3/8" male, stroke 80	01.24.962
Level compensator LC30	01.11.552
Level compensator 3/8" NPT	33.00.A09
Level compensator G1/2"	33.50.071
Level compensator G1/2" with stiffer spring	01.14.291
Level compensator G1/8"	33.50.069
Level compensator M5	33.50.068
Level compensator LC30	01.11.552



Level compensator LC30 EOAT

- Easy installation with the option of fine adjustments and positioning of the suction cup.
- Conical spring means very low total height in relation to stroke. For example, that can help increase cycle speed in sheet metal press-to-press stamping applications.
- Non-rotational for use with, for example, oval suction cups. Can easily be made rotational.
- Mounting interfaces for standard flexible end-of-arm-tooling (EOAT) systems.
- Quiet and reliable level compensation with load protection and shock absorption.



Level compensator – profile mount

- Compensates for differences in height.
- Provides certain degree of shock absorption.
- Fits on standard size extrusion.



Vactivator V18

- Actuated by vacuum only.
- Automatic extension and retraction.
- Self-adjusting stroke, the piston with a suction cup returns home as soon as it seals off the object.
- Suction cup ordered separately.
- Simple solution for high picking speed.
- Easy installation.
- Designed for millions of cycles under normal industrial conditions.

TECHNICAL DATA

Description	Load, vertical, max.	Action range/Stroke	Thread
Level compensator LC30 EOAT	157 lbf	1.18 in	G3/8" / 1/8"NPSF
Level compensator – profile mount	157 lbf	1.97 in	G3/8" / 3/8" NPT
Vactivator V18/20	1.10 lbf	0.79 in	G1/8"
Vactivator V18/40	1.10 lbf	1.57 in	G1/8"

ORDERING INFORMATION

Description	Part no.
Level compensator LC30 w ball joint LH	01.24.213
Level compensator LC30 w lock pin 16 LH	01.24.215
Level compensator LC30 w lock pin 19 LH	01.24.214
LCS 200 profile mounted level compensator 3/8" NPT female x 3/8" NPT male	01.21.219
LCS 200 profile mounted level compensator G3/8" female x G3/8" female	01.21.220
Vactivator V18/20	01.29.516
Vactivator V18/40	01.29.517



Kenos® level compensator – KSPH

- Adjust differences in levels, for example on lifting devices with several suction cups.



Kenos® level compensator – KSPH, non rotating

- Adjust differences in levels, for example on lifting devices with several suction cups.

TECHNICAL DATA

Description	Spring constant	Spring force	Action range/ Stroke	Volume
Level compensator KSPH, G 1/8" male, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.21 in ³
Level compensator KSPH, G 1/8" male, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.28 in ³
Level compensator KSPH, G 1/8" male, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.34 in ³
Level compensator KSPH, G 1/8" female, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.23 in ³
Level compensator KSPH, G 1/8" female, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.29 in ³
Level compensator KSPH, G 1/8" female, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.36 in ³
Level compensator KSPH, G 1/4" female, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.23 in ³
Level compensator KSPH, G 1/4" female, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.3 in ³
Level compensator KSPH, G 1/4" female, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.37 in ³
Level compensator KSPH, G 1/4" male, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.26 in ³
Level compensator KSPH, G 1/4" male, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.34 in ³
Level compensator KSPH, G 1/4" male, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.41 in ³
Level compensator KSPH, G 3/8" female, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.27 in ³

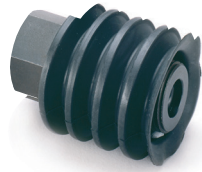
Description	Spring constant	Spring force	Action range/ Stroke	Volume
Level compensator KSPH, G 3/8" female, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.34 in ³
Level compensator KSPH, G 3/8" female, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.41 in ³
Level compensator KSPH, G 3/8" male, stroke 25	4 lbf/in	1.43–5.37 lbf	0.98 in	0.34 in ³
Level compensator KSPH, G 3/8" male, stroke 50	2.63 lbf/in	0.63–5.8 lbf	1.97 in	0.41 in ³
Level compensator KSPH, G 3/8" male, stroke 75	1.48 lbf/in	1.06–5.44 lbf	2.95 in	0.48 in ³
Level compensator KSPH, G 1/2" male, stroke 25	21.9 lbf/in	4.3–25.81 lbf	0.98 in	0.58 in ³
Level compensator KSPH, G 1/2" female, stroke 25	21.9 lbf/in	4.3–25.81 lbf	0.98 in	0.58 in ³
Level compensator KSPH, G 1/2" male, stroke 50	12.7 lbf/in	2.51–27.61 lbf	1.97 in	0.28 in ³
Level compensator KSPH, G 1/2" female, stroke 50	12.7 lbf/in	2.51–27.61 lbf	1.97 in	0.92 in ³
Level compensator KSPH, G 1/2" male, stroke 75	8.05 lbf/in	1.58–25.36 lbf	2.95 in	0.35 in ³
Level compensator KSPH, G 1/2" female, stroke 75	8.05 lbf/in	1.58–25.36 lbf	2.95 in	0.36 in ³

ORDERING INFORMATION

Description	Part no.	Part no. (non rotating)
Level compensator KSPH, G 1/8" male, stroke 25	02.08.900	02.08.901
Level compensator KSPH, G 1/8" male, stroke 50	02.08.902	02.08.903
Level compensator KSPH, G 1/8" male, stroke 75	02.08.904	02.08.905
Level compensator KSPH, G 1/8" female, stroke 25	02.08.906	02.08.907
Level compensator KSPH, G 1/8" female, stroke 50	02.08.908	02.08.909
Level compensator KSPH, G 1/8" female, stroke 75	02.08.910	02.08.911
Level compensator KSPH, G 1/4" female, stroke 25	02.08.912	02.08.913
Level compensator KSPH, G 1/4" female, stroke 50	02.08.914	02.08.915

Description	Part no.	Part no. (non rotating)
Level compensator KSPH, G 1/4" female, stroke 75	02.08.916	02.08.917
Level compensator KSPH, G 1/4" male, stroke 25	02.08.918	02.08.919
Level compensator KSPH, G 1/4" male, stroke 50	02.08.921	02.08.922
Level compensator KSPH, G 1/4" male, stroke 75	02.08.923	02.08.924
Level compensator KSPH, G 3/8" female, stroke 25	02.08.925	02.08.926
Level compensator KSPH, G 3/8" female, stroke 50	02.08.927	02.08.928
Level compensator KSPH, G 3/8" female, stroke 75	02.08.929	02.08.930
Level compensator KSPH, G 3/8" male, stroke 25	02.08.931	02.08.932
Level compensator KSPH, G 3/8" male, stroke 50	02.08.933	02.08.934
Level compensator KSPH, G 3/8" male, stroke 75	02.08.935	02.08.936
Level compensator KSPH, G 1/2" male, stroke 25	02.09.472	02.09.478
Level compensator KSPH, G 1/2" female, stroke 25	02.09.473	02.09.479
Level compensator KSPH, G 1/2" male, stroke 50	02.09.474	02.09.480
Level compensator KSPH, G 1/2" female, stroke 50	02.09.475	02.09.481
Level compensator KSPH, G 1/2" male, stroke 75	02.09.476	02.09.482
Level compensator KSPH, G 1/2" female, stroke 75	02.09.477	02.09.483

Ball Joints



Ball joints

- Ball joint fittings could be used when lifting sheet metal with a device using several suction cups.
- To avoid bending stress a suction cup can be fitted with a balljoint.

TECHNICAL DATA

Description	Load, max.	Movement, angular
Ball joint G1/8"	55.0 lb	±12 °
Ball joint G1/2"	110 lb	±12 °
Ball joint G3/4"	330 lb	±12 °
Ball joint fitting G3/8"	–	±20 °
Ball joint fitting G3/8", locking	–	±20 °
Ball joint fitting G3/8", limited movement	–	±5 °



Ball joint fitting

- Fitted to a suction cup to avoid bending stress.
- Non-leaking design to work with Vacuum Check Valve and Vacustat.
- Available in a loose-fit, a locking version or one with 5° movement.

ORDERING INFORMATION

Description	Part no.
Ball joint G1/8"	33.50.065
Ball joint G1/2"	33.50.066
Ball joint G3/4"	33.50.067
Ball joint fitting G3/8"	X7016
Ball joint fitting G3/8", locking	X7018
Ball joint fitting G3/8", limited movement	X7026

Suction Cup Valves



piSAVE® sense

- Vacuum check valves which allows a few suction cups to miss the object(s) and still maintain enough vacuum level in the system with quick response and release times.
- The vacuum check valves shall be used in a centralized vacuum system, one for each suction cup.
- Designing with vacuum check valves will require a smaller vacuum pump and save energy.
- Suitable for handling different size or different number of leaking or sealed objects such as MDF boards, corrugated cardboards or metal sheets with a flexible handling device.
- Also suitable for objects with surface leakage around the lip of the suction cup.
- The smallest sizes are mainly suitable for sealed and smooth materials, such as metal and glass (02/06 for small cups and 03/60 for large cups).
- The valves are supplied separately for integration or mounted in an Al-fitting with female and male threaded connections to facilitate installation.

piSAVE® restrict

- Vacuum flow restrictors which allows a few suction cups to miss the object(s) and still maintain enough vacuum level in the system.
- Suitable for handling different size sealed sheets/ objects with the same flexible lifting device.
- The vacuum flow restrictors shall be used in a centralized vacuum system, one for each suction cup.
- Designing with flow restrictors will require a smaller vacuum pump and save energy.
- Available in three sizes with different flow performance/ characteristics to suit different size suction cups.
- The restrictors are integrated in an Al-fitting with female and male threaded connections to facilitate installation.

TECHNICAL DATA

Description	Pump flow/cup min.	Pump flow/cup to close valve	Leakage flow, max.
piSAVE sense 02/60 (yellow)	0.002 (@ 13.3 -inHg) scfm	0.44 (@ 0.9 -inHg) scfm	–
piSAVE sense 03/60 (green)	0.13 (@ 13.3 -inHg) scfm	0.78 (@ 0.9 -inHg) scfm	–
piSAVE sense 04/60 (blue)	0.32 (@ 13.3 -inHg) scfm	1.17 (@ 2.1 -inHg) scfm	–
piSAVE sense 05/60 (red)	0.53 (@ 13.3 -inHg) scfm	1.53 (@ 3.3 -inHg) scfm	–

Description	Pump flow/cup min.	Pump flow/cup to close valve	Leakage flow, max.
piSAVE restrict multiple port fitting 0.7	–	–	0.17 scfm
piSAVE restrict multiple port fitting 1.0	–	–	0.34 scfm
piSAVE restrict multiple port fitting 1.3	–	–	0.57 scfm

ORDERING INFORMATION

Description	Part no.
piSAVE® sense 02/60 (yellow), 100p, incl. Assembly tool	02.02.395
piSAVE® sense 02/60 (yellow), 10p, incl. Assembly tool	02.02.394
piSAVE® sense 03/60 (green), 100p, incl. Assembly tool	02.02.427
piSAVE® sense 03/60 (green), 10p, incl. Assembly tool	02.02.424
piSAVE® sense 04/60 (blue), 100p, incl. Assembly tool	02.02.428
piSAVE® sense 04/60 (blue), 10p, incl. Assembly tool	02.02.425
piSAVE® sense 05/60 (red), 100p, incl. Assembly tool	02.02.429
piSAVE® sense 05/60 (red), 10p, incl. Assembly tool	02.02.426
piSAVE® sense Assembly tool 16mm	02.02.589
piSAVE® sense Multiple port fitting 02/60 (yellow)	02.02.396
piSAVE® sense Multiple port fitting 03/60 (green)	01.28.719
piSAVE® sense Multiple port fitting 04/60 (blue)	01.28.731
piSAVE® sense Multiple port fitting 05/60 (red)	01.28.733
piSAVE® restrict multiple port fitting 0.7	01.29.339
piSAVE® restrict multiple port fitting 1.0	01.29.340
piSAVE® restrict multiple port fitting 1.3	01.29.341



piSAVE® release

- Equalizes pressure in the suction cups to provide fast release of the product.
- Extra fast release by accumulating and utilising the feed-air pressure as a boost.
- ON/OFF activated simultaneously with the ejector.
- No additional controls required — use a single 3/2 control valve for the ejector and piSAVE release.



AQR (Atmospheric Quick-Release Valve)

- Equalizes pressure in vacuum gripper systems to provide fast release of product.
- Consumes no additional compressed air.
- ON/OFF activated simultaneously with the ejector.
- No additional controls required — use a single 3/2 control valve for the pump and AQR.



Blow-off Check Valve

- Prevents vacuum from being pulled through the blow-off lines, which means faster response time and completely independent vacuum units.
- Reliable quick-release function even in larger systems with several units, due to the very low feed pressure required to break away for blow-off.
- Suitable in applications where cleaning of the suction cup filters or cooling of the object to be picked is important.

TECHNICAL DATA

Description	Flow, atmospheric	Flow rate
piSAVE release G1/8"	8.16 scfm	–
piSAVE release G1/4"	16.6 scfm	–
Atmospheric quick-release valve – AQR	6.99 scfm	–
Blow-off Check valve G1/8"	–	3.18–5.93 scfm (@ 44-101.5 psi)

ORDERING INFORMATION

Description	Part no.
piSAVE® release G1/4"	01.19.720
piSAVE® release G1/8"	01.19.721
Atmospheric quick-release valve – AQR.	01.11.236
Blow-off Check valve 1/8" NPSF female.	01.15.314
Blow-off Check valve G1/4" female	01.17.337

Suction Cup Fittings

	M2,5 Male	M5 Male	M5 Female	5xM5 Female	M10x1,5 Male	G3/4" Female	G1/2" Female	G1/2" Male	G3/8" Female	G3/8" Male	G1/4" Female	G1/4" Male
B		5, 8, 10, 15		20		150	75, 110, 150		75, 110	30, 40, 50		30, 40, 50
BB-L								30, 40, 60		30, 40, 60		
BFF					40, 60, 80, 110				30, 40, 60, 80, 110	60, 80, 110	30, 40, 60, 80, 110	80, 110
BFFT					50, 70, 80, 90, 110				50, 70, 80, 90, 110	80, 110	50, 70, 80, 90, 110	50, 70, 80, 90, 110
BL-2				20						30, 40, 50		30, 40, 50
BL-3-P								50		30, 40		
BL-4								50		40		30
BL-5								50		40		30
B-MF		15		20						30, 40, 50		30, 40, 50
B-P							75		75	75		
BXF					60, 75, 90, 105				60, 75, 90, 105	60, 75, 90, 105	60, 75, 90, 105	60, 75, 90, 105
BX-P		10, 15		20, 25						35, 52, 75, 110		25, 35, 52, 75
B-XP				20, 25						35, 52, 75, 110		35, 52, 75
D		15		30						50		50
DCF					65, 90, 110				65, 90, 110		65, 90, 110	65, 90, 110
F				20, 25, 30		150	75, 110, 150		75, 110	40, 50, 75, 110,		26, 33, 40, 50
F-BX		10								25, 35		15, 20, 25, 35
FC				20, 25			100, 150		100, 150	35, 75, 100		35

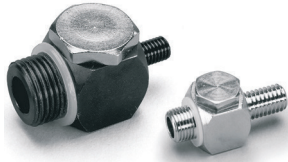
G1/8" Male	G1/8" M. / M5 F.	3/8" NPSF Female	1/8" NPSF Female	5x1/8" NPSF F.	3/8" NPT Female	3/8" NPT Male	1/2" NPT Male	1/4" NPT Female	1/4" NPT Male	1/8" NPT Male	G3/8" M. / 1/8" NPSF F.	T-slot
20	20	110	30, 40, 50, 75, 110	30, 40, 50		30, 40, 50	30, 40, 50	75		20		
						30, 40, 60	30, 40, 60					
					30, 40, 60, 80, 110							
			50, 70, 90		50, 70, 80, 90, 110						50, 70, 90	
20	20		30, 40, 50	30, 40, 50		30, 40, 50			30, 40, 50	20		
						30, 40	50					
						40	50		30			
						40	50		30			
20	20		30, 40, 50	30, 40, 50		40, 50			30, 40, 50	20		
		75	75									
					60, 75, 90, 105							
20, 25, 35, 52, 75	20, 25	75, 110	35, 52	52		35, 52			35, 52	20, 25		
20, 25, 35, 52, 75	20, 25	52, 75, 110,	35, 52	52		35, 52			35, 52	20, 25	75	
20,30	20, 30		50						50	20, 30		
					65, 90, 110						65, 90, 110	
20, 25, 30	20, 25, 30	75, 110	40, 50, 75	40, 50		40, 50		75	40,50	20, 25, 30		
10, 15, 20						25, 35			15, 20, 25, 35	10, 15, 20		
25, 25	20, 25	75, 100, 150,	20, 25, 35, 100	35		35			35	20, 25	50, 75	

Specifications subject to change without notice.

	M2,5 Male	M5 Male	M5 Female	5xM5 Female	M10x1,5 Male	G3/4" Female	G1/2" Female	G1/2" Male	G3/8" Female	G3/8" Male	G1/4" Female	G1/4" Male
FCF					35, 50, 75, 100, 125				25, 35, 50, 75, 100, 125	35, 50, 75, 100, 125	25, 35, 50, 75, 100, 125	
F-MF			15, 25	20, 30						40,50		40, 50
F-OB												20x40, 30x60
OB										35x90, 50x140, 65x170 35x90, 50x140, 65x170		
OBF					15x35, 15x65, 30x60, 35x90, 50x140, 65x170				15x35,15x65, 30x60, 35x90, 50x140, 65x170	15x35,15x65, 30x60, 35x90, 50x140, 65x170	15x35, 15x65, 30x60	15x35, 15x65, 30x60
OBL										40x90		
OC									60x140			
OCF					20x50				20x80, 30x90, 40x110, 20x50, 20x50	20x80, 30x90, 40x110, 20x50	20x50	20x50
OC-P									35x90, 35x90	35x90		
OF		15x45								15x45		
PD										27		27
RB											20x40	
U	2, 3	4, 6, 8, 10, 15	20, 30	20, 30						40, 50		40, 50
U-P												
XLF							150, 200, 250,300					

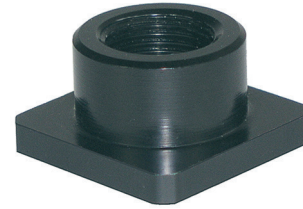
G1/8" Male	G1/8" M. / M5 F.	3/8" NPSF Female	1/8" NPSF Female	5x1/8" NPSF F.	3/8" NPT Female	3/8" NPT Male	1/2" NPT Male	1/4" NPT Female	1/4" NPT Male	1/8" NPT Male	G3/8" M. / 1/8" NPSF F.	T-slot
					25, 35, 50, 75, 100, 125							
20, 30	20, 30		40, 50	40		40,50			40, 50	20, 30		
10x30, 20x40, 30x60												
20x60		35x90, 50x140, 65x170 35x90, 50x140, 65x170										
					15x35, 15x65, 30x60, 35x90, 50x140, 65x170	15x35						15x35, 15x65, 30x60
					60x140							
					20x80, 30x90, 40x110, 20x50							20x50
		35x90										
15x45		15x45										
27						27			27	27		
20x40												
20, 30	20, 30		40, 50	40, 50		50			40, 50	20, 30		
20												

Other



Angle Adaptors

- Angle adaptors facilitate vacuum connections when space and headroom are limited.
- Can also be used as T-connectors.



T-slot Adapters

- The Piab T-slot adapter enables Piab suction cups to mount to existing boom assemblies and end-of-arm tooling used in the automotive industry. The T-slot adapter threads into the Piab cup fitting and can then be mounted accordingly.
- The suction cups can be changed quickly and with great ease.
- Non-rotating feature — good when using oval suction cups.

ORDERING INFORMATION

Description	Part no.
Angle adapter G1/2"–M8	31.50.054U
Angle adapter G1/8"–M5	31.50.052U
Angle adapter G1/8"–M8	31.50.053U
T-slot adapter 3/8" NPT	01.04.111
T-slot adapter G1/2" male	01.04.112
T-slot adapter G1/8" male	01.04.108
T-slot adapter G3/8" female	01.07.942
T-slot adapter G3/8" male	01.04.110

Vacuum pumps/generators

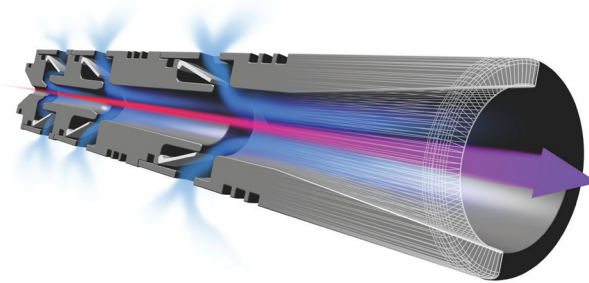


VACUUM PUMPS/GENERATORS	221
Vacuum cartridges / custom integration	223
piINLINE®	234
Compact/stackable	244
Combined pump and gripper	264
Standard	278
Extra safety	308
Chemical resistant	316

COAX® technology

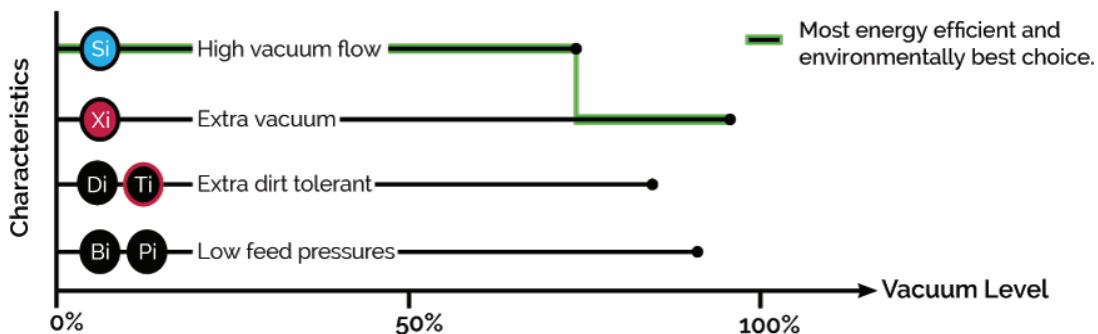
PIAB VACUUM PUMPS/GENERATORS ARE PREDOMINATELY BASED ON THE PATENTED COAX® TECHNOLOGY.

COAX® is an advanced solution for creating vacuum with compressed air. Based on Piab's multistage technology, COAX® cartridges are smaller, more efficient and more reliable than conventional ejectors, which allow for the design of a flexible, modular and efficient vacuum system. A vacuum system based on COAX® technology can provide you with three times more vacuum flow than conventional systems, allowing you to increase speed with high reliability while reducing energy consumption. COAX® cartridges exist in several sizes (MIDI, MINI & MICRO) and models (Bi, Pi, Si, Ti, Xi and Di), making them suitable for every application. The technology ensures excellent performance at both low and high feed pressures. Pumps based on COAX® technology can operate within the feed pressure range of 25 to 87 psi.



CUSTOM INTEGRATION

- The two-stage COAX® cartridge MICRO is probably the world's smallest multistage vacuum ejector. Its low weight makes it suitable to integrate close to the suction point in high speed pick and-place applications of small objects.
- The two-stage COAX® cartridge MINI has small mounting dimensions and the three-stage COAX® cartridge MINI has high initial vacuum flow.
- The two-stage COAX® cartridge MIDI has small mounting dimensions and the three-stage COAX® cartridge MIDI has high initial vacuum flow. The MIDI cartridges are efficient generators of blow-air and are also suitable for fast evacuation of large volumes.



COAX® MICRO family



MICRO Bi03-2



MICRO Si02-2



MICRO Ti05-2



MICRO Xi2.5-2

The two-stage COAX® cartridge MICRO is probably the world's smallest multistage vacuum ejector. Its low weight makes it suitable to integrate close to the suction point in high speed pick-and-place applications of small objects.

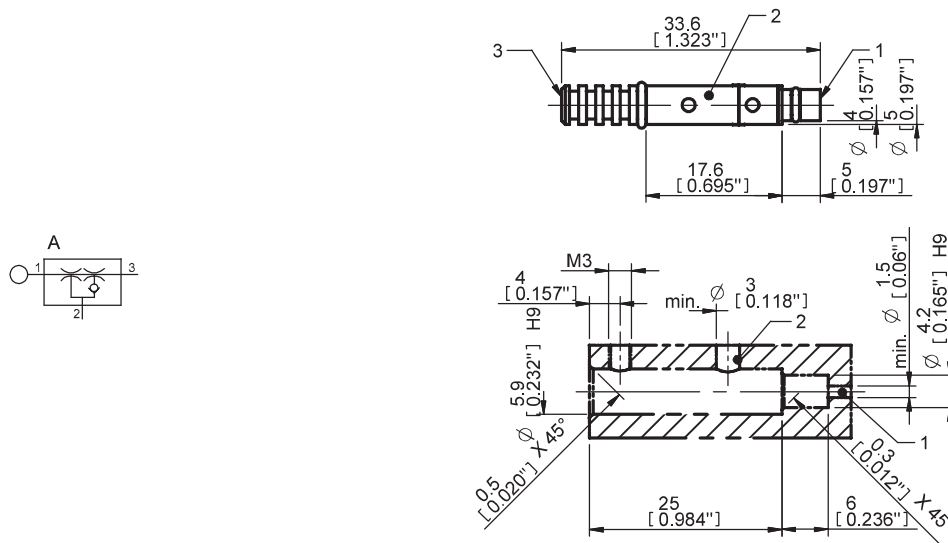
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	—	24.5
MICRO Si02-2	87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	—	22.1
MICRO Ti05-2	58	0.57	0.68	0.59	0.49	0.36	0.21	0.15	0.08	0.04	0.01	24.8
MICRO Xi2.5-2	73	0.28	0.51	0.36	0.21	0.13	0.08	0.06	0.04	0.02	0.02	27.2

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	14.2	39.6	110	181	283	453	793	1444	24.5
MICRO Si02-2	87	0.25	11.6	28.6	56.9	93.4	139	195	289	—	22.1
MICRO Ti05-2	58	0.57	9.34	20.7	34	56.6	87.8	142	235	470	24.8
MICRO Xi2.5-2	73	0.28	13.9	34.8	70.2	127	207	320	510	793	27.2

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
COAX® cartridge MICRO Bi03-2	01.06.966
COAX® cartridge MICRO Bi03-2, holding cap	01.06.968
COAX® cartridge MICRO Si02-2	01.13.591
COAX® cartridge MICRO Si02-2, holding cap	01.13.593
COAX® cartridge MICRO Ti05-2	01.23.098
COAX® cartridge MICRO Ti05-2, holding cap	01.25.794
COAX® cartridge MICRO Xi2.5-2	01.20.297
COAX® cartridge MICRO Xi2.5-2, holding cap	01.20.283

COAX® MINI family



The two-stage COAX® cartridge MINI has small mounting dimensions and the three-stage COAX® cartridge MINI has high initial vacuum flow.

VACUUM FLOW

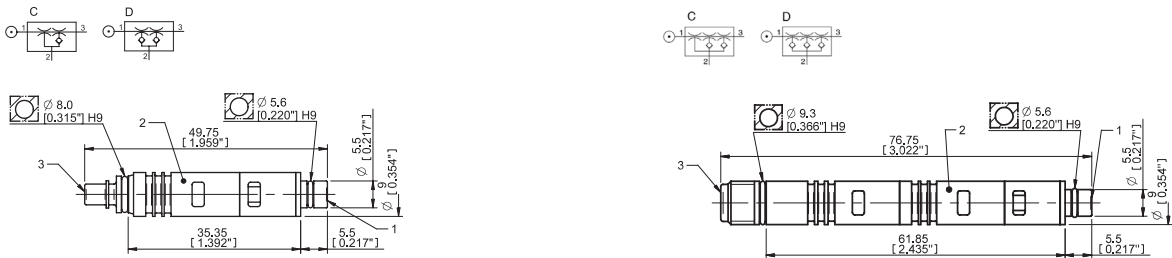
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Di16-2	87	1.59	1.36	1.21	1.04	0.87	0.74	0.61	0.38	0.08	—	—	21.5
MINI Pi12-2	46	0.93	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Pi12-3	46	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Pi12-3 FS	46	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Si08-2	87	0.93	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	—	—	22.1
MINI Si08-3	87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	—	—	22.1

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Si08-3 FS	87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	—	—	22.1
MINI Xi10-2	73	0.97	1.59	1.33	1.04	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7
MINI Xi10-3	73	0.97	3.03	1.48	1.06	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7
MINI Xi10-3 FS	73	0.97	3.03	1.48	1.06	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Di16-2	87	1.59	4.81	9.91	16.4	23.8	32.6	44.7	70.5	—	—	21.5
MINI Pi12-2	46	0.93	4.81	9.06	16.4	31.1	51.0	76.5	113	181	—	26.6
MINI Pi12-3	46	0.93	2.27	6.51	13.9	28.3	48.1	73.6	110	178	—	26.6
MINI Pi12-3 FS	46	0.93	2.27	6.51	13.9	28.3	48.1	73.6	110	178	—	26.6
MINI Si08-2	87	0.93	3.96	8.78	15.6	25.5	39.6	59.5	87.8	—	—	22.1
MINI Si08-3	87	0.93	2.83	7.08	13.6	22.7	36.8	56.6	82.1	—	—	22.1
MINI Si08-3 FS	87	0.93	2.83	7.08	13.6	22.7	36.8	56.6	82.1	—	—	22.1
MINI Xi10-2	73	0.97	3.96	8.50	17.0	28.3	45.3	65.1	99.1	150	252	27.7
MINI Xi10-3	73	0.97	2.55	7.36	14.2	25.5	42.5	62.3	96.3	147	249	27.7
MINI Xi10-3 FS	73	0.97	2.55	7.36	14.2	25.5	42.5	62.3	96.3	147	249	27.7

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
COAX® cartridge MINI Di16-2	02.04.917
COAX® cartridge MINI Di16-2, holding cap	02.04.918
COAX® cartridge MINI Pi12-2	01.06.922
COAX® cartridge MINI Pi12-2, extra non-return valve	01.06.963
COAX® cartridge MINI Pi12-2, holding cap	01.06.924
COAX® cartridge MINI Pi12-2, holding cap, extra non-return valve	01.06.964
COAX® cartridge MINI Pi12-3	01.06.895
COAX® cartridge MINI Pi12-3, extra non-return valve	01.06.956
COAX® cartridge MINI Pi12-3, extra non-return valve, holding cap silencer, vacuum filter	01.06.676
COAX® cartridge MINI Pi12-3, holding cap	01.06.923
COAX® cartridge MINI Pi12-3, holding cap silencer, vacuum filter	01.04.265
COAX® cartridge MINI Pi12-3, holding cap, extra non-return valve	01.06.957
COAX® cartridge MINI Si08-2	01.13.583
COAX® cartridge MINI Si08-2, extra non-return valve	01.13.587
COAX® cartridge MINI Si08-2, holding cap	01.13.585
COAX® cartridge MINI Si08-2, holding cap, extra non-return valve	01.13.589
COAX® cartridge MINI Si08-3	01.13.214
COAX® cartridge MINI Si08-3, extra non-return valve	01.13.575
COAX® cartridge MINI Si08-3, extra non-return valve, holding cap silencer, vacuum filter	01.13.581
COAX® cartridge MINI Si08-3, holding cap	01.13.572
COAX® cartridge MINI Si08-3, holding cap silencer, vacuum filter	01.13.579

Description	Part no.
COAX® cartridge MINI Si08-3, holding cap, extra non-return valve	01.13.577
COAX® cartridge MINI Xi10-2	01.20.284
COAX® cartridge MINI Xi10-2, extra non-return valve	01.20.280
COAX® cartridge MINI Xi10-2, holding cap	01.20.294
COAX® cartridge MINI Xi10-2, holding cap, extra non-return valve	01.20.300
COAX® cartridge MINI Xi10-3	01.20.286
COAX® cartridge MINI Xi10-3, extra non-return valve	01.20.289
COAX® cartridge MINI Xi10-3, extra non-return valve, holding cap silencer, vacuum filter	01.20.776
COAX® cartridge MINI Xi10-3, holding cap	01.20.299
COAX® cartridge MINI Xi10-3, holding cap silencer, vacuum filter	01.20.775
COAX® cartridge MINI Xi10-3, holding cap, extra non-return valve	01.20.298

COAX® MIDI family



The two-stage COAX® cartridge MIDI has small mounting dimensions and the three-stage COAX® cartridge MIDI has high initial vacuum flow. The MIDI cartridges are efficient generators of blow-air and are also suitable for fast evacuation of large volumes.

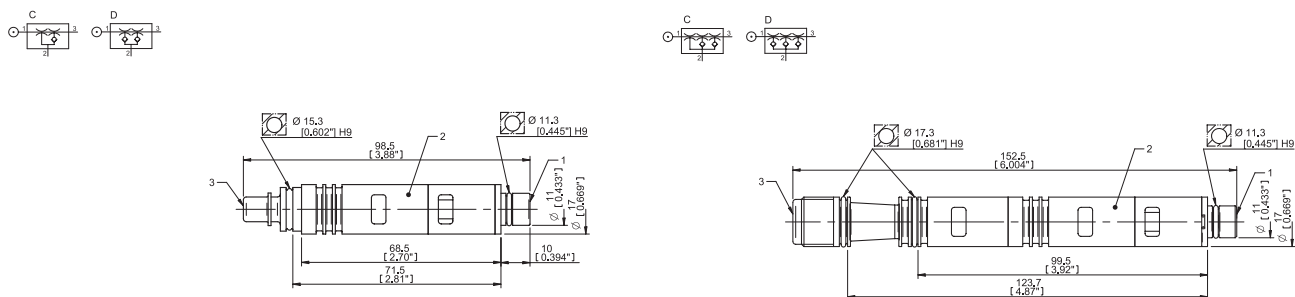
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Pi48-2	45	4.24	5.9	5.3	3.8	2.3	1.4	1.1	0.7	0.5	0.2	—	26.6
MIDI Pi48-3	45	4.34	11.87	5.3	3.8	2.3	1.4	1.1	0.7	0.5	0.2	—	26.6
MIDI Si32-2	87	3.71	7.0	6.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
MIDI Si32-3	87	3.71	12.71	7.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
MIDI Xi40-2	65	3.88	5.9	4.9	3.4	2.1	1.5	1.2	0.9	0.7	0.4	0.1	28
MIDI Xi40-3	65	3.88	12.5	6.4	4.2	2.8	1.5	1.2	0.9	0.7	0.4	0.1	28

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MIDI Pi48-2	45	4.24	0.85	1.98	3.68	7.36	13	19.8	28.3	45.3	113	26.6
MIDI Pi48-3	45	4.34	0.57	1.7	3.4	7.08	12.7	19.8	28.3	45.3	113	26.6
MIDI Si32-2	87	3.71	0.85	1.98	2.83	5.10	9.34	15	22.7	—	—	22.1
MIDI Si32-3	87	3.71	0.57	1.42	2.83	5.10	9.34	15	22.7	—	—	22.1
MIDI Xi40-2	65	3.88	1.13	2.55	4.81	7.93	12.5	17.8	25.5	36.8	65.1	28
MIDI Xi40-3	65	3.88	0.62	1.76	3.4	6.23	10.5	16.1	23.8	34	62.3	28

DIMENSIONAL DRAWING

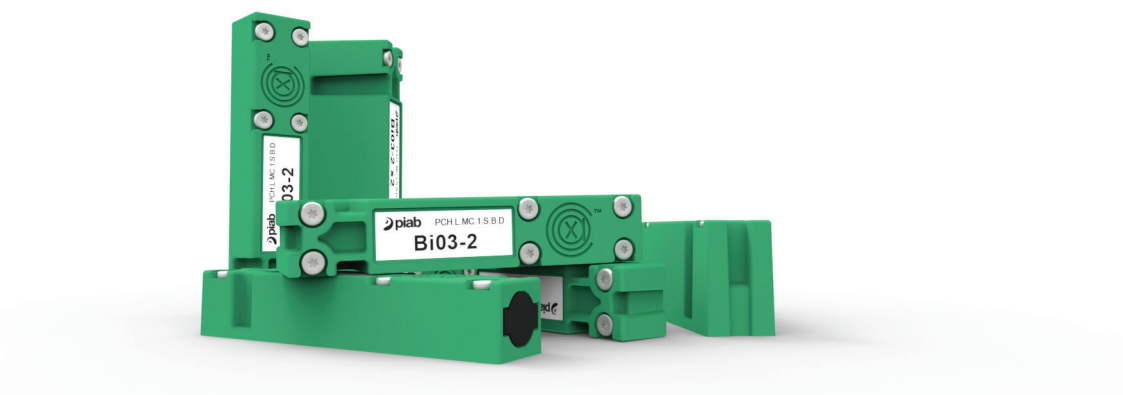


ORDERING INFORMATION

Description	Part no.
COAX® cartridge MIDI Pi48-2	01.07.125
COAX® cartridge MIDI Pi48-2, extra non-return valve	01.07.710
COAX® cartridge MIDI Pi48-2, holding cap	01.07.127
COAX® cartridge MIDI Pi48-2, holding cap, extra non-return valve	01.07.712
COAX® cartridge MIDI Pi48-3	01.06.639
COAX® cartridge MIDI Pi48-3, extra non-return valve	01.07.714
COAX® cartridge MIDI Pi48-3, extra non-return valve, sealings in Viton®	01.24.806
COAX® cartridge MIDI Pi48-3, holding cap	01.07.129
COAX® cartridge MIDI Pi48-3, holding cap, extra non-return valve	01.07.716
COAX® cartridge MIDI Pi48-3, sealings in Viton®	01.17.286
COAX® cartridge MIDI Si32-2	01.07.124
COAX® cartridge MIDI Si32-2, extra non-return valve	01.07.709
COAX® cartridge MIDI Si32-2, holding cap	01.07.126
COAX® cartridge MIDI Si32-2, holding cap, extra non-return valve	01.07.711
COAX® cartridge MIDI Si32-3	01.07.053

Description	Part no.
COAX® cartridge MIDI Si32-3, extra non-return valve	01.07.713
COAX® cartridge MIDI Si32-3, extra non-return valve, sealings in Viton®	01.22.176
COAX® cartridge MIDI Si32-3, holding cap	01.07.128
COAX® cartridge MIDI Si32-3, holding cap, extra non-return valve	01.07.715
COAX® cartridge MIDI Si32-3, sealings in Viton®	01.14.989
COAX® cartridge MIDI Xi40-2	01.18.747
COAX® cartridge MIDI Xi40-2, extra non-return valve	01.18.748
COAX® cartridge MIDI Xi40-2, holding cap	01.18.757
COAX® cartridge MIDI Xi40-2, holding cap, extra non-return valve	01.18.758
COAX® cartridge MIDI Xi40-3	01.18.724
COAX® cartridge MIDI Xi40-3, extra non-return valve	01.18.725
COAX® cartridge MIDI Xi40-3, extra non-return valve, sealings in Viton®	01.24.796
COAX® cartridge MIDI Xi40-3, holding cap	01.18.759
COAX® cartridge MIDI Xi40-3, holding cap, extra non-return valve	01.18.760
COAX® cartridge MIDI Xi40-3, sealings in Viton®	01.24.794

piCHIP10X family



The lightweight piCHIP10X unit is a small vacuum pump which is optimized for integration. It is flexible enough to surface mount quickly on a variety of materials. With its almost silent operation, the piCHIP10X is ideal for clean room operations. Medical and electronic industries are best suited to use this product in their vacuum applications. Because COAX® cartridges are up to twice as fast as other cartridges and provide three times more flow than a conventional ejector with the same air consumption, the piCHIP10X is able to provide a high performance even at low or fluctuating feed pressures (14.5-87 psi).

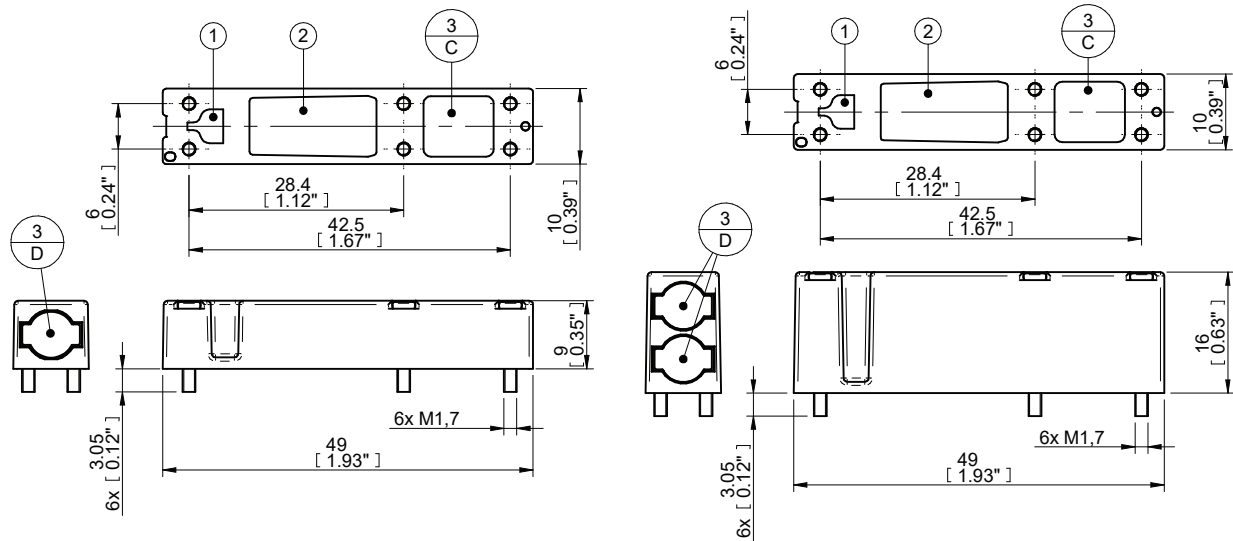
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	—	24.5
MICRO Si02-2	87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	—	22.1
MICRO Ti05-2	58	0.57	0.68	0.59	0.49	0.36	0.21	0.15	0.08	0.04	0.01	24.8
MICRO Xi2.5-2	73	0.28	0.51	0.36	0.21	0.13	0.08	0.06	0.04	0.02	0.02	27.1

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	14.2	39.6	110	181	283	453	793	1444	24.5
MICRO Si02-2	87	0.25	11.6	28.6	56.9	93.4	139	195	289	—	22.1
MICRO Ti05-2	58	0.57	9.34	20.7	34.0	56.6	87.8	142	235	470	24.8
MICRO Xi2.5-2	73	0.28	13.9	34.8	70.2	127	207	320	510	793	27.1

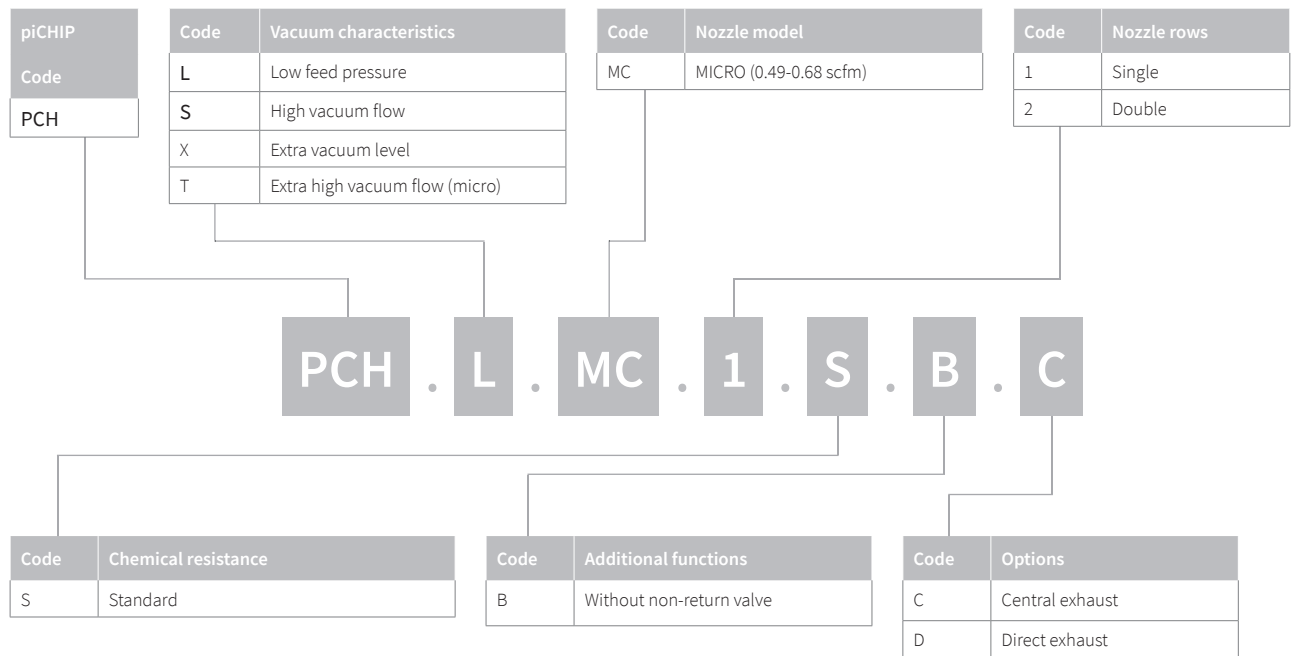
DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

piCHIP10X – CUSTOMER CODE



piINLINE® MICRO family



piINLINE® are small lightweight inline ejectors that use the patented COAX® technology inside. They can be mounted directly on a hose close to the suction cup (or point of suction). Piab's piINLINE® ejector program offers much better performance with at least 40-50% lower energy consumption compared to competing Inline single-stage ejectors in corresponding sizes. Inline vacuum generators are especially common in electronic/semiconductor pick-and-place applications, dedicated packaging equipment, injection-molding automation and unloading/loading metal forming machines (bending, punching and laser-cutting)

The COAX® Cartridge Si/Ti for extra vacuum flow. Bi cartridge for reliability at low feed pressures. And Ti/Xi cartridge when high flow and deep vacuum is needed. The Ti cartridges are also extra dirt tolerant.

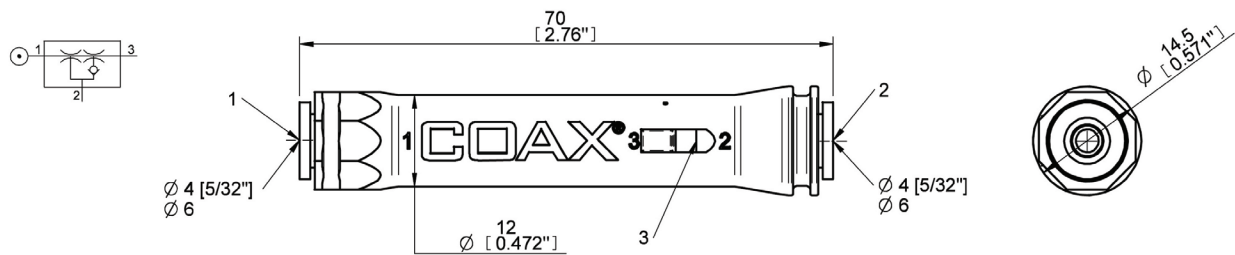
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	0.49	0.32	0.13	0.08	0.07	0.05	0.03	0.01	—	24.5
MICRO Si02-2	87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	—	22.1
MICRO Ti05-2	58	0.57	0.68	0.59	0.49	0.36	0.21	0.15	0.08	0.04	0.01	24.8
MICRO Ti05-2	87	0.78	0.66	0.57	0.51	0.42	0.32	0.19	0.08	0.02	—	22.1
MICRO Xi2.5-2	73	0.28	0.51	0.36	0.21	0.13	0.08	0.06	0.04	0.02	0.02	27.1

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	14.2	39.6	110	181	283	453	793	1444	24.5
MICRO Si02-2	87	0.25	11.6	28.6	56.9	93.4	139	195	289	—	22.1
MICRO Ti05-2	58	0.57	9.34	20.7	34.0	56.6	87.8	142	235	470	24.8
MICRO Ti05-2	87	0.78	8.50	19.8	34.0	51.0	73.6	119	239	—	22.1
MICRO Xi2.5-2	73	0.28	13.9	34.8	70.2	127	207	320	510	793	27.1

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
piINLINE® vacuum generator MICRO Bi, 4-4 mm	01.22.880
piINLINE® vacuum generator MICRO Bi, 6-6 mm	01.22.883
piINLINE® vacuum generator MICRO Si, 6-6 mm	01.22.882
piINLINE® vacuum generator MICRO Ti, 6-6 mm	01.22.022
piINLINE® vacuum generator MICRO Xi, 4-4 mm	01.22.881
piINLINE® vacuum generator MICRO Xi, 6-6 mm	01.22.884

piINLINE® MINI family



piINLINE® are small lightweight inline ejectors that use the patented COAX® technology inside. They can be mounted directly on a hose close to the suction cup (or point of suction). Piab's piINLINE® ejector program offers much better performance with at least 40-50% lower energy consumption compared to competing inline single-stage ejectors in corresponding sizes. Inline vacuum generators are especially common in electronic/semiconductor pick-and-place applications, dedicated packaging equipment, injection-molding automation and unloading/loading metal forming machines (bending, punching and laser-cutting).

The COAX® Cartridge Si cartridge for extra vacuum flow the Pi cartridge for high performance at low feed pressures. And the Xi cartridge when high flow and deep vacuum is needed.

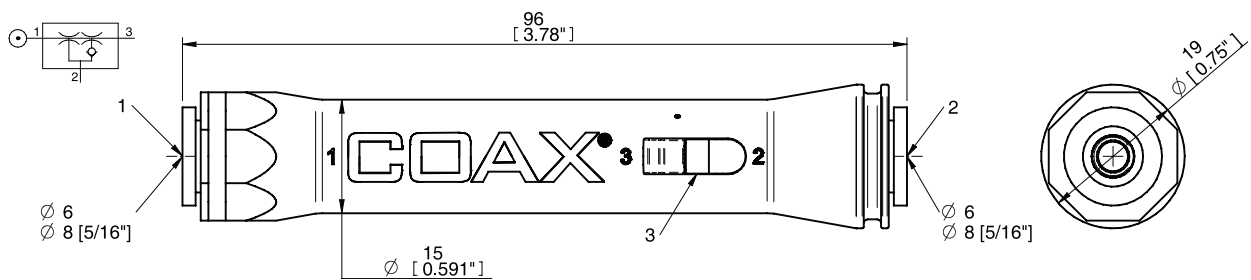
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Si08-2	87	0.93	1.46	1.17	0.89	0.59	0.49	0.34	0.25	0.17	—	—	22.1
MINI Pi12-2	46	0.93	1.21	0.93	0.66	0.49	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Xi10-2	73	0.97	1.31	1.06	0.78	0.57	0.40	0.32	0.23	0.15	0.095	0.023	27.7

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Si08-2	87	0.93	4.53	10.5	18.7	31.1	39.6	59.5	87.8	—	—	22.1
MINI Pi12-2	46	0.93	5.66	13.0	23.5	31.1	51.0	76.5	113	181	—	26.6
MINI Xi10-2	73	0.97	5.10	11.6	20.4	28.3	45.3	65.1	99.1	150	252	27.7

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
piINLINE® vacuum generator MINI Pi, 6-6 mm	01.22.894
piINLINE® vacuum generator MINI Pi, 8-8 mm	01.22.897
piINLINE® vacuum generator MINI Si, 6-6 mm	01.22.025
piINLINE® vacuum generator MINI Si, 8-8 mm	01.22.896
piINLINE® vacuum generator MINI Xi, 1/4"-1/4"	02.05.550
piINLINE® vacuum generator MINI Xi, 6-6 mm	01.22.895
piINLINE® vacuum generator MINI Xi, 8-8 mm	01.22.898

piINLINE® MIDI family



piINLINE® are small lightweight inline ejectors that use the patented COAX® technology inside. They can be mounted directly on a hose close to the suction cup (or point of suction). Piab's piINLINE® ejector program offers much better performance with at least 40-50% lower energy consumption compared to competing inline single-stage ejectors in corresponding sizes. Inline vacuum generators are especially common in electronic/semiconductor pick-and-place applications, dedicated packaging equipment, injection-molding automation and unloading/loading metal forming machines (bending, punching and laser-cutting).

The COAX® Cartridge Si cartridge for extra vacuum flow the Pi cartridge for high performance at low feed pressures. And the Xi cartridge when high flow and deep vacuum is needed.

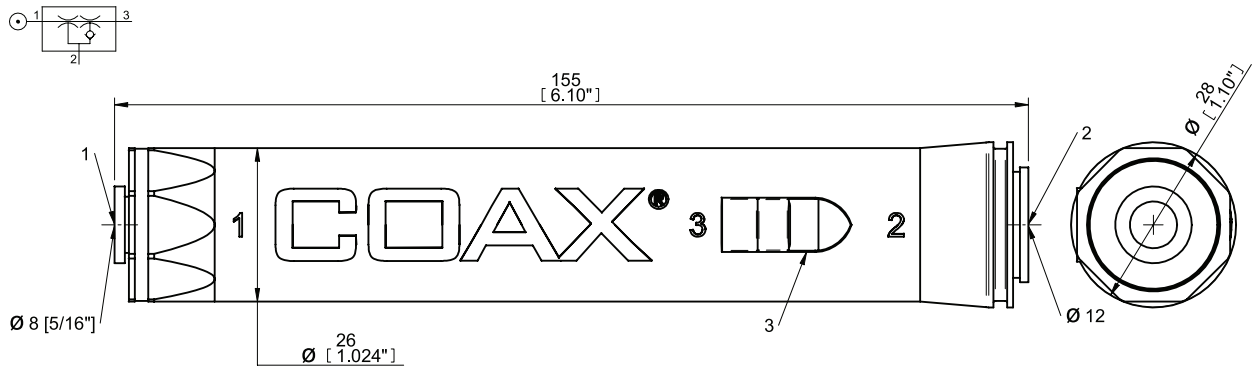
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-2	87	3.71	6.57	5.3	4.03	2.54	1.48	1.27	1.06	0.74	—	—	22.1
MIDI Pi48-2	45	4.24	5.72	4.66	3.18	1.97	1.38	1.06	0.74	0.53	0.21	—	26.6
MIDI Xi40-2	65	3.88	5.93	4.87	3.39	2.12	1.55	1.23	0.91	0.68	0.38	0.06	28.1

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MIDI Si32-2	87	3.71	1.13	2.27	3.96	7.08	11.3	16.7	23.2	—	—	22.1
MIDI Pi48-2	45	4.24	1.13	2.83	5.1	8.5	13.6	20.1	29.7	52.4	113	26.6
MIDI Xi40-2	65	3.88	1.13	2.55	4.81	7.93	12.5	17.8	25.5	36.8	65.1	28.1

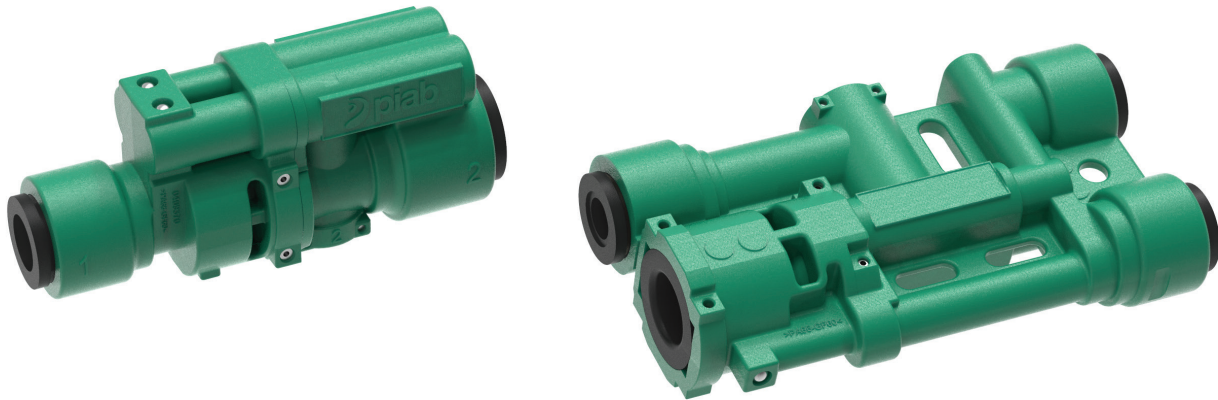
DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
piINLINE® vacuum generator MIDI Pi, 8-12 mm	01.22.899
piINLINE® vacuum generator MIDI Si, 8-12 mm	01.22.032
piINLINE® vacuum generator MIDI Xi, 8-12 mm	01.22.900

piINLINE® plus



The ultra-lightweight vacuum ejectors feature a unique and integrated automatic release mechanism, and come in compact, minimized packages. Tailor-made for automotive press-shop automation, piINLINE® plus generators utilize the COAX® technology, ensuring low air consumption (typically 25 percent lower than competing technology), excellent suction capacity, and fast evacuation. Generators can be configured with either one or two MICRO COAX® cartridges; two cartridges for larger suction cups in high speed applications, or one cartridge for smaller suction cups or for reduced air consumption when high speed is not essential.

The integrated release function is available in two optional designs – the easily controllable Atmospheric Quick Release (AQR), which requires no extra compressed air hose, and the very fast performing Exhaust Block Release (EBR).

VACUUM FLOW

COAX® cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO TI05-2	72.5	1.36	1.3	1.2	1	0.8	0.56	0.3	0.12	0.04	0	23.9

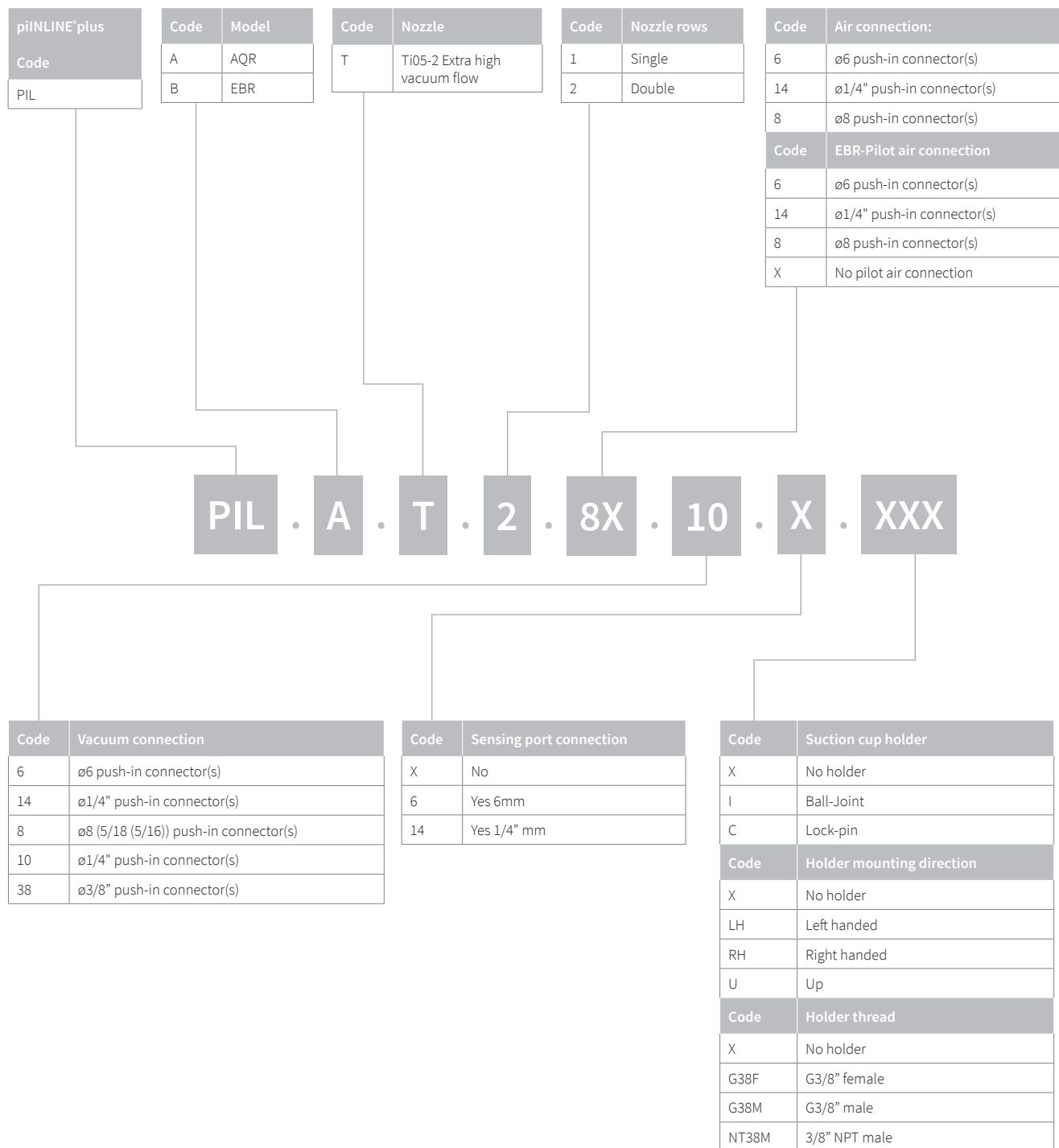
EVACUATION TIMES

COAX® cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO TI05-2	72.5	1.36	4.8	10.2	17	25.5	39.7	68	139	375	23.9

ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

piINLINE® PLUS – CUSTOMER CODE



piSTAMP



piSTAMP offers easy retrofitting in the automotive press shop tooling. The ultra-lightweight vacuum generator features a unique and integrated release mechanism, and comes in a compact, minimized package. A fully decentralized design with compressed air ports at the side and vacuum port underneath, piSTAMP will fit perfectly in generic suction cup holders found in standard press shop tooling systems. piSTAMP utilizes COAX® technology, typically 25 percent lower than competing technology, excellent suction capacity, and fast evacuation. The generator is normally supplied with two MICRO COAX® cartridges, supporting large suction cups in high speed applications. A one cartridge option is available for additional air consumption saving when used with smaller cups or at slower cycle speeds.

The integrated release function, the very fast acting Exhaust Block Release (EBR), is based on a durable polyurethane membrane which is not sensitive to dust. This ensures highly reliable production systems with improved uptime.

VACUUM FLOW

COAX® cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO TI05-2	73	1.36	1.31	1.19	1.02	0.81	0.55	0.3	0.13	0.04	0.01	23.9

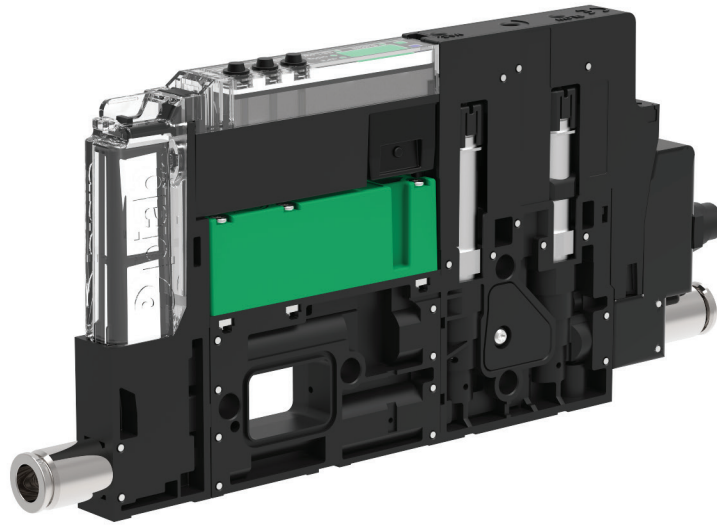
EVACUATION TIMES

COAX® cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO TI05-2	73	1.36	4.81	10.2	17	25.5	39.6	68	139	377	23.9

ORDERING INFORMATION

Name	Part No.
piSTAMP STX0785x2, 6-6 mm	02.08.767
piSTAMP STX0785x2, 8-8mm	02.08.766
piSTAMP STX0785x2, 1/4"-1/4"	02.08.768
piSTAMP COAX® MICRO Ti05-2x2, 6-6 mm	02.07.771
piSTAMP COAX® MICRO Ti05-2x2, 8-8 mm	02.07.770
piSTAMP COAX® MICRO Ti05-2x2, 1/4"-1/4"	02.07.772

piCOMPACT[®]10X



piCOMPACT[®] is an ejector family with integrated controls, so called compact or "all-in-one" ejector unit. It is a stackable platform with the possibility to mount several units in the same manifold and have common pneumatic and electrical connections. The focus during development has been on the most significant "key criteria" for these types of pumps, reliability and speed, as well as introducing some brand new attractive features/functions. That in combination with our state-of-the-art vacuum engine, COAX[®], the product is outstanding. By working at low feed pressure and maximizing the utilization rate of the compressed air, the COAX[®] ejectors reduce energy consumption for manufacturers while increasing productivity and reliability. Its vacuum response to 15–18 -inHg is typically 30–50% faster compared to single stage technology. The piCOMPACT[®] is only 10 mm wide with a large 6 mm vacuum connection for maximum performance.

VACUUM FLOW

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum -inHg
			0	3	6	9	12	15	18	21	
MICRO Bi03-2	31.9/29.0*	0.30	0.44	0.30	0.13	0.04	0.03	0.03	0.01	0.01	24.2
MICRO Si02-2	87.6/87*	0.23	0.55	0.38	0.20	0.11	0.10	0.08	0.06	0.04	22.1
MICRO Ti05-2	62.4/58*	0.49	0.66	0.59	0.47	0.34	0.19	0.13	0.10	0.05	24.8
MICRO Xi2.5-2	74/72.5*	0.28	0.49	0.32	0.17	0.09	0.08	0.06	0.05	0.03	26.9

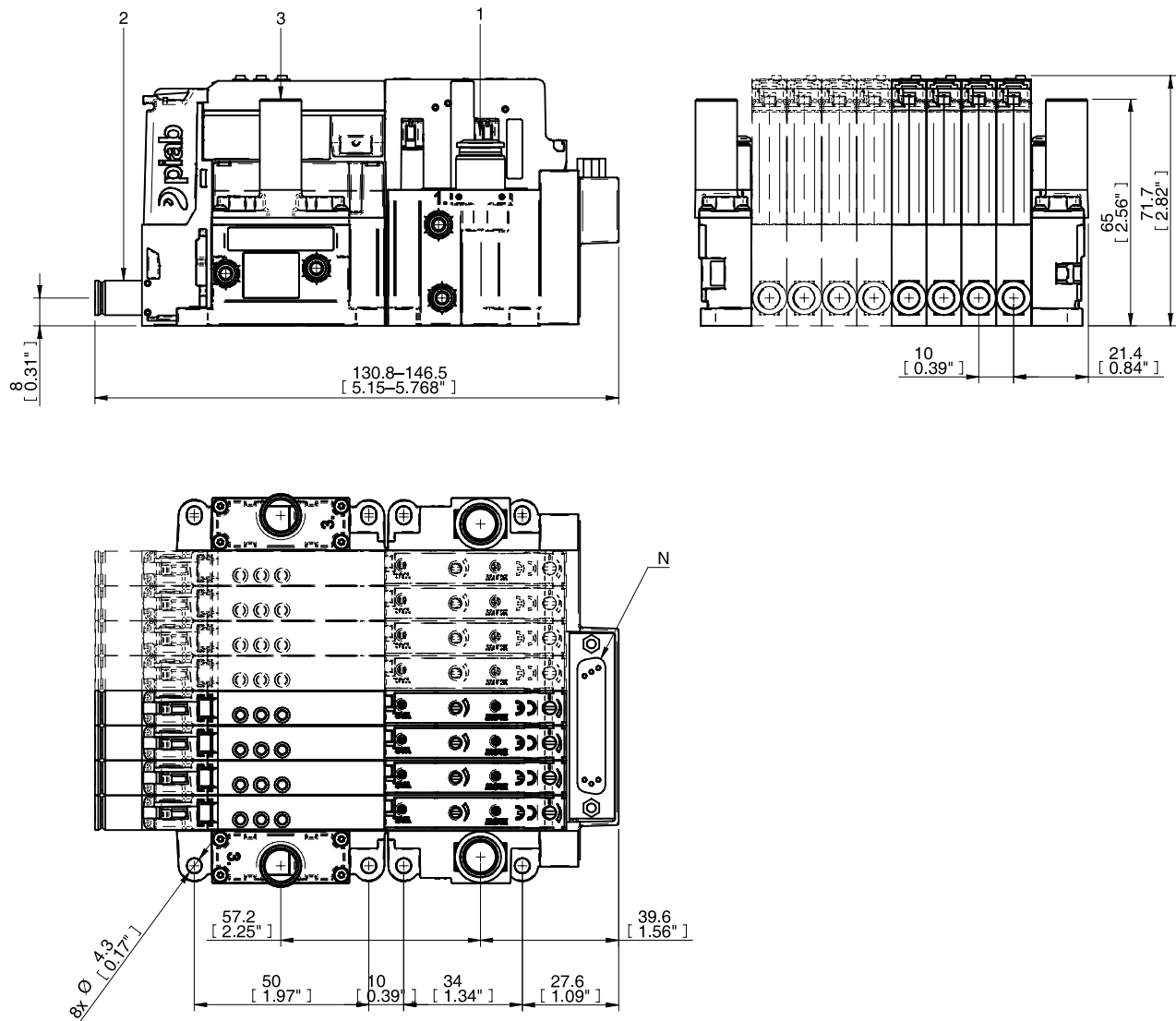
* Pump/nozzle.

EVACUATION TIMES

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (ms) of 0.30 cu in to reach different vacuum levels (-inHg)											Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	Max	
MICRO Bi03-2	31.9/29.0*	0.30	5.00	9.9	20.4	52.8	99.4	153	228	354	552	—	652**	24.2
MICRO Si02-2	87.6/87*	0.23	5.00	8.90	16.2	30.6	48.3	68.4	95.0	136	—	—	185**	22.1
MICRO Ti05-2	62.4/58*	0.49	5.00	6.70	10.2	14.8	23.0	34.6	50.0	70.2	114	—	159**	24.8
MICRO Xi2.5-2	74/72.5*	0.28	5.10	8.90	16.2	35.0	59.0	86.6	121	169	250	421	464**	26.9

* Pump/nozzle ** Evacuation time (ms) to max vacuum level (-inHg).

DIMENSIONAL DRAWING



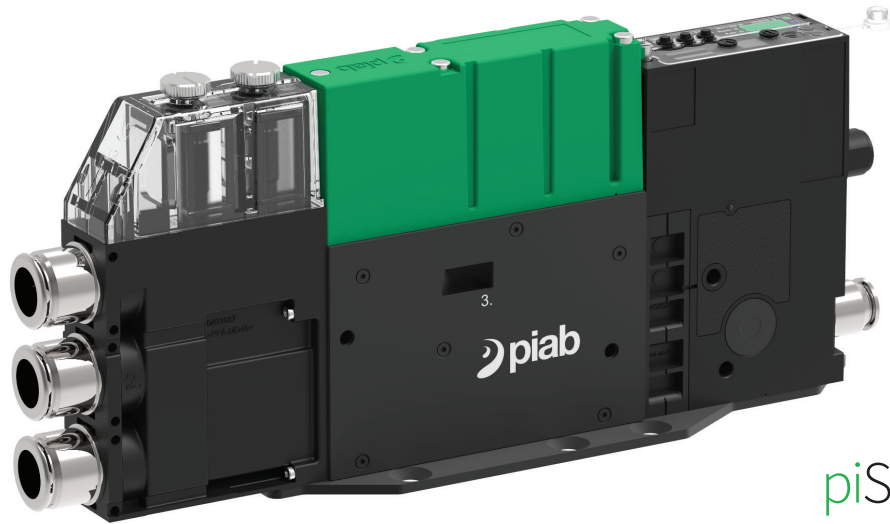
ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

CUSTOMER CODE

For the configuration tables of piCOMPACT[®]10X go to page 248.

piCOMPACT[®]23



piSMART[®] 

piCOMPACT[®] is an ejector family with integrated controls, so called compact or “all-in-one” ejector unit. It is a stackable platform with the possibility to mount several units in the same manifold and have common pneumatic and electrical connections. The focus during development has been on the most significant “key criteria” for these types of pumps, reliability and speed, as well as introducing some brand new attractive features/functions. That in combination with our state-of-the-art vacuum engine, COAX[®], the product is outstanding. By working at low feed pressure and maximizing the utilization rate of the compressed air, the COAX[®] ejectors reduce energy consumption for manufacturers while increasing productivity and reliability. Its vacuum response to 15–18 -inHg is typically 30–50% faster compared to single stage technology.

VACUUM FLOW

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
SX12	73.2/72.5*	1.53	2.59	2.18	1.65	1.10	0.57	0.44	0.32	0.19	0.06	25
SX42	68.2/62.4*	4.68	7.33	6.40	5.11	3.60	2.16	1.29	1.00	0.59	0.21	26.6

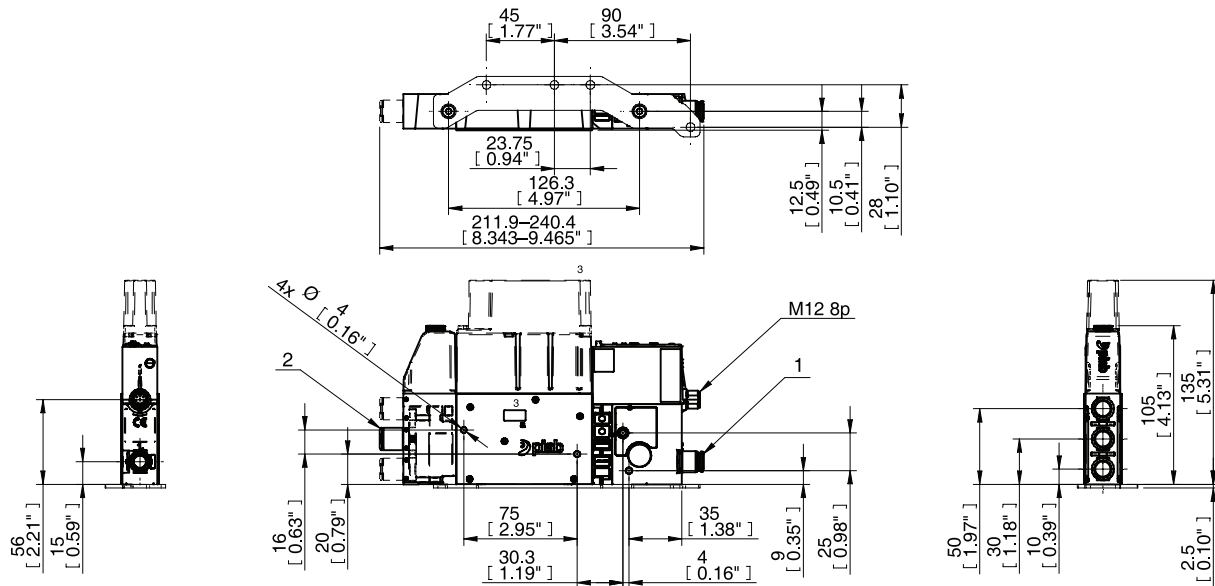
* Pump/nozzle.

EVACUATION TIMES

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
SX12	73.2/72.5*	1.53	2.32	5.69	10.6	19.1	34.5	54.2	84.4	175	25
SX42	68.2/62.4*	4.68	1.08	2.10	3.48	5.78	10.1	16.3	24.9	48.7	26.6

* Pump/nozzle.

DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.



piSMART®

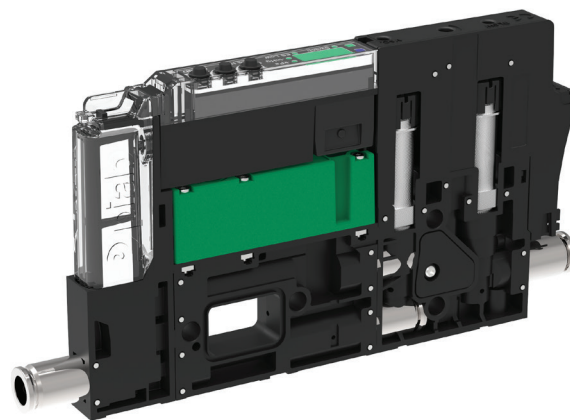
For more information on piSMART® and how Piab helps shape the industry of tomorrow go to page 427

CUSTOMER CODE

For the configuration tables of piCOMPACT®23 go to page 250.

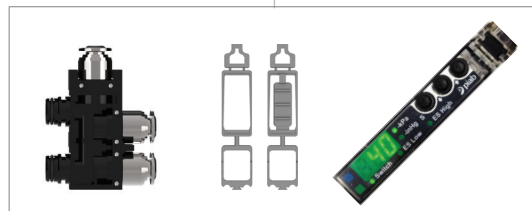
piCOMPACT® 10X – CUSTOMER CODE

			
<p>piCOMPACT®</p>	<p>Ejector performance</p>		<p>Working environment</p>
<p>Code</p>	<p>Code</p>	<p>Vacuum characteristics</p>	<p>Code</p>
<p>PC</p>	<p>L</p>	<p>Low feed pressure</p>	<p>S</p>
	<p>S</p>	<p>High vacuum flow</p>	<p>Standard</p>
	<p>X</p>	<p>Extra vacuum level</p>	
	<p>T</p>	<p>Extra high vacuum flow</p>	
		<p>Code</p>	<p>Nozzle model</p>
		<p>MC</p>	<p>MICRO (0.50–0.67 scfm)</p>
		<p>Code</p>	<p>Nozzle rows</p>
		<p>1</p>	<p>Single</p>
		<p>2</p>	<p>Double</p>



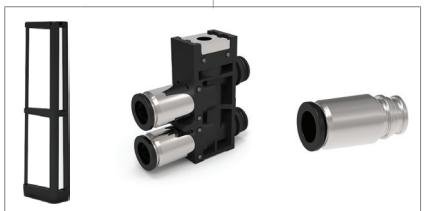
PC . S . MC2 . S . AAA . S16 . 1X . 6 . EI . CCP6

PC . S . MC2 . S . AAA . S16 . 1X . 6 . EI . CCP6



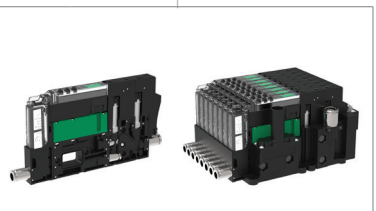
Functionality

Code	Control functions
A	Electrical ES, vac and blow off
B	Electrical ES, vac and automatic blow off
C	Vac and blow off
D	Vac and automatic blow off (ATBO)
E	Vacuum on/off (vac)
Code	Non-return valve
B	Without non-return valve
A	With non-return valve
Code	Vacuum sensing
A	Display, analog and digital output
X	No vacuum sensing



Vacuum connect module

Code	Vacuum filter
S	Vacuum filter 50 µm
X	No vacuum filter
Code	Vacuum port(s)/channel
1	1 vacuum port
2	2 vacuum ports
3	3 vacuum ports
Code	Vacuum connection(s)
4	Ø4 (5/32") push-in connector(s)
6	Ø6 push-in connector(s)
14	Ø1/4" push-in connector(s)



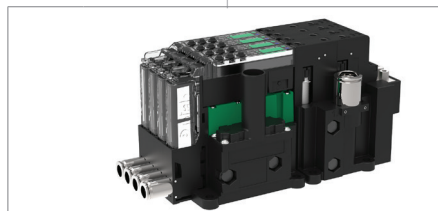
Single unit or manifold mount

Code	Number of channels
1	1 channel
2	2 channels
3	3 channels
4	4 channels
5	5 channels
6	6 channels
7	7 channels
8	8 channels
Code	Split control from vacuum
X	No split
A	Split Ø4
B	Split Ø6
C	Split Ø1/4"



Air supply

Code	Air connections
4	Ø4 (5/32") push-in connector
6	Ø6 push-in connector
14	Ø1/4" push-in connector
8	Ø8 (5/16") push-in connector
26	2 x Ø6 push-in connectors
214	2 x Ø1/4" push-in connectors
28	2 x Ø8 (5/16") push-in connectors



Mounting

Code	Options
EC	Ejectors stacked with central exhaust
EN	Ejectors stacked with central silencer
EI	Ejector(s) for individual mounts

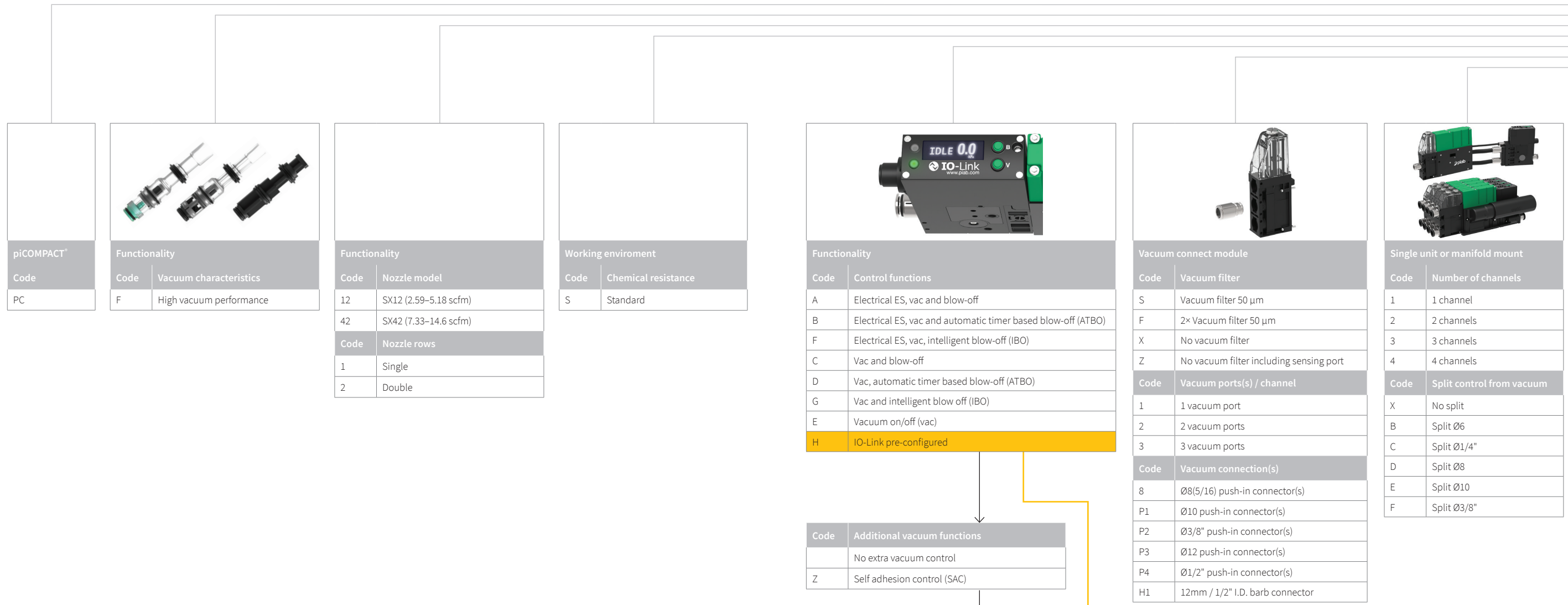


Electrical properties

Code	Valve configuration
CC	NC vacuum + NC blow off
OC	NO vacuum + NC blow off
RC	NC 2/2 vacuum + NC 2/2 blow off
C	NC vacuum
O	NO vacuum
R	NC 2/2 vacuum
Code	Electrical input/output
P	PNP
N	NPN
Code	Electrical interface
6	6p connector(s)
A	M8 6p connector(s)
26	HD D-sub 26p connector
44	HD D-sub 44p connector



piCOMPACT[®]23 – CUSTOMER CODE



piCOMPACT [®]	
Code	
PC	

Functionality	
Code	Vacuum characteristics
F	High vacuum performance

Functionality	
Code	Nozzle model
12	SX12 (2.59–5.18 scfm)
42	SX42 (7.33–14.6 scfm)
Code	Nozzle rows
1	Single
2	Double

Working enviroment	
Code	Chemical resistance
S	Standard

Functionality	
Code	Control functions
A	Electrical ES, vac and blow-off
B	Electrical ES, vac and automatic timer based blow-off (ATBO)
F	Electrical ES, vac, intelligent blow-off (IBO)
C	Vac and blow-off
D	Vac, automatic timer based blow-off (ATBO)
G	Vac and intelligent blow off (IBO)
E	Vacuum on/off (vac)
H	IO-Link pre-configured

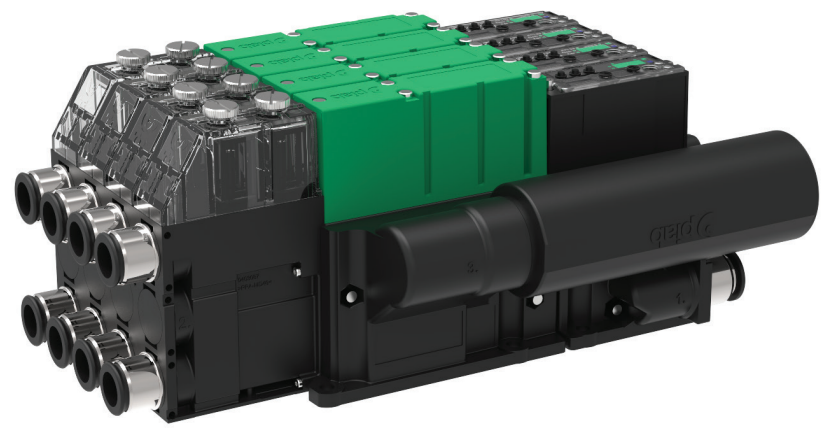
Vacuum connect module	
Code	Vacuum filter
S	Vacuum filter 50 µm
F	2× Vacuum filter 50 µm
X	No vacuum filter
Z	No vacuum filter including sensing port
Code	Vacuum ports(s) / channel
1	1 vacuum port
2	2 vacuum ports
3	3 vacuum ports
Code	Vacuum connection(s)
8	Ø8(5/16) push-in connector(s)
P1	Ø10 push-in connector(s)
P2	Ø3/8" push-in connector(s)
P3	Ø12 push-in connector(s)
P4	Ø1/2" push-in connector(s)
H1	12mm / 1/2" I.D. barb connector

Single unit or manifold mount	
Code	Number of channels
1	1 channel
2	2 channels
3	3 channels
4	4 channels
Code	Split control from vacuum
X	No split
B	Split Ø6
C	Split Ø1/4"
D	Split Ø8
E	Split Ø10
F	Split Ø3/8"

Code	Additional vacuum functions
	No extra vacuum control
Z	Self adhesion control (SAC)

Code	Internal check valves
B	Without non-return valve
A	With non-return valve
C	Amplified blow-off, without vacuum non-return valve (ABO)
D	Amplified blow-off, with vacuum non-return valve (ABO)
E	Pre-vacuum hovering, without vacuum non-return valve (PVH)
F	Pre-vacuum hovering, with vacuum non-return valve (PVH)
Code	Vacuum sensing
A	Display, analog and digital output
B	Display, 2× digital outputs
C	Display, leakage warning and digital output
D	IO-Link display
X	No vacuum sensing

Code	IO-Link Energy saving type
1	ES pre-set on 22.1 -inHg
2	ES Automatic level determination (ALD)
3	ES pre-set on 22.1 -inHg with ALD backup
0	No ES
Code	IO-Link Blow-off type
1	Automatic timer based blow-off (ATBO)
2	Intelligent blow off (IBO)
0	External control
Code	IO-Link Additional functions
1	Self adhesion control (SAC)
0	No IO-Link additional functions



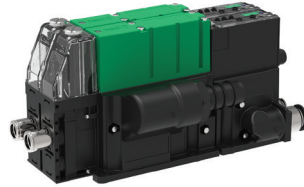
PC . F . 422 . S . AAA . F18 . 4X . 2P1 . EN . CCAB

PC . F . 122 . S . H111AD . S1P1 . 1X . 8 . EJ . CCCC



Air supply

Code	Air connections
6	Ø6 push-in connector
14	Ø1/4" push-in connector
8	Ø8(5/16") push-in connector
P1	Ø10 push-in connector
P2	Ø3/8" push-in connector
P3	Ø12 push-in connector(s)
P4	Ø1/2" push-in connector(s)
2P1	2x Ø10 push-in connector(s)
2P2	2x Ø3/8" push-in connector(s)
2P3	2x Ø12 push-in connector(s)
2P4	2x Ø1/2" push-in connector(s)



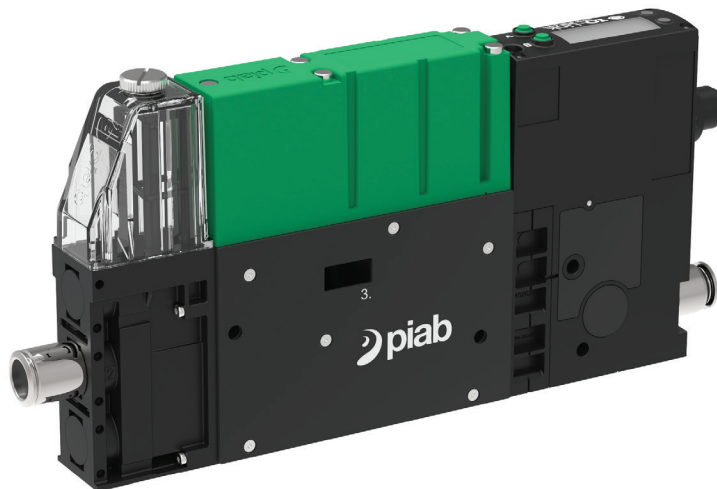
Mounting

Code	Ejector options
EC	Ejectors stacked with central exhaust
EN	Ejectors stacked with central silencer
EJ	Ejector(s) for individual mounts, integrated silencer
EK	Ejector(s) for individual mounts, top mounted silencer
EL	Ejector(s) for individual mounts, central exhaust
EM	Ejector(s) for individual mounts, central silencer



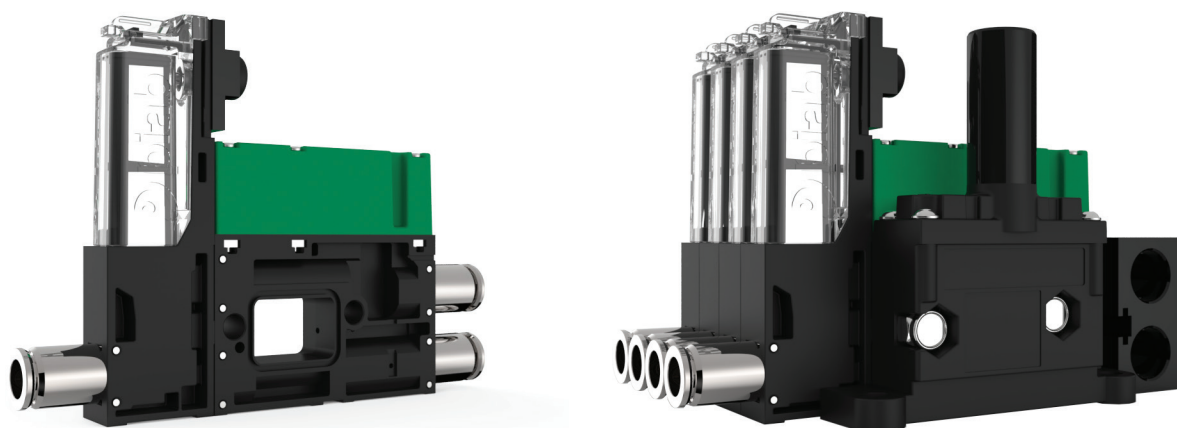
Electrical properties

Code	Valve configuration
CC	NC vacuum + NC blow off
FC	NC vacuum (power off - NO) + NC blow off
OC	NO vacuum + NC blow off
C	NC vacuum
O	NO vacuum
AC	Bi-stable vacuum valve + NC blow off
Code	Electrical input/output
A	PNP/PNP or NPN/NPN
B	Mixed mode
C	IO-Link, PNP/PNP
Code	Electrical interface
B	M12 8p connector(s)
C	M12 4p connector(s)



PC . F . 122 . S . H111AD . S1P1 . 1X . 8 . EJ . CCCC

piPUMP10X



Compact/stackable vacuum pumps are air-driven multistage ejector families, based on COAX® technology. It provides a high operational reliability, in case of fluctuating or low compressed-air pressure. Excellent performance when a quick response time when deep vacuum is needed. There is also a quick vacuum non-return valve as an option.

VACUUM FLOW

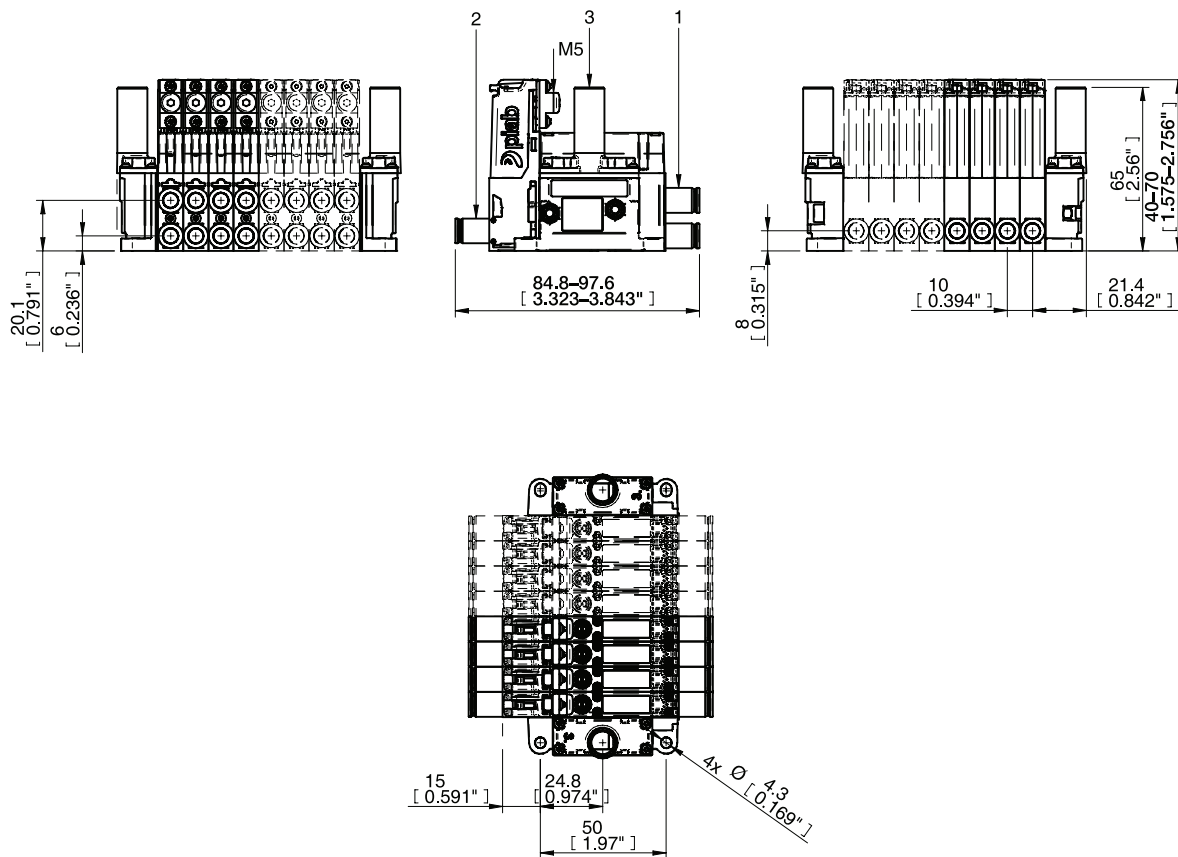
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum -inHg
			0	3	6	9	12	15	18	21	
MICRO Bi03-2	29	0.30	0.44	0.30	0.133	0.044	0.034	0.030	0.015	0.008	24.2
MICRO Si02-2	87	0.23	0.55	0.38	0.201	0.112	0.095	0.081	0.057	0.040	22.1
MICRO Ti05-2	58	0.49	0.66	0.59	0.466	0.339	0.186	0.133	0.095	0.049	24.8
MICRO Xi2.5-2	73	0.28	0.49	0.32	0.167	0.093	0.076	0.064	0.049	0.028	26.8

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (ms) of 0.30 cu in to reach different vacuum levels (-inHg)											Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	Max	
MICRO Bi03-2	29	0.30	5	9.9	20.4	53	99	153	228	354	552	—	652*	24.2
MICRO Si02-2	87	0.23	5	8.9	16.2	31	48	68	95	136	—	—	185*	22.1
MICRO Ti05-2	58	0.49	5	6.7	10.2	14.8	23	35	50	70	114	—	159*	24.8
MICRO Xi2.5-2	73	0.28	5.1	8.9	16.2	35	59	87	121	169	250	421	464*	26.8

*Evacuation time (ms) at max vacuum level (-inHg)

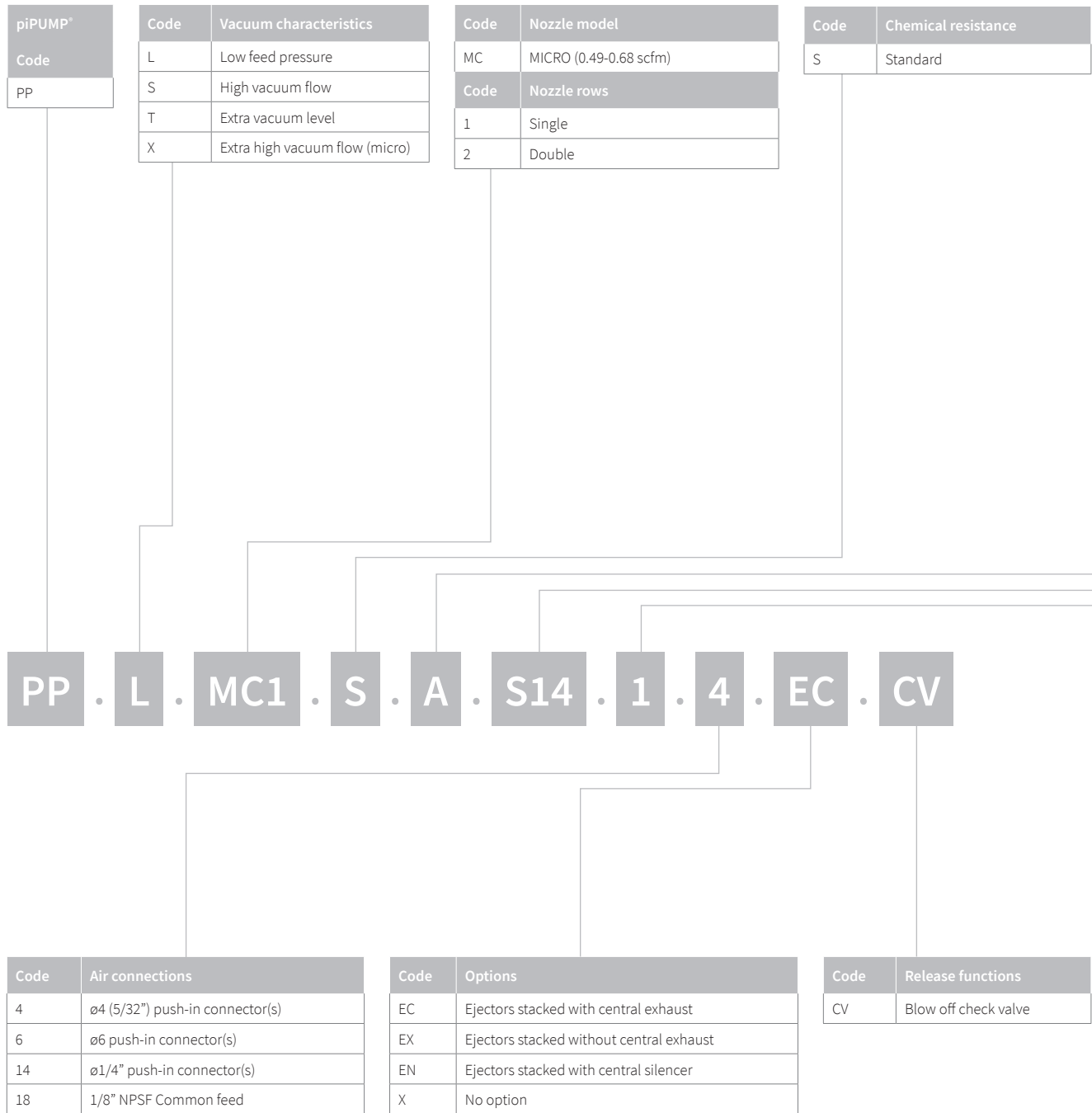
DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

piPUMP10X – CUSTOMER CODE

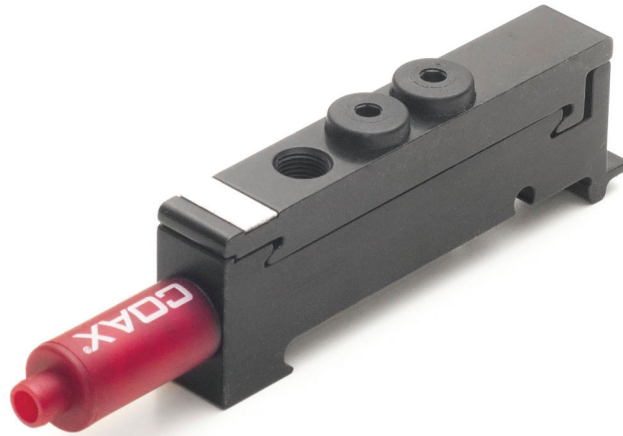


Code	Additional function
A	With non-return valve
B	Without non-return valve

Code	Vacuum filter
S	Vacuum filter 50 µm
X	No vacuum filter
Code	Vacuum port(s)/channel
1	1 vacuum port
2	2 vacuum ports
3	3 vacuum ports
Code	Vacuum connection(s)
4	ø4 (5/32") push-in connector(s)
6	ø6 push-in connector(s)
14	ø1/4" push-in connector(s)

Code	Number of channels
1	1 channel
2	2 channels
3	3 channels
4	4 channels
5	5 channels
6	6 channels
7	7 channels
8	8 channels

P3010 family



Compact/stackable vacuum pumps are air-driven multistage ejector families, based on COAX® technology, they are equipped with integrated controls and special functions, such as on/off valve, blow-off valve, vacuum switch, energy saving function etc. They are configurable platforms, making it easy to specify the exact control functions needed for the system.

It is available with three-stage COAX® cartridge MINI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The P3010 includes a flow-through silencer and a built-in vacuum filter for harsh environments. It is suitable for fast and reliable evacuation in sealed systems

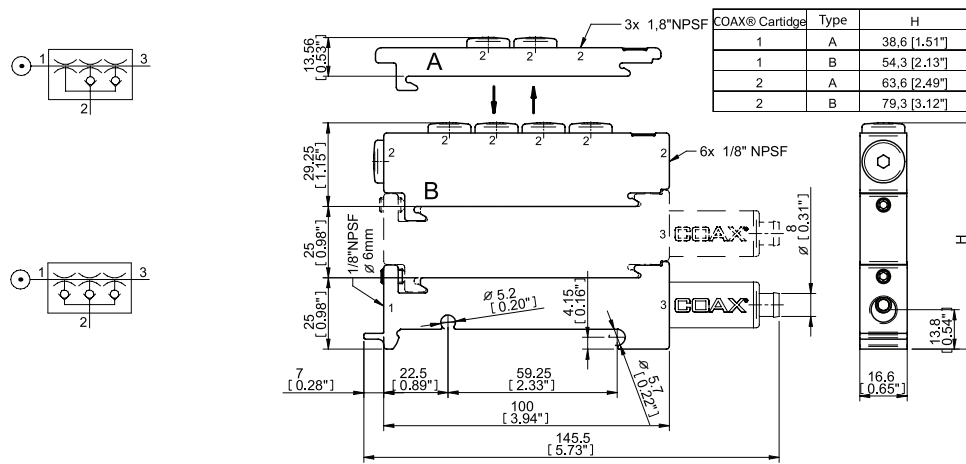
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Pi12-3	46	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Si08-3	87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	—	—	22.1
MINI Xi10-3	73	0.97	3.03	1.48	1.06	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Pi12-3	46	0.93	2.27	6.51	13.9	28.3	48.1	73.6	110	178	—	26.6
MINI Si08-3	87	0.93	2.83	7.08	13.6	22.7	36.8	65.1	130	—	—	22.1
MINI Xi10-3	73	0.97	2.55	7.36	14.2	25.5	42.5	62.3	96.3	147	249	27.7

DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

ACCESSORY DESCRIPTIONS



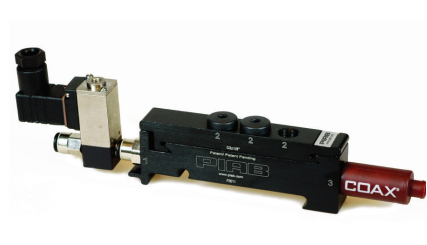
P3010 Quick release

The quick release function has a volume of 0.18–3.67 in³. Quick release is done by accumulating and utilizing the feed-air pressure as a boost. The ON/OFF is activated simultaneously with the P3010



P3010 ES

The P3010 has an integrated air-saving function (piSAVE[®]onoff) that minimizes the air consumption by controlling the incoming air flow to the pump. Large hysteresis is recommended for sealed vacuum handling applications such as metal sheet, glass or plastic handling. And small hysteresis is recommended if a very accurate vacuum level has to be maintained in the process. It has an adjustable ES switch level and is a pneumatic function.



Solenoid Valve

The solenoid valve is an electric 3/2 valve with a possibility for manual override. As it has push in connections it is quick and easy to mount. The body has three M5 ports. It is suitable for compressed air with a filtration of 40 µm.



Vacuum switch

A vacuum switch can be used for many different applications. It converts a vacuum signal into a electric or pneumatic signal. Vacuum switches are available in many different versions, from very small electro-mechanicals with pre-set settings to pneumatics or programmable fully electronics. Some switches are design to fit directly into the P3010 with an Ø 6 mm push-in.



AVM™2

The AVM™2 unit has built-in control and monitoring functions. The integrated energy saving function (ES) minimizes the air consumption in sealed systems. It has valves for vacuum on/off and blow-off with electrical power failsafe function. The AVM has digital outputs, 16 pre-set combinations of vacuum levels, digital vacuum level display and a mechanical valve for blow-off flow adjustment.



CU

The CU has electric valves for vacuum on/off and blow-off and a mechanical valve for blow-off flow adjustment. It also has a special M12 4-pin cable assembly with LED for status of valve signal.

P3010 – CUSTOMER CODE

P3010
Code
P3010

Code	Connection interface
00	Housing connection Ø6 mm
01	Housing connection 1/8"

Code	COAX [®] Cartridge module
AA	COAX [®] Cartridge module Si08-3 FS ×1
AB	COAX [®] Cartridge module Si08-3 AFS ×1
AC	COAX [®] Cartridge module Si08-3 FS ×2
AD	COAX [®] Cartridge module Si08-3 AFS ×2
AE	COAX [®] Cartridge module Pi12-3 FS ×1
AF	COAX [®] Cartridge module Pi12-3 AFS ×1
AG	COAX [®] Cartridge module Pi12-3 FS ×2
AH	COAX [®] Cartridge module Pi12-3 AFS ×2
AI	COAX [®] Cartridge module Xi10-3 FS ×1
AJ	COAX [®] Cartridge module Xi10-3 AFS ×1
AK	COAX [®] Cartridge module Xi10-3 FS ×2
AL	COAX [®] Cartridge module ×10-3 AFS ×2

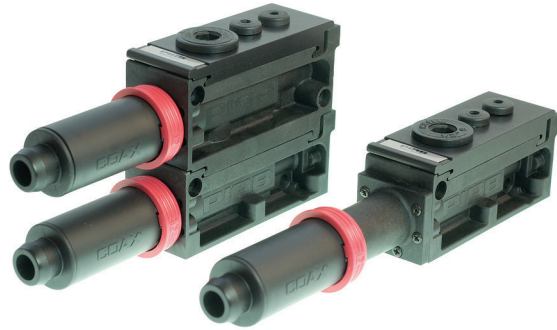
P3010 . 00 . AA . 01 . AA . 00

Code	Connection modules / function
01	Connection module high 6×1/8"
02	Connection module low 3×1/8"
04	Function Quick-release module 10/6 - 3
05	Function Quick-release module 8/6 - 30
06	Function Quick-release module 8/6 - 60
07	Function Quick-release module 10/6 - 30
08	Function Quick-release module 10/6 - 60
09	Function Quick-release module 1/4"/6 - 3 (NPSF)
10	Function Quick-release module 1/4"/6-30 (NPSF)
11	Function Quick-release module 1/4"/6-60 (NPSF)
12	Function Quick-release module 8/6-3
27	Function AVM [™] 2 NO
28	Function AVM [™] 2 NC (power off - NO)
29	Function CU NC
30	Function AVM [™] 2 NO auto blow-off (1 sec)
31	Function AVM [™] 2 NC auto blow-off (1 sec)
32	Function AVM [™] 2 NC 2 (power off - NC)
33	Function CU NO

Code	Energy saving
AA	No energy saving (included in AVM2)
AB	Solenoid valve DS23
AC	piSAVE [®] onoff 2/2 NO large hysteres
AD	piSAVE [®] onoff 2/2 NO small hysteres

Code	Vacuum sensing
00	No vacuum sensing (included in AVM2)
01	Vacuum switch PNP NO MM8
02	Vacuum switch NPN NO MM8
05	Vacuum switch PNP NO LM8
09	Vacuum switch PNP NO DM8
10	Vacuum switch NPN NO DM8
11	Vacuum switch Inductive, adj. Knob
18	Vacuum switch VS4015 9 -inHg
19	Vacuum switch VS4015 15 -inHg
20	Vacuum switch VS4015 21 -inHg
21	Vacuum switch VS4016 9 -inHg
22	Vacuum switch VS4016 15 -inHg
23	Vacuum switch VS4016 21 -inHg

P5010 family



Compact/stackable vacuum pumps are air-driven multistage ejector families, based on COAX® technology. They are equipped with integrated controls and special functions, such as on/off valve, blow-off valve, vacuum switch, energy saving function etc. They are configurable platforms, making it easy to specify the exact control functions needed for the system.

It has a patented COAX® push-in technology that allows insertion and removal of the cartridge without tools. It is available two or three-stage COAX® cartridge MIDI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The P5010 has an integrated flow-through silencer that is unaffected by dust and dirt. It provides substantially lower air-consumption as compared to conventional ejectors of similar sizes.

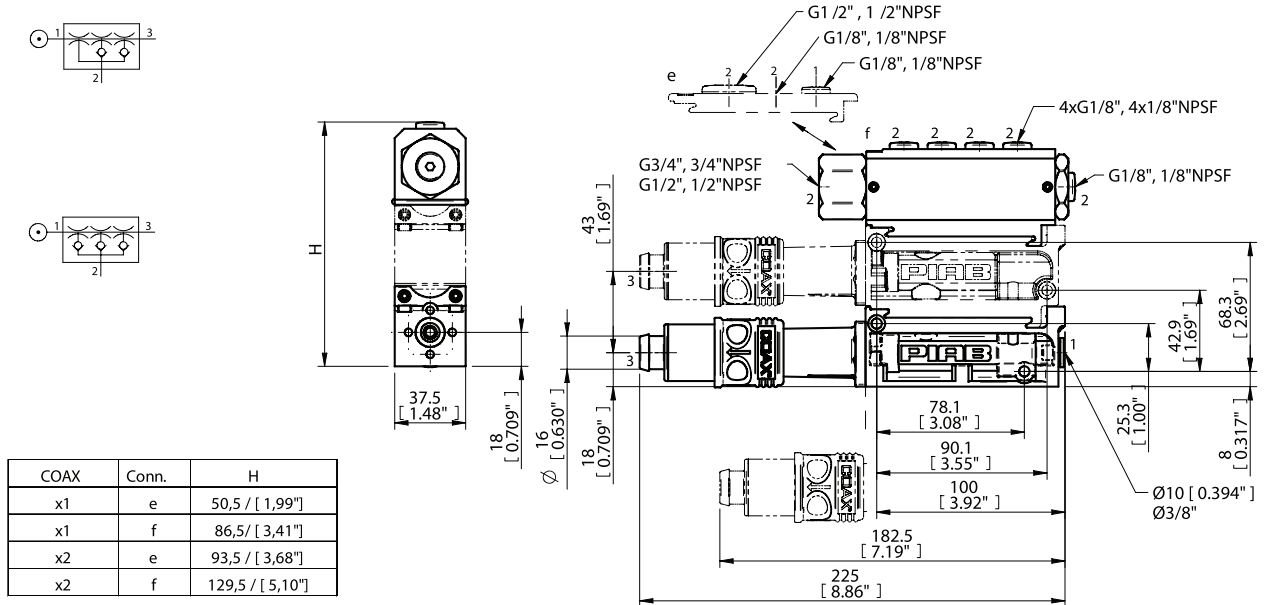
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
Pi48-2	45	4.24	5.9	5.3	3.8	2.3	1.4	1.1	0.7	0.5	0.2	—	26.6
Pi48-3	45	4.34	11.9	5.3	3.8	2.3	1.4	1.1	0.7	0.5	0.2	—	26.6
Si32-2	87	3.71	7.0	6.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
Si32-3	87	3.71	12.7	7.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
Xi40-2	65	3.88	5.9	4.9	3.4	2.1	1.5	1.2	0.9	0.7	0.4	0.1	28.0
Xi40-3	65	3.88	12.5	6.4	4.2	2.8	1.5	1.2	0.9	0.7	0.4	0.1	28.0

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
Pi48-2	45	4.24	0.85	1.98	3.68	7.36	13.0	19.8	28.3	45.3	113	26.6
Pi48-3	45	4.34	0.57	1.70	3.40	7.08	12.7	19.8	28.3	45.3	113	26.6
Si32-2	87	3.71	0.85	1.98	2.83	5.10	9.34	15.0	22.7	—	—	22.1
Si32-3	87	3.71	0.57	1.42	2.83	5.10	9.34	15.0	22.7	—	—	22.1
Xi40-2	65	3.88	1.13	2.55	4.81	7.93	12.5	17.8	25.5	36.8	65.1	28.0
Xi40-3	65	3.88	0.62	1.76	3.40	6.23	10.5	16.1	23.8	34.0	62.3	28.0

DIMENSIONAL DRAWING



ORDERING INFORMATION

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ACCESSORY DESCRIPTIONS



AVM™2

The AVM™2 unit has built-in control and monitoring functions. The integrated energy saving function (ES) minimizes the air consumption in sealed systems. It has valves for vacuum on/off and blow-off with electrical power failsafe function. The AVM has digital outputs, 16 pre-set combinations of vacuum levels, digital vacuum level display and a mechanical valve for blow-off flow adjustment.



CU

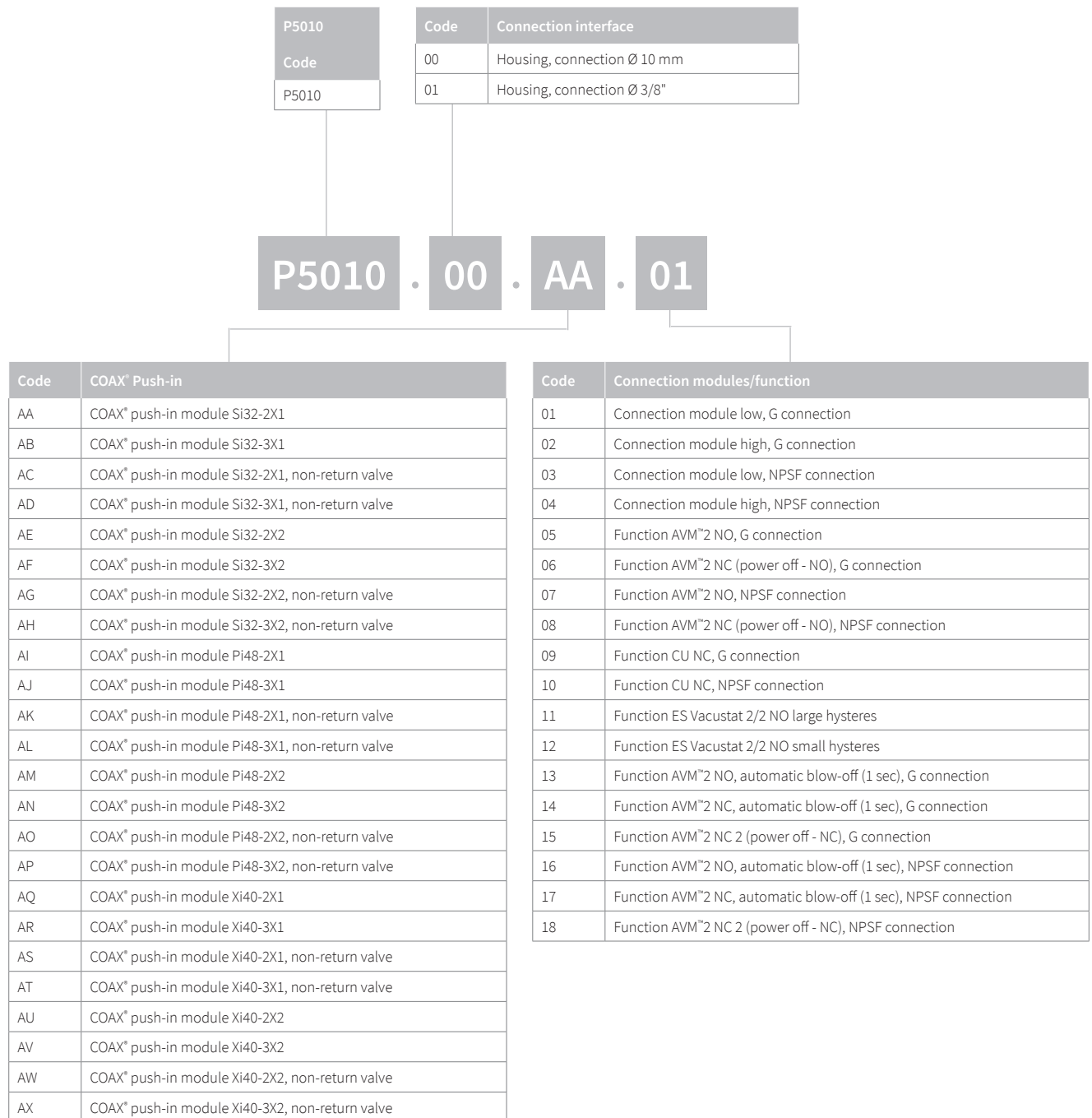
The CU has electric valves for vacuum on/off and blow-off and a mechanical valve for blow-off flow adjustment. It also has a special M12 4-pin cable assembly with LED for status of valve signal.



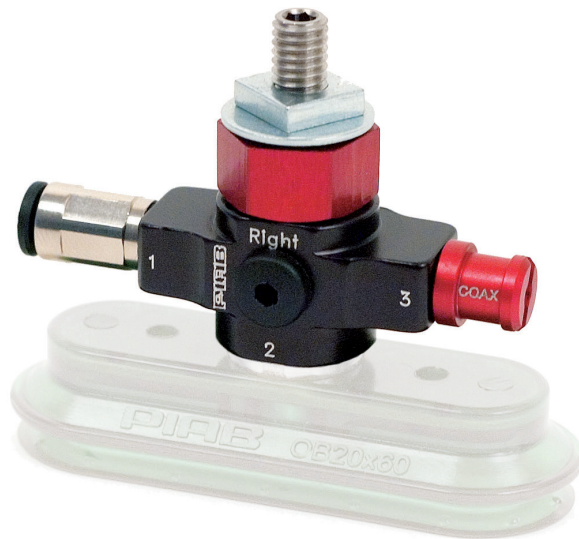
P5010 ES

The P5010 has an integrated air-saving function (piSAVE® onoff) that minimizes the air consumption by controlling the incoming air flow to the pump. Large hysteresis is recommended for sealed vacuum handling applications such as metal sheet, glass or plastic handling. And small hysteresis is recommended if a very accurate vacuum level has to be maintained in the process. It has an adjustable ES switch level and is a pneumatic function.

P5010 – CUSTOMER CODE



VGS™ 2010 family



Piab VGS™ – A product design where different suction cups are integrated with vacuum cartridges based on the patented COAX® technology. The “vacuum gripper” makes selection, sizing and installation of a vacuum system easier. With a VGS™ you will enjoy the benefits of a more cost-efficient and reliable decentralized vacuum system. It has a low weight at 0.88–1.38 oz..

It is available with a two-stage COAX® cartridge MICRO. Choose Bi for low feed pressure, Si for high vacuum flow, Xi for extra vacuum and Ti at 0.4/0.6 MPa for extra capacity/dirt tolerance. This VGS™ is compatible with any suction cup with G1/8” male fitting.

VACUUM FLOW

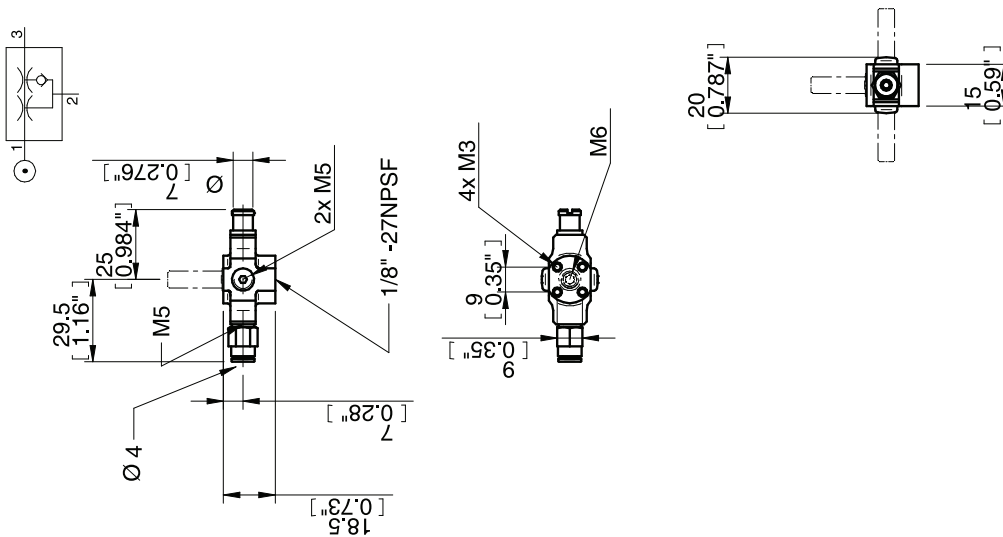
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum -inHg
			0	3	6	9	12	15	18	21	
MICRO Bi03-2	58	0.19	0.53	0.32	0.17	0.15	0.11	0.06	—	—	17.7
MICRO Si02-2	73	0.21	0.57	0.40	0.19	0.17	0.15	0.11	0.04	—	20.7
MICRO Ti05-2	58	0.19	0.53	0.32	0.17	0.15	0.11	0.06	—	—	17.7
MICRO Ti05-2	73	0.21	0.57	0.40	0.19	0.17	0.15	0.11	0.04	—	20.7
MICRO Xi2.5-2	87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	22.1

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Bi03-2	58	0.19	7.08	4.25	2.27	1.98	1.42	0.85	—	—	17.7
MICRO Si02-2	73	0.21	7.65	5.38	2.55	2.27	1.98	1.42	0.57	—	20.7
MICRO Ti05-2	58	0.19	7.08	4.25	2.27	1.98	1.42	0.85	—	—	17.7

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Ti05-2	73	0.21	7.65	5.38	2.55	2.27	1.98	1.42	0.57	—	20.7
MICRO Xi2.5-2	87	0.25	7.93	5.95	3.40	2.27	1.98	1.70	1.13	0.57	22.1

DIMENSIONAL DRAWING



ORDERING INFORMATION

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VGS™2010 – CUSTOMER CODE

VGS2010 . AB . 01 . BA

VGS2010
Code
VGS2010

Code	COAX®
AA	No COAX® cartridge (slave unit)
AB	COAX® cartridge MICRO Bi03-2
AF	COAX® cartridge MICRO Si02-2
AJ	COAX® cartridge MICRO Xi2.5-2
AN	COAX® cartridge MICRO Ti05-2

Code	Mounting orientation
00	4x M3 top, flush mount
01	M6 19 mm top, profile kit
02	M6 19 mm right, profile kit
03	M6 19 mm left, profile kit

Code	Suction cup
BA	No suction cup
DA	BX25P 30°/60° Shore A
DB	BX25P 60° Shore A
DC	FC20P 50° Shore A
DD	F25CP 50° Shore A
DE	OB20x60P 60° Shore A
DF	OF10x30P 50° Shore A
DG	OF15x45P 50° Shore A

VGS™ 3010 family



Piab VGS™ – A product design where different suction cups are integrated with vacuum cartridges based on the patented COAX® technology. The “vacuum gripper” makes selection, sizing and installation of a vacuum system easier. With a VGS™ you will enjoy the benefits of a more cost-efficient and reliable decentralized vacuum system. It has a low weight at 3.91–12.0 oz..

It is available with two- or three-stage COAX® cartridge MINI. Choose a Di cartridge, for very harsh environments, combining high dust and high humidity levels, an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The three-stage cartridge will give extra high initial vacuum flow, which is suitable in high speed applications. The VGS™ is compatible with any suction cup with G3/8” male fitting.

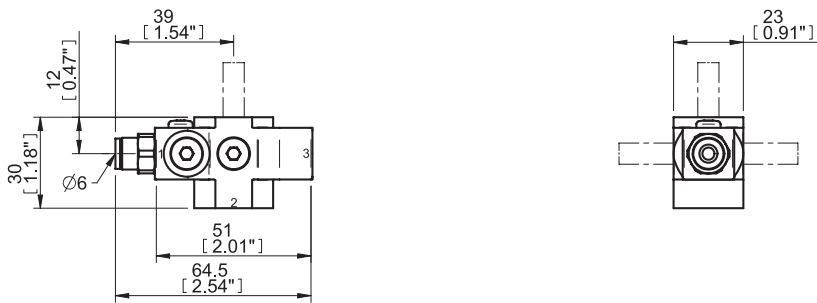
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Di16-2	87	1.59	1.36	1.21	1.04	0.87	0.74	0.61	0.38	0.08	—	—	21.5
MINI Pi12-2	46	0.93	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Pi12-3	46	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.06	—	26.6
MINI Si08-2	87	0.93	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	—	—	22.1
MINI Si08-3	87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	—	—	22.1
MINI Xi10-2	73	0.97	1.59	1.33	1.04	0.70	0.40	0.32	0.23	0.15	0.08	0.023	27.7
MINI Xi10-3	73	0.97	3.03	1.48	1.06	0.70	0.40	0.32	0.23	0.15	0.08	0.023	27.7

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Di16-2	87	1.59	4.81	9.91	16.4	23.8	32.6	44.7	70.5	—	—	21.5
MINI Pi12-2	46	0.93	4.81	9.06	16.4	31.1	51.0	76.5	113	181	—	26.6
MINI Pi12-3	46	0.93	2.27	6.51	13.9	28.3	48.1	73.6	110	178	—	26.6
MINI Si08-2	87	0.93	3.96	8.78	15.6	25.5	39.6	59.5	87.8	—	—	22.1
MINI Si08-3	87	0.93	2.83	7.08	13.6	22.7	36.8	56.6	82.1	—	—	22.1
MINI Xi10-2	73	0.97	3.96	8.50	17.0	28.3	45.3	65.1	99.1	150	252	27.7
MINI Xi10-3	73	0.97	2.55	7.36	14.2	25.5	42.5	62.3	96.3	147	249	27.7

DIMENSIONAL DRAWING



ORDERING INFORMATION

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VGS™3010 – CUSTOMER CODE

VGS3010 . AB . 01 . 38

VGS3010
Code
VGS3010

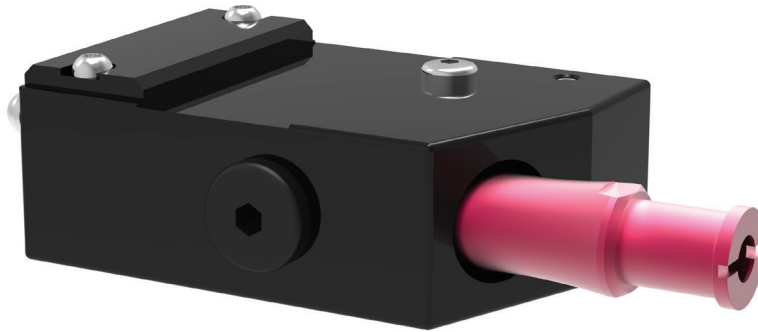
Code	COAX®
AA	No COAX® cartridge (slave unit)
AB	MINI Pi12-2
AC	MINI Pi12-3
AD	MINI Pi12-2, non-return valve
AE	MINI Pi12-3, non-return valve
AF	MINI Si08-2
AG	MINI Si08-3
AH	MINI Si08-2, non-return valve
AI	MINI Si08-3, non-return valve
AJ	MINI Xi10-2
AK	MINI Xi10-3
AL	MINI Xi10-2, non-return valve
AM	MINI Xi10-3, non-return valve
AN	MINI Di16-2

Code	Mounting orientation
00	4x M4 top, flush mount
01	M8 16 mm top
02	M8 16 mm right
03	M8 16 mm left
04	M8 27 mm top, profile kit
05	M8 27 mm right, profile kit
06	M8 27 mm left, profile kit
07	M6 22 mm top, profile kit
08	M6 22 mm right, profile kit
09	M6 22 mm left, profile kit
11	Ball joint VGS™3010 right
12	Ball joint VGS™3010 left
13	Lock-pin VGS™3010 right
14	Lock-pin VGS™3010 left
15	Level compensator LC30

Suction cup

Visit piab.com for the full range of suction cups available for VGS™3010

VGS™ 3040 family



This is a product design where different suction cups can be integrated with vacuum cartridges based on the patented COAX® technology. The “vacuum gripper” makes selection, sizing and installation of a vacuum system easier. With a VGS™ you will enjoy the benefits of a more cost-efficient and reliable decentralized vacuum system. The VGS™ is compatible with any suction cup with G3/8” male fitting. It has a low weight at 7.20–12.0 oz..

It is available with two- or three-stage COAX® cartridge MINI. Choose a Di cartridge, for very harsh environments, combining high dust and high humidity levels, an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The three-stage cartridge will give extra high initial vacuum flow, which is suitable in high speed applications.

It is available in lockpin 16, 19 or balljoint mountings, industry standard as well as level compensator to compensate for differences in level of object. It can also be fitted with different functions as energy saving, release or blow off.

VACUUM FLOW

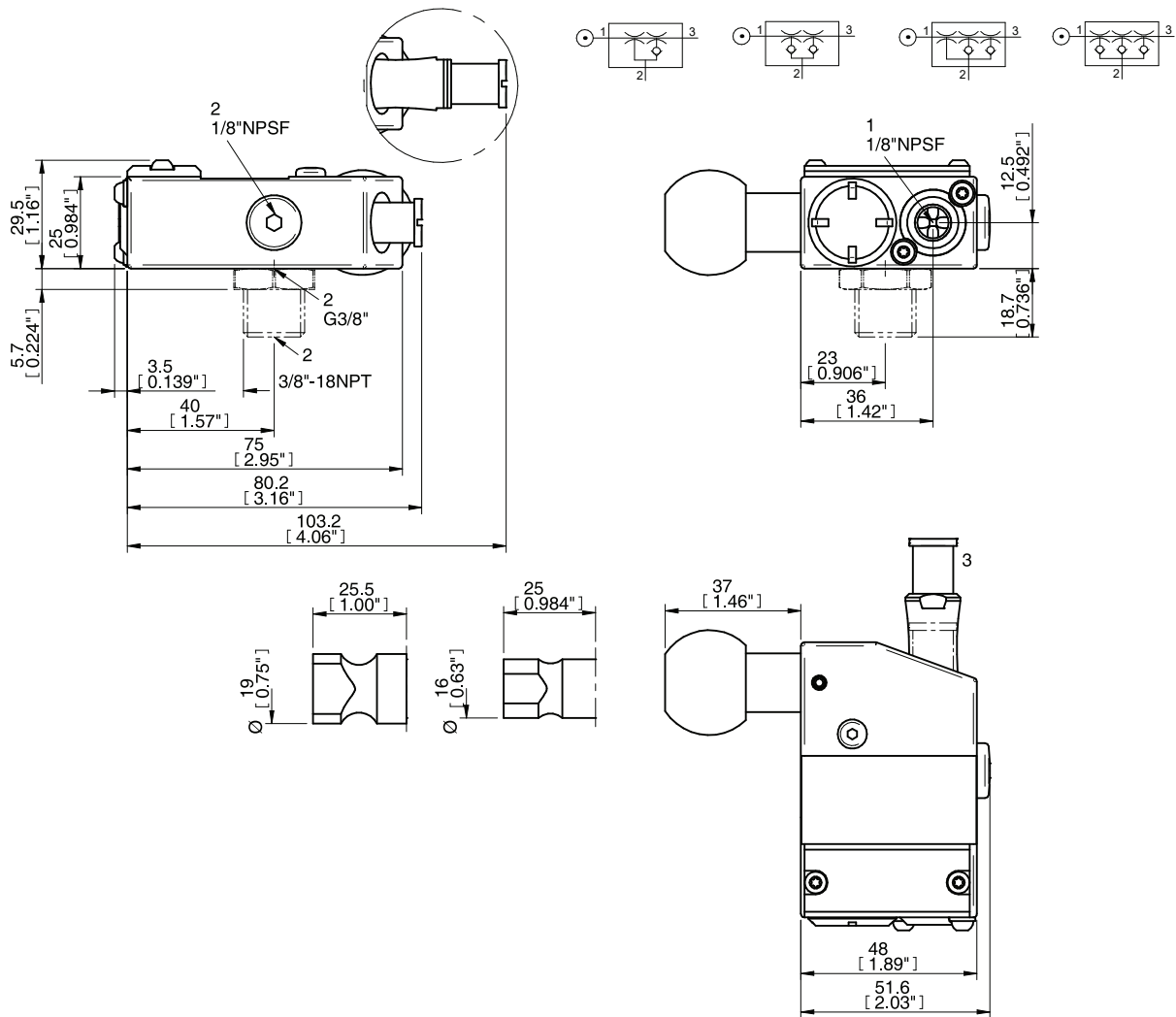
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Pi12-2	46	0.93	1.44	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.03	—	26.6
MINI Pi12-3	46	0.93	2.97	1.27	0.93	0.57	0.40	0.30	0.21	0.13	0.03	—	26.6
MINI Si08-2	87	0.93	1.63	1.42	1.08	0.70	0.49	0.34	0.25	0.17	—	—	22.1
MINI Si08-3	87	0.93	2.84	1.55	1.17	0.74	0.49	0.36	0.28	0.17	—	—	22.1
MINI Xi10-2	73	0.97	1.59	1.33	1.04	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7
MINI Xi10-3	73	0.97	3.03	1.48	1.06	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Pi12-2	46	0.93	4.81	9.06	16.4	31.1	51.0	76.5	113	181	—	26.6
MINI Pi12-3	46	0.93	2.27	6.51	13.9	28.3	48.1	73.6	110	178	—	26.6
MINI Si08-2	87	0.93	3.96	8.78	15.6	25.5	39.6	59.5	87.8	—	—	22.1

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Si08-3	87	0.93	2.83	7.08	13.6	22.7	36.8	56.6	82.1	—	—	22.1
MINI Xi10-2	73	0.97	3.96	8.50	17.0	28.3	45.3	65.1	99.1	150	252	27.7
MINI Xi10-3	73	0.97	2.55	7.36	14.2	25.5	42.5	62.3	96.3	147	249	27.7

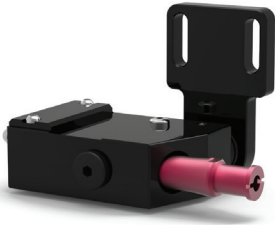
DIMENSIONAL DRAWING



ORDERING INFORMATION

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ACCESSORY DESCRIPTIONS



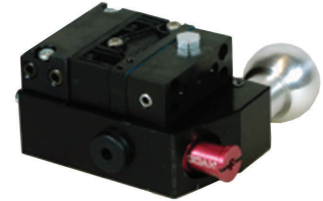
VGS™3040 with profile mount

It makes the attachment easy to a standard extrusion and profile systems with an adjustable position. This will give a quick setup and changeover.



VGS™3040 with level compensator

It is available with level compensator to compensate for differences in level of object.



VGS™3040 with piSAVE® onoff

It has an integrated energy-saving device, piSAVE® onoff, results in very low air consumption in sealed applications. The built-in blow off check valve will provide a fast release of the object. It has an adjustable vacuum controlled 2/2 NO valve and is available with large hysteresis for object handling and small hysteresis for process applications.



VGS™3040 with piSAVE® release

It has a built-in quick release for fast release of object. It works with an internal or separate feed of air. It equalises pressure in the suction cups to provide fast release of the product. The piSAVE® release will provide an extra fast release by accumulating and utilizing the feed-air pressure as a boost. It has an ON/OFF activated simultaneously with the ejector and no additional controls required — use a single 3/2 control valve for the ejector and piSAVE® release.



VGS™3040 with blow off

It has a built-in blow off check valve for fast release of object. Prevents vacuum from being pulled through the blow-off lines, which means faster response time and completely independent vacuum units.

VGS™3040 – CUSTOMER CODE

VGS 3040
Code
VGS3040

Code	COAX® cartridge
AB	COAX® cartridge MINI Pi12-2
AC	COAX® cartridge MINI Pi12-3
AD	COAX® cartridge MINI Pi12-2, non-return valve
AE	COAX® cartridge MINI Pi12-3, non-return valve
AF	COAX® cartridge MINI Si08-2
AG	COAX® cartridge MINI Si08-3
AH	COAX® cartridge MINI Si08-2, non-return valve
AI	COAX® cartridge MINI Si08-3, non-return valve
AJ	COAX® cartridge MINI Xi10-2
AK	COAX® cartridge MINI Xi10-3
AL	COAX® cartridge MINI Xi10-2, non-return valve
AM	COAX® cartridge MINI Xi10-3, non-return valve

Code	Mounting style
00	No mounting style
01	Mounting Lock pin 16 mm
02	Mounting Lock pin 19 mm
03	Mounting Ball joint
04	Mounting Lock pin 16 mm level compensator
05	Mounting Lock pin 19 mm level compensator
06	Mounting Ball joint level compensator
07	Mounting Extrusion mount level compensator
08	Mounting Profile mount
09	Mounting Profile mount

VGS3040 . AB . 01 . AA . 01 . AA

Code	Energy saving
AA	No energy saving
AB	piSAVE® onoff 19.5 -inHg
AC	piSAVE® onoff, Adjustable (factory set at 13.5 -inHg)

Code	Release function
01	Release Blow-off
02	piSAVE® release internal
03	piSAVE® release external

Code	Vacuum connection
AA	G3/8" female
AB	G3/8" male - 3/8" NPT male adapter

VGS™ 5010 family



Piab VGS™ – A product design where different suction cups are integrated with vacuum cartridges based on the patented COAX® technology. The “vacuum gripper” makes selection, sizing and installation of a vacuum system easier. With a VGS™ you will enjoy the benefits of a more cost-efficient and reliable decentralized vacuum system. It has a low weight at 14.6–24.0 oz..

The VGS™5010 is specially designed for handling larger parts, such as car body sheets as it is compatible with any suction cup with G1/2” male fitting. It is also available with a two or three-stage COAX® cartridge MIDI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The three-stage cartridge will give extra high initial vacuum flow, suitable in high speed applications.

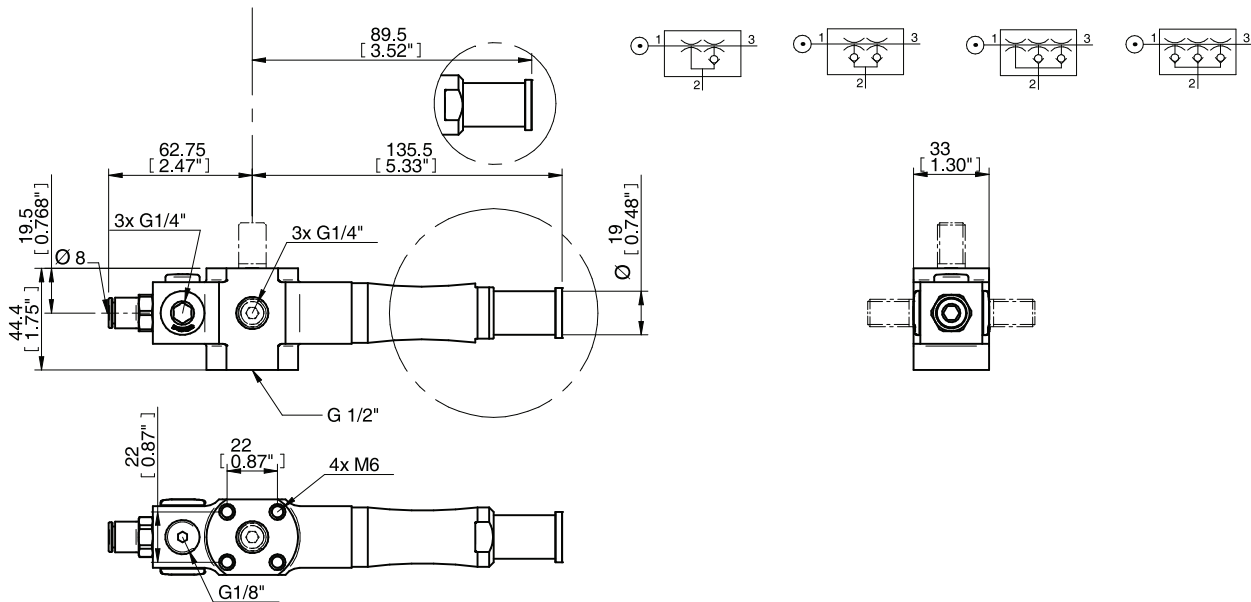
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Pi48-2	45	4.24	5.93	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	—	26.6
MIDI Pi48-3	45	4.34	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	—	26.6
MIDI Si32-2	87	3.71	6.99	6.36	5.51	3.60	1.91	1.27	1.06	0.74	—	—	22.1
MIDI Si32-3	87	3.71	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	—	—	22.1
MIDI Xi40-2	65	3.88	5.93	4.87	3.39	2.12	1.55	1.23	0.91	0.68	0.38	0.06	28
MIDI Xi40-3	65	3.88	12.5	6.36	4.24	2.75	1.55	1.23	0.91	0.68	0.38	0.06	28

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MIDI Pi48-2	45	4.24	0.03	0.07	0.13	0.26	13.0	19.8	28.3	45.3	113	26.6
MIDI Pi48-3	45	4.34	0.02	0.06	0.12	0.25	12.7	19.8	28.3	45.3	113	26.6
MIDI Si32-2	87	3.71	0.03	0.07	0.1	0.18	9.34	15.0	22.7	—	—	22.1
MIDI Si32-3	87	3.71	0.02	0.05	0.1	0.18	9.34	15.0	22.7	—	—	22.1
MIDI Xi40-2	65	3.88	0.04	0.09	0.17	0.28	12.5	17.8	25.5	36.8	65.1	28
MIDI Xi40-3	65	3.88	0.022	0.062	0.12	0.22	10.5	16.1	23.8	34.0	62.3	28

DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

VGS™ 5010 – CUSTOMER CODE

VGS 5010
Code
VGS5010

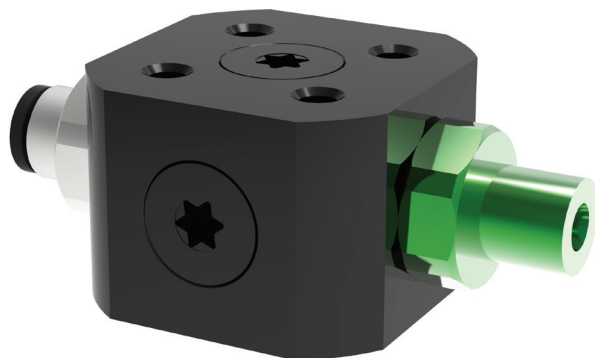
Code	COAX® cartridge
AA	No COAX® cartridge (slave unit)
AB	COAX® cartridge MIDI Pi48-2
AC	COAX® cartridge MIDI Pi48-3
AD	COAX® cartridge MIDI Pi48-2, non-return valve
AE	COAX® cartridge MIDI Pi48-3, non-return valve
AF	COAX® cartridge MIDI Si32-2
AG	COAX® cartridge MIDI Si32-3
AH	COAX® cartridge MIDI Si32-2, non-return valve
AI	COAX® cartridge MIDI Si32-3, non-return valve
AJ	COAX® cartridge MIDI Xi40-2
AK	COAX® cartridge MIDI Xi40-3
AL	COAX® cartridge MIDI Xi40-2, non-return valve
AM	COAX® cartridge MIDI Xi40-3, non-return valve

Code	Mounting style
00	4x M6 top, flush mount
01	4x M6 top, angle bracket
02	M12 20 mm top
03	M12 20 mm right
04	M12 20 mm left
05	M12 20 mm top, angle bracket
06	M12 20 mm right, angle bracket
07	M12 20 mm left, angle bracket

VGS5010 . AB . 00 . BA

Code	Suction cup
BA	No suction cup
CO	BF110P 30°/60° Shore A
CP	BF110P 60° Shore A
CQ	BX110P 30°/60° Shore A
CR	BX110P 60° Shore A
CS	F110P 30°/60° Shore A
CT	F110P 60° Shore A
CU	OB65x170P 30°/60° Shore A
CV	OB65x170P 60° Shore A
CX	BL50-3P 30°/70° Shore A
CY	BX75P 30°/60° Shore A
CZ	BX75P 60° Shore A

COAX[®] in piGRIP[®]



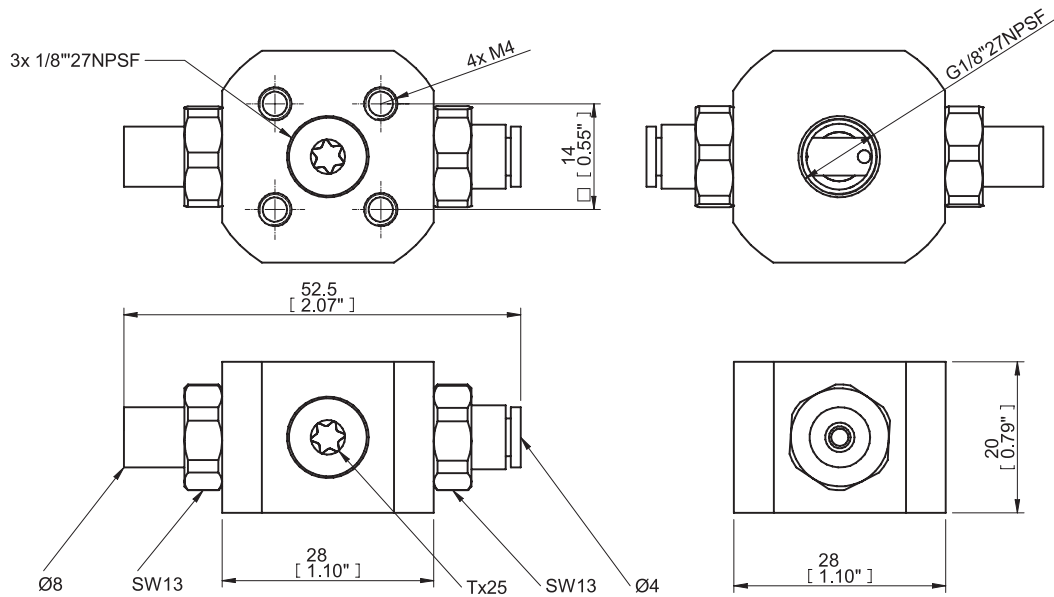
This is a fully decentralized vacuum unit based on patented COAX[®] technology. It provides the quickest response time and very high energy efficiency. The COAX[®] in piGRIP[®] is available with a variation of two stage COAX[®] MICRO cartridges. The COAX[®] in piGRIP[®] is compatible with any suction cup with G1/8" male fitting.

VACUUM FLOW

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	0.49	0.32	0.13	0.08	0.074	0.049	0.028	0.013	—	24.5
MICRO Si02-2	87	0.25	0.59	0.44	0.25	0.17	0.15	0.13	0.08	0.04	—	22.1
MICRO Ti05-2	58	0.57	0.68	0.59	0.49	0.36	0.21	0.15	0.08	0.04	0.008	24.8
MICRO Xi2.5-2	73	0.28	0.51	0.36	0.21	0.13	0.08	0.06	0.04	0.02	0.02	27.1

EVACUATION TIMES

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MICRO Bi03-2	26	0.30	14.2	39.6	110	181	283	453	793	1444	24.5
MICRO Si02-2	87	0.25	11.6	28.6	56.9	93.4	139	195	289	—	22.1
MICRO Ti05-2	58	0.57	9.34	20.7	34.0	56.6	87.8	142	235	470	24.8
MICRO Xi2.5-2	73	0.28	13.9	34.8	70.2	127	207	320	510	793	27.1

DIMENSIONAL DRAWING

ORDERING INFORMATION

Description	Part no.
COAX® in piGRIP® Bi	02.01.096
COAX® in piGRIP® Si	02.00.345
COAX® in piGRIP® Ti	02.00.346
COAX® in piGRIP® Xi	02.00.344

piCLASSIC



It is available with a three-stage COAX® cartridge MIDI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. This pump has a substantially lower air consumption compare to competition, it is compact with no moving parts. It can be configured with 1–6 cartridges. This pump can easily be upgraded with more capacity if needed. And it is also easy to disassemble for maintenance.

VACUUM FLOW

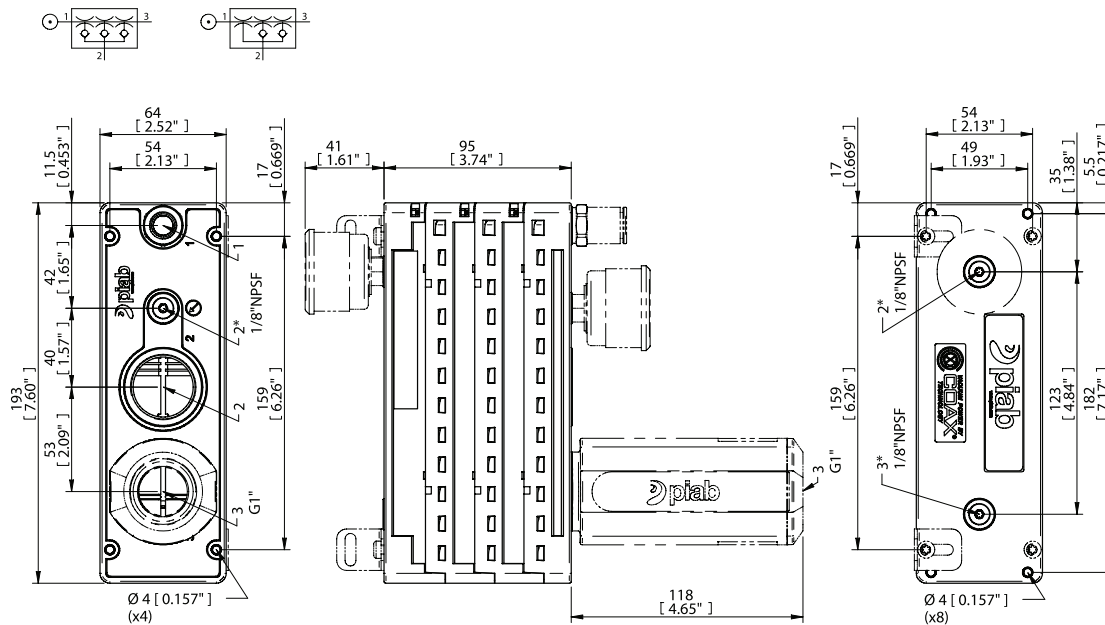
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 x1	87	3.71	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	—	—	22.1
MIDI Si32-3 x2	87	7.42	25.4	14.8	11.0	7.20	3.81	2.54	2.12	1.48	—	—	22.1
MIDI Si32-3 x3	87	11.12	38.1	22.2	16.5	10.8	5.72	3.81	3.18	2.33	—	—	22.1
MIDI Si32-3 x4	87	14.83	50.9	29.7	22.0	14.4	7.63	5.09	4.24	2.97	—	—	22.1
MIDI Si32-3 x5	87	18.54	54.0	33.5	26.3	18.0	9.54	6.36	5.30	4.45	—	—	22.1
MIDI Si32-3 x6	87	22.25	61.0	37.9	31.4	21.6	11.4	7.63	6.36	4.66	—	—	22.1
MIDI Pi48-3 x1	45	4.34	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	—	26.6
MIDI Pi48-3 x2	45	8.48	23.7	10.6	7.63	4.66	2.75	2.12	1.48	1.06	0.42	—	26.6
MIDI Pi48-3 x3	45	12.71	35.6	15.9	11.4	6.99	4.13	3.18	2.22	1.59	0.64	—	26.6
MIDI Pi48-3 x4	45	16.95	47.5	21.2	15.3	9.32	5.51	4.24	2.97	2.12	0.85	—	26.6
MIDI Pi48-3 x5	45	21.19	50.4	23.9	18.2	11.7	6.89	5.30	3.71	2.65	1.06	—	26.6
MIDI Pi48-3 x6	45	25.43	57.0	27.1	21.8	14.0	8.26	6.36	4.45	3.18	1.27	—	26.6
MIDI Xi40-3 x1	65	3.88	12.5	6.36	4.24	2.75	1.55	1.23	0.91	0.68	0.38	0.06	28

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Xi40-3 x2	65	7.76	25.0	12.7	8.48	5.51	3.09	2.46	1.82	1.36	0.76	0.13	28
MIDI Xi40-3 x3	65	11.63	37.5	19.1	12.7	8.26	4.64	3.69	2.73	2.03	1.14	0.19	28
MIDI Xi40-3 x4	65	15.51	50.0	25.4	17.0	11.0	6.19	4.92	3.64	2.71	1.53	0.25	28
MIDI Xi40-3 x5	65	19.39	53.2	28.6	20.1	13.8	7.73	6.14	4.56	3.39	1.91	0.32	28
MIDI Xi40-3 x6	65	23.31	60.0	32.4	24.2	16.5	9.28	7.29	5.47	4.07	2.29	0.38	28

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)										Max vacuum -inHg
			3	6	9	12	15	18	21	24	27		
MIDI Si32-3 x1	87	3.71	0.57	1.42	2.83	5.10	9.34	15.0	22.7	—	—	22.1	
MIDI Si32-3 x2	87	7.42	0.28	0.71	1.42	2.55	4.81	7.65	11.3	—	—	22.1	
MIDI Si32-3 x3	87	11.12	0.20	0.48	0.93	1.70	3.11	5.10	7.65	—	—	22.1	
MIDI Si32-3 x4	87	14.83	0.14	0.37	0.71	1.27	2.35	3.68	5.66	—	—	22.1	
MIDI Si32-3 x5	87	18.54	0.14	0.34	0.62	1.02	1.87	3.11	4.53	—	—	22.1	
MIDI Si32-3 x6	87	22.25	0.11	0.28	0.51	0.85	1.56	2.55	3.68	—	—	22.1	
MIDI Pi48-3 x1	45	4.34	0.57	1.70	3.40	7.08	12.7	19.8	28.3	45.3	113	26.6	
MIDI Pi48-3 x2	45	8.48	0.28	0.85	1.70	3.68	6.51	9.91	14.2	22.7	56.6	26.6	
MIDI Pi48-3 x3	45	12.71	0.20	0.57	1.13	2.27	4.25	6.51	9.34	15.0	37.7	26.6	
MIDI Pi48-3 x4	45	16.95	0.14	0.42	0.85	1.70	3.11	5.10	7.08	11.3	28.3	26.6	
MIDI Pi48-3 x5	45	21.19	0.14	0.40	0.79	1.42	2.55	3.96	5.66	9.1	22.7	26.6	
MIDI Pi48-3 x6	45	25.43	0.11	0.37	0.71	1.13	2.27	3.40	4.81	7.6	19.0	26.6	
MIDI Xi40-3 x1	65	3.88	0.62	1.76	3.40	6.23	10.5	16.1	23.8	34.0	62.3	28	
MIDI Xi40-3 x2	65	7.76	0.31	0.88	1.70	3.11	5.38	8.21	11.9	17.0	31.1	28	
MIDI Xi40-3 x3	65	11.63	0.20	0.59	1.13	1.98	3.40	5.38	7.93	11.3	20.7	28	
MIDI Xi40-3 x4	65	15.51	0.17	0.45	0.85	1.56	2.55	3.96	5.95	8.5	15.6	28	
MIDI Xi40-3 x5	65	19.39	0.14	0.40	0.74	1.25	1.98	3.11	4.81	6.8	12.5	28	
MIDI Xi40-3 x6	65	23.31	0.14	0.34	0.62	1.13	1.70	2.83	3.96	5.7	10.5	28	

DIMENSIONAL DRAWING

PCL.XXXX.S. **AB**

	1	2
AB	G1/4"	G1"
12B	Ø12	G1"

ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

ACCESSORY DESCRIPTIONS



piCLASSIC Energy saving

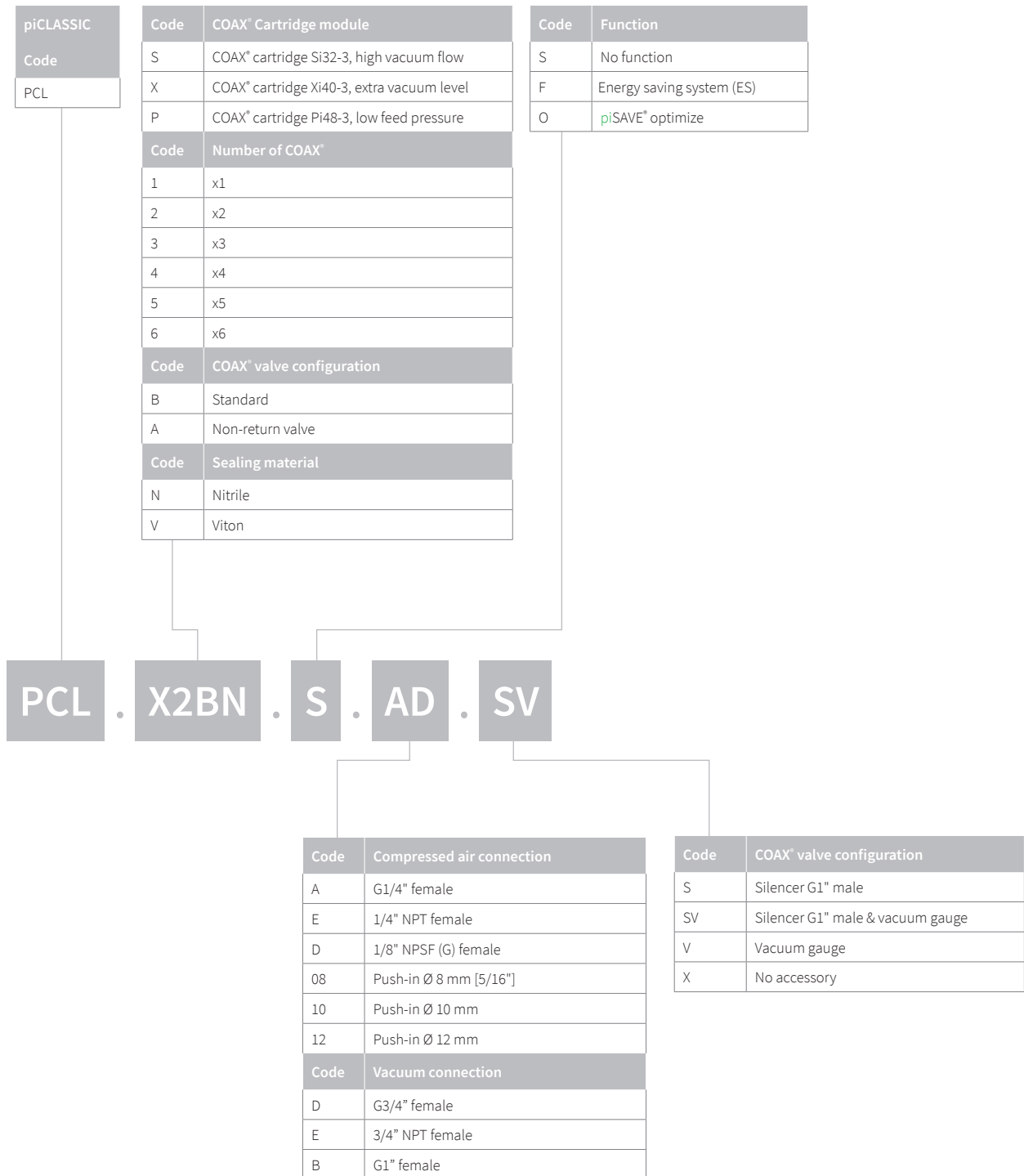
piCLASSIC has an integrated air-saving function (piSAVE® onoff) that minimizes the air consumption by controlling the incoming air flow to the pump. Large hysteresis is recommended for sealed vacuum handling applications such as metal sheet, glass or plastic handling. And small hysteresis is recommended if a very accurate vacuum level has to be maintained in the process. It has an adjustable ES switch level and is a pneumatic function.



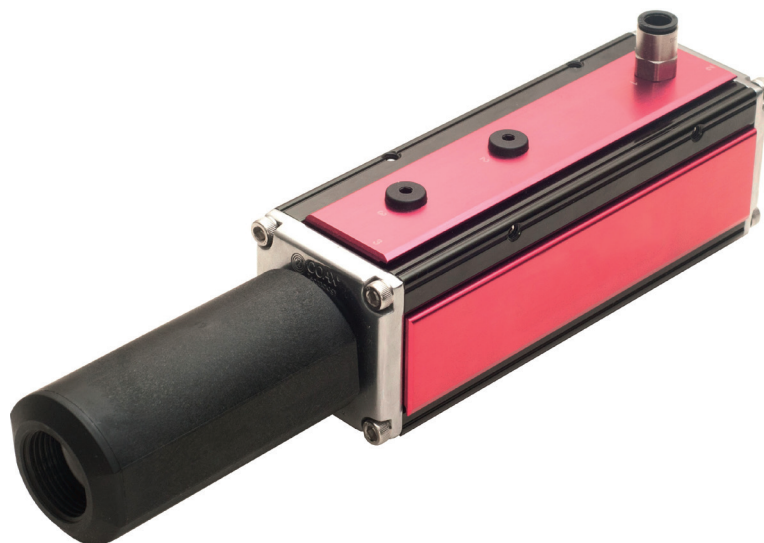
piCLASSIC piSAVE® optimize

The piSAVE® optimize is a vacuum controlled proportional pressure regulator, a fully pneumatic device suitable for air-driven ejectors/pumps. The feed pressure to the vacuum pump/ejector is automatically regulated and controlled to maintain the set vacuum level. Air/energy usage is kept to a minimum for the application (optimized). It is recommended for leaking and sealed applications to save energy and secure the right vacuum level.

piCLASSIC – CUSTOMER CODE



P6010



As with the majority of our pumps, it is available with the patented COAX® technology and with a three-stage COAX® cartridge MIDI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. The P6010 consumes substantially less air compared to conventional ejectors. It also has quicker evacuation times and a low noise level. It is available with multiple connection alternatives. It can be configured with 1–4 cartridges.

VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
Pi48-3 × 1	45	4.24	11.9	5.30	3.81	2.33	1.38	1.06	0.74	0.53	0.21	—	26.6
Si32-3 × 1	87	3.71	12.7	7.42	5.51	3.60	1.91	1.27	1.06	0.74	—	—	22.1/15.3*
Xi40-3 × 1	65	3.88	12.5	6.36	4.24	2.75	1.55	1.23	0.91	0.68	0.38	0.06	28/15*
Pi48-3 × 2	45	8.48	23.7	10.6	7.63	4.66	2.75	2.12	1.48	1.06	0.42	—	26.6
Si32-3 × 2	87	7.42	25.4	14.8	11.0	7.20	3.81	2.54	2.12	1.48	—	—	22.1/15.3*
Xi40-3 × 2	65	7.76	25.0	12.7	8.48	5.51	3.09	2.46	1.82	1.36	0.76	0.13	28/15*
Pi48-3 × 3	45	12.71	35.6	15.9	11.4	6.99	4.13	3.18	2.22	1.59	0.64	—	26.6
Si32-3 × 3	87	11.12	38.1	22.2	16.5	10.8	5.72	3.81	3.18	2.22	—	—	22.1/15.3*
Xi40-3 × 3	65	11.63	37.5	19.1	12.7	8.26	4.64	3.69	2.73	2.03	1.14	0.19	28/15*
Pi48-3 × 4	45	16.95	47.5	21.2	15.3	9.32	5.51	4.24	2.97	2.12	0.85	—	26.6
Si32-3 × 4	87	14.83	50.9	29.7	22.0	14.4	7.63	5.09	4.24	2.97	—	—	22.1/15.3*
Xi40-3 × 4	65	15.51	50.0	25.4	17.0	11.0	6.19	4.92	3.64	2.71	1.53	0.25	28/15*

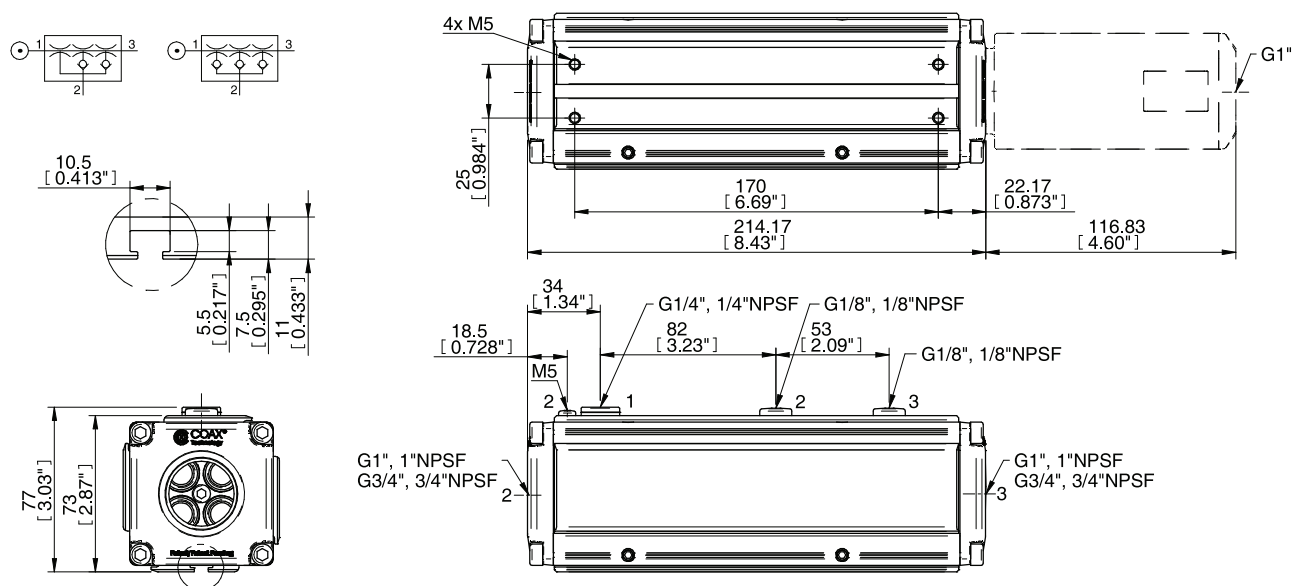
*With 1x flap valve

EVACUATION TIMES

COAX [®] Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
Pi48-3 ×1	45	4.24	0.57	1.70	3.40	7.08	12.7	19.8	28.3	45.3	113	26.6
Si32-3 ×1	87	3.71	0.57	1.42	2.83	5.10	9.34	15.0	22.7	—	—	22.1/15.3*
Xi40-3 ×1	65	3.88	0.62	1.76	3.40	6.23	10.5	16.1	23.8	34.0	62.3	28/15*
Pi48-3 ×2	45	8.48	0.28	0.85	1.70	3.54	6.51	9.91	14.2	22.7	56.6	26.6
Si32-3 ×2	87	7.42	0.28	0.71	1.42	2.55	4.81	7.65	11.3	—	—	22.1/15.3*
Xi40-3 ×2	65	7.76	0.31	0.88	1.70	3.11	5.38	8.21	11.9	17.0	31.1	28/15*
Pi48-3 ×3	45	12.71	0.19	0.57	1.13	2.35	4.25	6.51	9.34	15.0	37.7	26.6
Si32-3 ×3	87	11.12	0.19	0.48	0.93	1.70	3.11	4.81	7.65	—	—	22.1/15.3*
Xi40-3 ×3	65	11.63	0.21	0.59	1.13	2.07	3.40	5.38	7.93	11.3	20.7	28/15*
Pi48-3 ×4	45	16.95	0.14	0.42	0.85	1.78	3.11	4.96	7.08	11.3	28.3	26.6
Si32-3 ×4	87	14.83	0.14	0.35	0.71	1.27	2.35	3.68	5.66	—	—	22.1/15.3*
Xi40-3 ×4	65	15.51	0.16	0.44	0.85	1.56	2.63	3.96	5.95	8.50	15.6	28/15*

*With 1x flap valve

DIMENSIONAL DRAWING



ORDERING INFORMATION

For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

ACCESSORY DESCRIPTIONS



P6010 Classic

Very similar to the P6010 with the patented COAX® technology. The connections can be made on the long side of the ejector and is retro-compatible with Piab's Classic model in regard to mounting.



P6010 AVM™2

The AVM™2 unit has built-in control and monitoring functions. The integrated energy saving function (ES) minimizes the air consumption in sealed systems. It has valves for vacuum on/off and blow-off with electrical power failsafe function. The AVM has digital outputs, 16 pre-set combinations of vacuum levels, digital vacuum level display and a mechanical valve for blow-off flow adjustment.



P6010 CU

The CU has electric valves for vacuum on/off and blow-off and a mechanical valve for blow-off flow adjustment. It also has a with special M12 4-pin cable assembly with LED for status of valve signal.



P6010 PCC

Different vacuum pumps need different feed pressure for optimum performance. The PCC is programmable for constant vacuum level, as the input signal regulates the feed pressure to maintain a constant vacuum level. It has an integrated analog vacuum sensor.

P6010 – CUSTOMER CODE

P6010
Code
P6010

Code	COAX® Cartridge module
AA	COAX® Cartridge module Blind x 4
AB	COAX® Cartridge module Si32-3x1
AC	COAX® Cartridge module Si32-3x2
AD	COAX® Cartridge module Si32-3x3
AE	COAX® Cartridge module Si32-3x4
AF	COAX® Cartridge module Si32-3x1, non-return valve
AG	COAX® Cartridge module Si32-3x2, non-return valve
AH	COAX® Cartridge module Si32-3x3, non-return valve
AI	COAX® Cartridge module Si32-3x4, non-return valve
AJ	COAX® Cartridge module Pi48-3x1
AK	COAX® Cartridge module Pi48-3x2
AL	COAX® Cartridge module Pi48-3x3
AM	COAX® Cartridge module Pi48-3x4
AN	COAX® Cartridge module Pi48-3x1, non-return valve
AO	COAX® Cartridge module Pi48-3x2, non-return valve
AP	COAX® Cartridge module Pi48-3x3, non-return valve
AQ	COAX® Cartridge module Pi48-3x4, non-return valve
AR	COAX® Cartridge module Xi40-3x1
AS	COAX® Cartridge module Xi40-3x2
AT	COAX® Cartridge module Xi40-3x3
AU	COAX® Cartridge module Xi40-3x4
AV	COAX® Cartridge module Xi40-3x1, non-return valve
AW	COAX® Cartridge module Xi40-3x2, non-return valve
AX	COAX® Cartridge module Xi40-3x3, non-return valve
AY	COAX® Cartridge module Xi40-3x4, non-return valve
BB	COAX® Cartridge module Si32-3x1, 1x flap valve
BC	COAX® Cartridge module Si32-3x2, 1x flap valve
BD	COAX® Cartridge module Si32-3x3, 1x flap valve
BE	COAX® Cartridge module Si32-3x4, 1x flap valve
BJ	COAX® Cartridge module Xi40-3x1, 1x flap valve
BK	COAX® Cartridge module Xi40-3x2, 1x flap valve
BL	COAX® Cartridge module Xi40-3x3, 1x flap valve
BM	COAX® Cartridge module Xi40-3x4, 1x flap valve

Code	Mounting
01	Mounting T-slot, Cover plate PIAB label

P6010

. AA

. 01

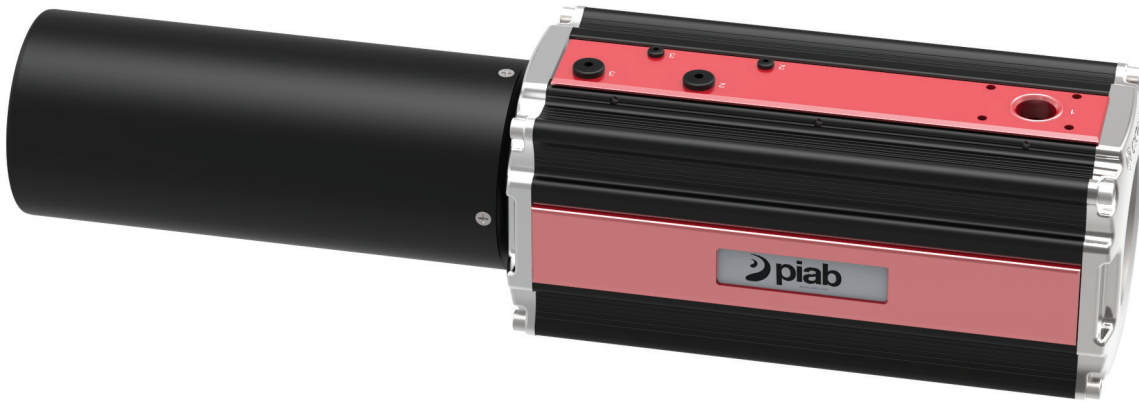
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. 51

Code	Cover/Function plates
LA	Cover plate G thread connections, Cover plate plain
LB	Function PCC Vacuum, Cover plate G thread connections
LI	Cover plate Classic G thread connections, Cover plate plain
LJ	Cover plate NPSF thread connections, Cover plate plain
LK	Cover plate Classic NPSF thread connections, Cover plate plain
LT	Function PCC Vacuum, Cover plate NPSF thread connections
LU	Function AVM™2 NO, Cover plate G thread connections
LV	Function AVM™2 NC, Cover plate G thread connections
LW	Function AVM™2 NO, Cover plate NPSF thread connections
LX	Function AVM™2 NC, Cover plate NPSF thread connections
LY	Function CU NC, Cover plate G thread connections
LZ	Function CU NC, Cover plate NPSF thread connections
MA	Function AVM™2 NO, Cover plate G thread connections SB
MB	Function AVM™2 NC, Cover plate G thread connections SB
MC	Function AVM™2 NO, Cover plate NPSF thread connections SB
MD	Function AVM™2 NC, Cover plate NPSF thread connections SB
ME	Function CU NC, Cover plate G thread connections SB
MF	Function CU NC, Cover plate NPSF thread connections SB

Code	Cover/Function plates
51	Connections 2x G1"
52	Connections 2x G1", silencer 1"
53	Connections 2x G3/4"
54	Connections 2x G3/4", silencer 3/4"
55	Connections 2x 1" NPSF
56	Connections 2x 1" NPSF, silencer 1"
57	Connections 2x 3/4" NPSF
58	Connections 2x 3/4" NPSF, silencer 3/4"

P6040



The P6040 comes with the patented COAX® technology. It is available with a three-stage COAX® cartridge MIDI. Choose an Si cartridge for extra vacuum flow, a Pi cartridge for high performance at low feed pressure or an Xi cartridge when high flow and deep vacuum is needed. This pump has a substantially lower air consumption compare to competition, it is compact with no moving parts. It can be configured with 5–16 cartridges.

VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Pi48-3 ×5	44	21.19	59.3	26.5	19.1	11.7	6.89	5.30	3.71	2.65	1.06	—	26.6
MIDI Pi48-3 ×6	44	25.43	71.2	31.8	22.9	14.0	8.26	6.36	4.45	3.18	1.27	—	26.6
MIDI Pi48-3 ×7	44	29.66	83.1	37.1	26.7	16.3	9.64	7.42	5.19	3.71	1.48	—	26.6
MIDI Pi48-3 ×8	44	33.90	94.9	42.4	30.5	18.6	11.0	8.48	5.93	4.24	1.70	—	26.6
MIDI Pi48-3 ×9	44	38.14	107	47.7	34.3	21.0	12.4	9.54	6.67	4.77	1.91	—	26.6
MIDI Pi48-3 ×10	44	42.38	119	53.0	38.1	23.3	13.8	10.6	7.42	5.30	2.12	—	26.6
MIDI Pi48-3 ×11	44	46.62	131	58.3	42.0	25.6	15.2	11.7	8.16	5.83	2.33	—	26.6
MIDI Pi48-3 ×12	44	50.85	142	63.6	45.8	28.0	16.5	12.7	8.90	6.36	2.54	—	26.6
MIDI Pi48-3 ×13	44	55.09	154	68.9	49.6	30.3	17.9	13.8	9.64	6.89	2.75	—	26.6
MIDI Pi48-3 ×14	44	59.33	166	74.2	53.4	32.6	19.3	14.8	10.4	7.42	2.97	—	26.6
MIDI Pi48-3 ×15	44	63.57	178	79.5	57.2	35.0	20.7	15.9	11.1	7.95	3.18	—	26.6
MIDI Pi48-3 ×16	44	67.80	190	84.8	61.0	37.3	22.0	17.0	11.9	8.48	3.39	—	26.6

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 ×5	87	18.54	63.6	37.1	27.5	18.0	9.54	6.36	5.30	3.71	—	—	22.1/15.3*
MIDI Si32-3 ×6	87	22.25	76.3	44.5	33.1	21.6	11.4	7.63	6.36	4.45	—	—	22.1/15.3*
MIDI Si32-3 ×7	87	25.96	89.0	51.9	38.6	25.2	13.3	8.90	7.42	5.19	—	—	22.1/15.3*
MIDI Si32-3 ×8	87	29.66	102	59.3	44.1	28.8	15.3	10.2	8.48	5.93	—	—	22.1/15.3*
MIDI Si32-3 ×9	87	33.37	114	66.7	49.6	32.4	17.2	11.4	9.54	6.67	—	—	22.1/15.3*
MIDI Si32-3 ×10	87	37.08	127	74.2	55.1	36.0	19.1	12.7	10.6	7.42	—	—	22.1/15.3*
MIDI Si32-3 ×11	87	40.79	140	81.6	60.6	39.6	21.0	14.0	11.7	8.16	—	—	22.1/15.3*
MIDI Si32-3 ×12	87	44.50	153	89.0	66.1	43.2	22.9	15.3	12.7	8.90	—	—	22.1/15.3*
MIDI Si32-3 ×13	87	48.20	165	96.4	71.6	46.8	24.8	16.5	13.8	9.64	—	—	22.1/15.3*
MIDI Si32-3 ×14	87	51.91	178	104	77.1	50.4	26.7	17.8	14.8	10.4	—	—	22.1/15.3*
MIDI Si32-3 ×15	87	55.62	191	111	82.6	54.0	28.6	19.1	15.9	11.1	—	—	22.1/15.3*
MIDI Si32-3 ×16	87	59.33	203	119	88.1	57.6	30.5	20.3	17.0	11.9	—	—	22.1/15.3*
MIDI Xi40-3 ×5	65	19.39	62.5	31.8	21.2	13.8	7.73	6.14	4.56	3.39	1.91	0.32	28/15*
MIDI Xi40-3 ×6	65	23.27	75.0	38.1	25.4	16.5	9.28	7.37	5.47	4.07	2.29	0.38	28/15*
MIDI Xi40-3 ×7	65	27.14	87.5	44.5	29.7	19.3	10.8	8.60	6.38	4.75	2.67	0.44	28/15*
MIDI Xi40-3 ×8	65	31.02	100	50.9	33.9	22.0	12.4	9.83	7.29	5.42	3.05	0.51	28/15*
MIDI Xi40-3 ×9	65	34.90	113	57.2	38.1	24.8	13.9	11.1	8.20	6.10	3.43	0.57	28/15*
MIDI Xi40-3 ×10	65	38.78	125	63.6	42.4	27.5	15.5	12.3	9.11	6.78	3.81	0.64	28/15*
MIDI Xi40-3 ×11	65	42.65	138	69.9	46.6	30.3	17.0	13.5	10.0	7.46	4.20	0.70	28/15*
MIDI Xi40-3 ×12	65	46.53	150	76.3	50.9	33.1	18.6	14.7	10.9	8.14	4.58	0.76	28/15*
MIDI Xi40-3 ×13	65	50.41	163	82.6	55.1	35.8	20.1	16.0	11.8	8.81	4.96	0.83	28/15*
MIDI Xi40-3 ×14	65	54.29	175	89.0	59.3	38.6	21.7	17.2	12.8	9.49	5.34	0.89	28/15*
MIDI Xi40-3 ×15	65	58.16	188	95.4	63.6	41.3	23.2	18.4	13.7	10.2	5.72	0.95	28/15*
MIDI Xi40-3 ×16	65	62.04	200	102	67.8	44.1	24.7	19.7	14.6	10.8	6.10	1.02	28/15*

* With 1x flap valve

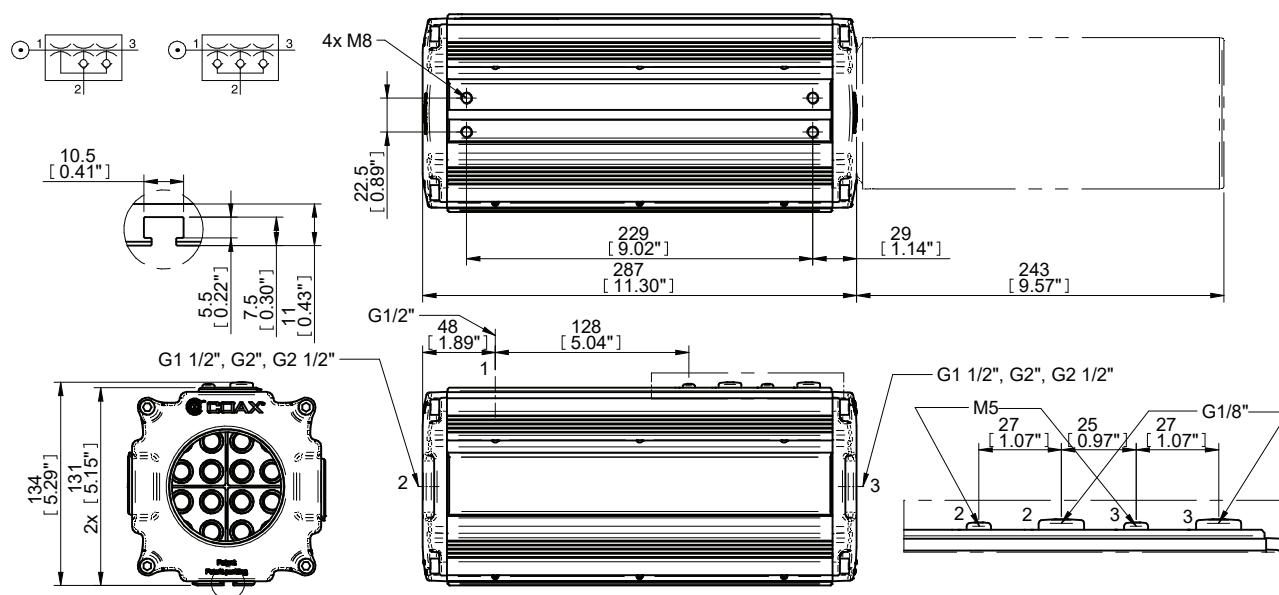
EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MIDI Pi48-3 ×5	44	21.19	0.11	0.34	0.68	1.42	2.55	3.96	5.66	9.06	22.7	26.6
MIDI Pi48-3 ×6	44	25.43	0.09	0.28	0.57	1.19	2.12	3.40	4.81	7.65	19.0	26.6
MIDI Pi48-3 ×7	44	29.66	0.08	0.24	0.48	1.02	1.81	2.83	3.96	6.51	16.1	26.6
MIDI Pi48-3 ×8	44	33.90	0.07	0.21	0.42	0.88	1.59	2.49	3.68	5.66	14.2	26.6
MIDI Pi48-3 ×9	44	38.14	0.06	0.19	0.37	0.79	1.42	2.21	3.11	5.10	12.5	26.6
MIDI Pi48-3 ×10	44	42.38	0.06	0.17	0.34	0.71	1.27	1.98	2.83	4.53	11.3	26.6
MIDI Pi48-3 ×11	44	46.62	0.05	0.16	0.31	0.65	1.16	1.81	2.58	4.25	10.2	26.6
MIDI Pi48-3 ×12	44	50.85	0.05	0.14	0.28	0.59	1.08	1.64	2.35	3.68	9.34	26.6
MIDI Pi48-3 ×13	44	55.09	0.04	0.13	0.26	0.54	0.99	1.53	2.18	3.40	8.78	26.6
MIDI Pi48-3 ×14	44	59.33	0.04	0.12	0.24	0.51	0.91	1.42	2.01	3.11	8.21	26.6
MIDI Pi48-3 ×15	44	63.57	0.04	0.11	0.23	0.48	0.85	1.33	1.90	3.11	7.65	26.6
MIDI Pi48-3 ×16	44	67.80	0.04	0.11	0.21	0.45	0.82	1.25	1.78	2.83	7.08	26.6
MIDI Si32-3 ×5	87	18.54	0.11	0.28	0.57	1.02	1.87	3.11	4.53	—	—	22.1/15.3*
MIDI Si32-3 ×6	87	22.25	0.09	0.24	0.48	0.85	1.56	2.49	3.68	—	—	22.1/15.3*
MIDI Si32-3 ×7	87	25.96	0.08	0.20	0.40	0.74	1.33	2.15	3.11	—	—	22.1/15.3*
MIDI Si32-3 ×8	87	29.66	0.07	0.18	0.37	0.65	1.16	1.87	2.83	—	—	22.1/15.3*
MIDI Si32-3 ×9	87	33.37	0.06	0.16	0.31	0.57	1.05	1.67	2.52	—	—	22.1/15.3*
MIDI Si32-3 ×10	87	37.08	0.06	0.14	0.28	0.51	0.93	1.50	2.27	—	—	22.1/15.3*
MIDI Si32-3 ×11	87	40.79	0.05	0.13	0.26	0.45	0.85	1.36	2.07	—	—	22.1/15.3*
MIDI Si32-3 ×12	87	44.50	0.05	0.12	0.24	0.42	0.79	1.25	1.90	—	—	22.1/15.3*
MIDI Si32-3 ×13	87	48.20	0.04	0.11	0.22	0.40	0.71	1.16	1.76	—	—	22.1/15.3*
MIDI Si32-3 ×14	87	51.91	0.04	0.10	0.20	0.37	0.68	1.08	1.61	—	—	22.1/15.3*
MIDI Si32-3 ×15	87	55.62	0.04	0.09	0.19	0.34	0.62	0.99	1.50	—	—	22.1/15.3*
MIDI Si32-3 ×16	87	59.33	0.04	0.09	0.18	0.31	0.59	0.93	1.42	—	—	22.1/15.3*
MIDI Xi40-3 ×5	65	19.39	0.12	0.34	0.68	1.25	2.10	3.11	4.81	6.80	12.5	28/15*
MIDI Xi40-3 ×6	65	23.27	0.10	0.28	0.57	1.05	1.76	2.69	3.96	5.66	10.5	28/15*

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MIDI Xi40-3 ×7	65	27.14	0.09	0.25	0.48	0.88	1.50	2.29	3.40	4.81	8.78	28/15*
MIDI Xi40-3 ×8	65	31.02	0.08	0.22	0.42	0.79	1.30	2.01	3.11	4.25	7.93	28/15*
MIDI Xi40-3 ×9	65	34.90	0.07	0.20	0.37	0.68	1.16	1.78	2.63	3.68	6.80	28/15*
MIDI Xi40-3 ×10	65	38.78	0.06	0.18	0.34	0.62	1.05	1.61	2.38	3.40	6.23	28/15*
MIDI Xi40-3 ×11	65	42.65	0.06	0.16	0.31	0.57	0.96	1.47	2.15	3.11	5.66	28/15*
MIDI Xi40-3 ×12	65	46.53	0.05	0.15	0.28	0.51	0.88	1.36	1.98	2.83	5.10	28/15*
MIDI Xi40-3 ×13	65	50.41	0.05	0.14	0.26	0.48	0.82	1.25	1.84	2.61	4.81	28/15*
MIDI Xi40-3 ×14	65	54.29	0.05	0.12	0.24	0.45	0.76	1.16	1.70	2.44	4.53	28/15*
MIDI Xi40-3 ×15	65	58.16	0.04	0.12	0.23	0.42	0.71	1.08	1.59	2.27	4.25	28/15*
MIDI Xi40-3 ×16	65	62.04	0.04	0.11	0.21	0.40	0.65	1.02	1.50	2.12	3.96	28/15*

*With 1x flap valve

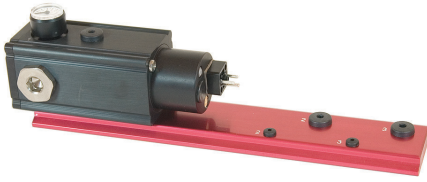
DIMENSIONAL DRAWING



ORDERING INFORMATION

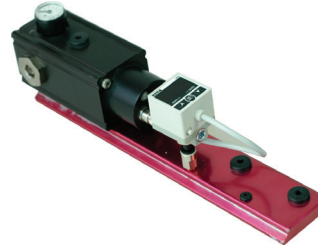
For a complete list of available pumps and combinations with further information visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

ACCESSORY DESCRIPTIONS



P6040 V30

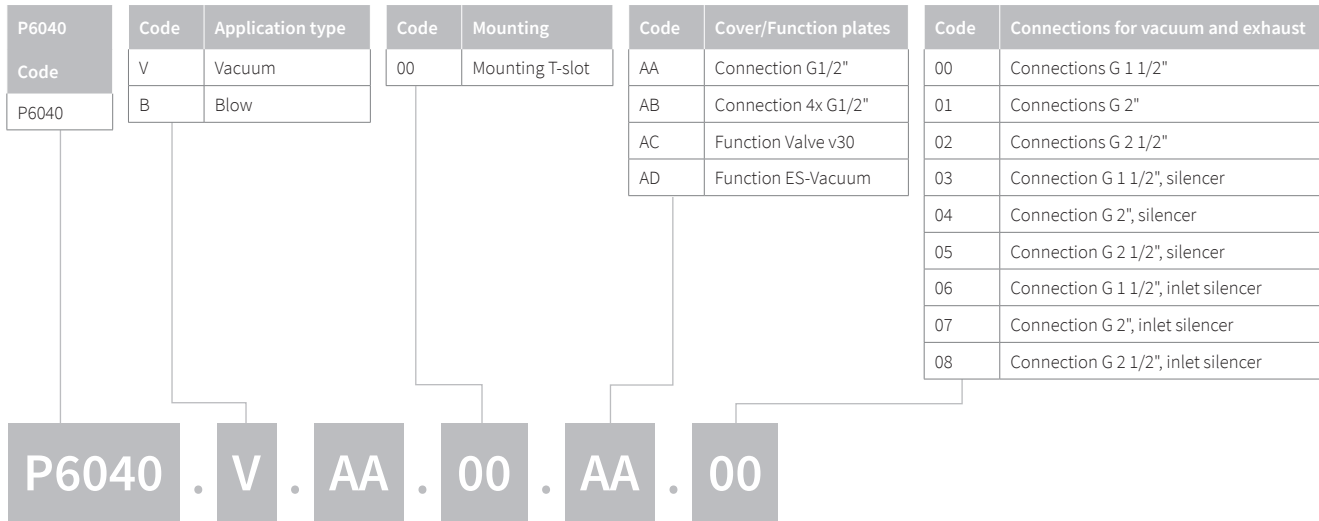
Piab P6040 multi stage ejector with Si, Pi or Xi COAX® technology. Modular design for flexible performance. Compact and durable with no moving parts. Electric 3/2 valve for on/off. Manometer for feed pressure control



P6040 ES Vacuum

Piab P6040 multi stage ejector with Si, Pi or Xi COAX® technology. Modular design for flexible performance. Compact and durable with no moving parts. Electrically operated air-saving device. Adjustable vacuum controlled 2/2 NO valve. Manometer for feed pressure control. Recommended for non-leaking system.

P6040 – CUSTOMER CODE



Code												COAX® Cartridge module
×5	×6	×7	×8	×9	×10	×11	×12	×13	×14	×15	×16	
AA	AB	AC	AD	AE	AF	AG	AH	AI	AJ	AK	AL	COAX® Cartridge module Pi48-3
AM	AN	AO	AP	AQ	AR	AS	AT	AU	AV	AW	AX	COAX® Cartridge module Pi48-3, non-return valve
AY	AZ	BA	BB	BC	BD	BE	BF	BG	BH	BI	BJ	COAX® Cartridge module Pi48-3, 1x flap valve
BK	BL	BM	BN	BO	BP	BQ	BR	BS	BT	BU	BV	COAX® Cartridge module Si32-3
BW	BX	BY	BZ	CA	CB	CC	CD	CE	CF	CG	CH	COAX® Cartridge module Si32-3, non-return valve
CI	CJ	CK	CL	CM	CN	CO	CP	CQ	CR	CS	CT	COAX® Cartridge module Si32-3, 1x flap valve
CU	CV	CW	CX	CY	CZ	DA	DB	DC	DD	DE	DF	COAX® Cartridge module Xi40-3
DG	DH	DI	DJ	DK	DL	DM	DN	DO	DP	DQ	DR	COAX® Cartridge module Xi40-3, non-return valve
DS	DT	DU	DV	DW	DX	DY	DZ	EA	EB	EC	ED	COAX® Cartridge module Xi40-3, 1x flap valve

Round pump



This round pump is available with the energy efficient COAX® cartridges. It designed for high vacuum flow with 6x COAX® Si MIDI cartridges. Still it is small, compact and lightweight (3.52 lb.). Easy to mount and install with integrated hose connectors.

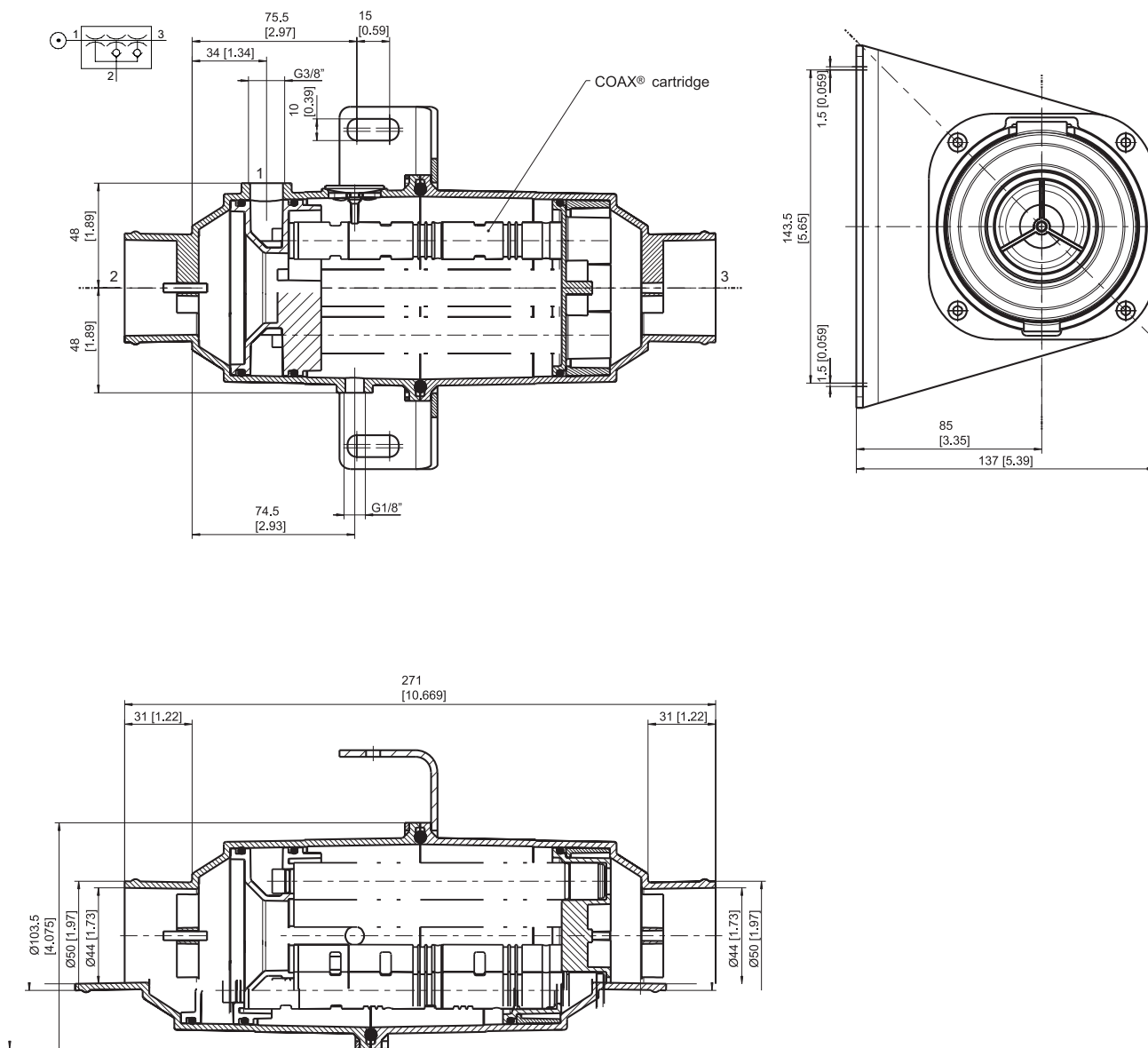
VACUUM FLOW

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum -inHg
			0	3	6	9	12	15	18	21	
MIDI Si32-3 ×6	58	15.89	63.6	36.9	24.2	15.3	10.2	5.09	1.27	—	17.7
MIDI Si32-3 ×6	73	19.07	72.5	42.0	28.0	17.8	10.8	7.88	4.45	2.29	20.7
MIDI Si32-3 ×6	87	22.25	76.3	44.5	33.1	21.6	11.4	7.63	6.36	4.45	22.1

EVACUATION TIMES

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum -inHg
			3	6	9	12	15	18	21	
MIDI Si32-3 ×6	58	15.89	0.14	0.34	0.65	1.13	1.98	4.73	—	17.7
MIDI Si32-3 ×6	73	19.07	0.08	0.28	0.51	0.99	1.64	2.83	4.73	20.7
MIDI Si32-3 ×6	87	22.25	0.08	0.23	0.48	0.85	1.56	2.49	3.77	22.1

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Round pump COAX® 6xSi32-3	01.21.632

MINI L pumps family



This family of pumps provides a large vacuum flow even though they are very small in size and lightweight. Vacuum level to 22.1 -inHg. Some pumps in this family are available with connection plate in aluminium or composite PA. These are recommended to use when the handled product is made of porous material such as cardboard, wood or paper.

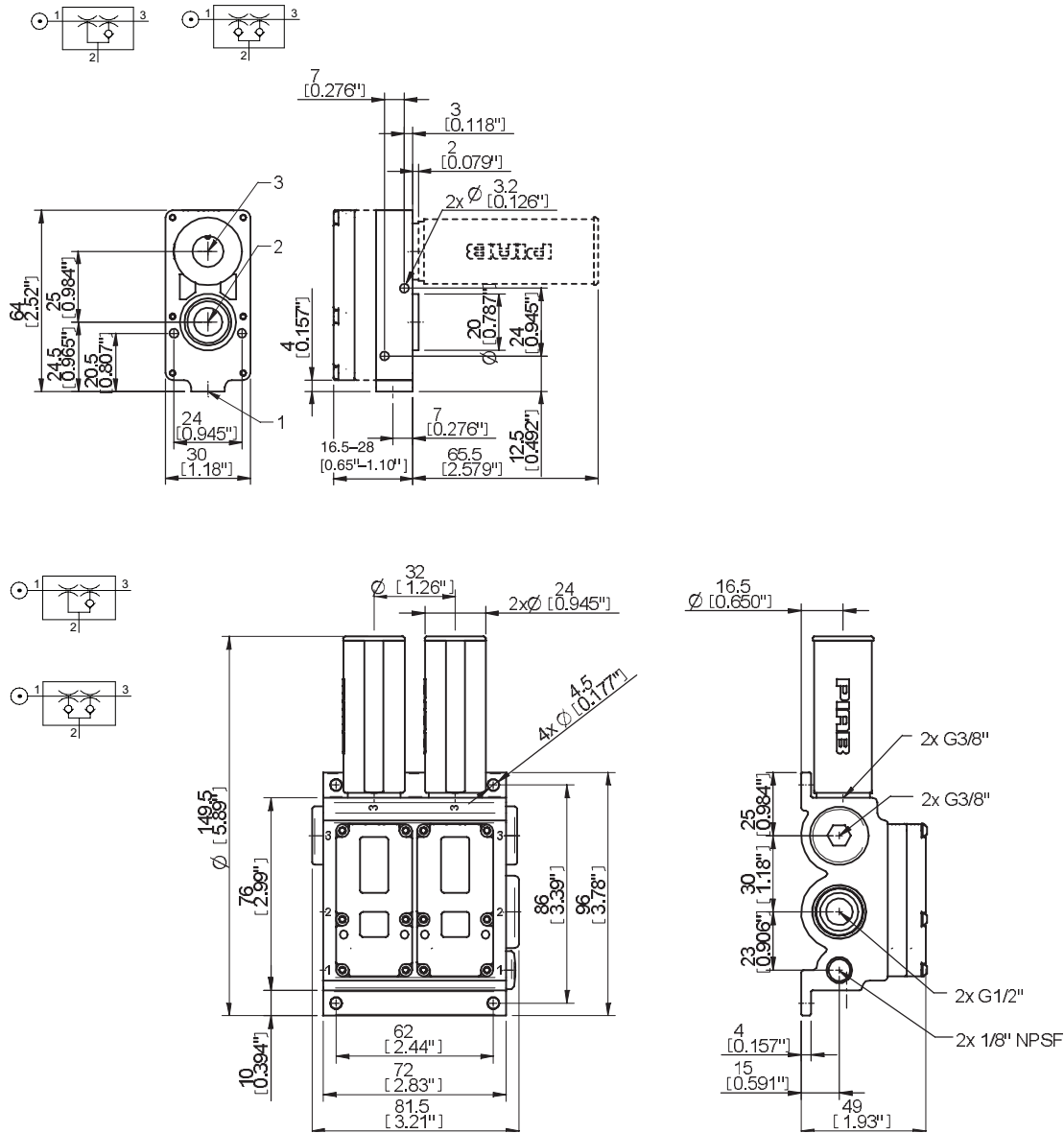
VACUUM FLOW

Pump name	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)								Max vacuum -inHg
			0	3	6	9	12	15	18	21	
L7	87	1.04	1.53	1.04	0.61	0.53	0.42	0.34	0.21	0.14	22.1
L14	87	2.08	3.18	2.12	1.21	0.95	0.83	0.68	0.51	0.28	22.1
L28	87	4.24	5.51	3.60	2.33	1.89	1.57	1.17	0.76	0.36	22.1
L56	87	8.48	10.8	7.42	4.24	3.60	2.97	2.33	1.72	0.91	22.1

EVACUATION TIMES

Pump name	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)							Max vacuum -inHg
			3	6	9	12	15	18	21	
L7	87	1.04	2.63	8.78	20.4	34.0	51.0	73.6	108	22.1
L14	87	2.08	1.81	4.81	10.2	16.7	24.9	36.8	51.0	22.1
L28	87	4.24	1.33	3.11	5.66	9.06	13.0	19.5	31.1	22.1
L56	87	8.48	0.65	1.50	2.83	4.53	6.51	9.34	14.2	22.1

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Vacuum pump MINI L7, conn. Z, NBR seals	L7A6-ZN
Vacuum pump MINI L7, conn. C, NBR seals	L7A6-CN
Vacuum pump MINI L7, conn. C, NBR seals, non-return valve	L7A6-CNA
Vacuum pump MINI L7, conn. A, NBR seals	L7A6-AN

Description	Part no.
Vacuum pump MINI L14, conn. Z, NBR seals	L14A6-ZN
Vacuum pump MINI L14, conn. C, NBR seals	L14A6-CN
Vacuum pump MINI L14, conn. B2, NBR sealings	L14A6-B1N
Vacuum pump MINI L14, conn. B2, NBR sealings, non-return valve	L14A6-B1NA
Vacuum pump MINI L14, conn. B2, NBR seals	L14A6-B2N
Vacuum pump MINI L14, conn. T, NBR sealings	L14A6-BN
Vacuum pump MINI L28, conn. C, NBR seals	L28A6-CN
Vacuum pump MINI L28, conn. C, NBR seals, non-return valve	L28A6-CNA
Vacuum pump MINI L28, conn. B1, NBR sealings	L28A6-B1N
Vacuum pump MINI L28, conn. B1, NBR sealings, non-return valve	L28A6-B1NA
Vacuum pump MINI L28, conn. B2, NBR seals	L28A6-B2N
Vacuum pump MINI L28, conn. B, NBR sealings	L28A6-BN
Vacuum pump MINI L28, conn. B, NBR sealings, non-return valve	L28A6-BNA
Vacuum pump MINI L28, conn. T, NBR seals	L28F6-TN
Vacuum pump MINI L56, conn. K, NBR seals	L56F6-KN
Vacuum pump MINI L56, conn. K, NBR seals, non-return valve	L56F6-KNA

MINI M-L pumps family



This pump family with its very small size and low weight provide extra vacuum level to 24.1 -inHg. Some models are available with the connection plate in aluminium or composite PA. These are recommended to use when the handled product is made of a sealed material or a non-porous material such as plastic, metal or glass.

VACUUM FLOW

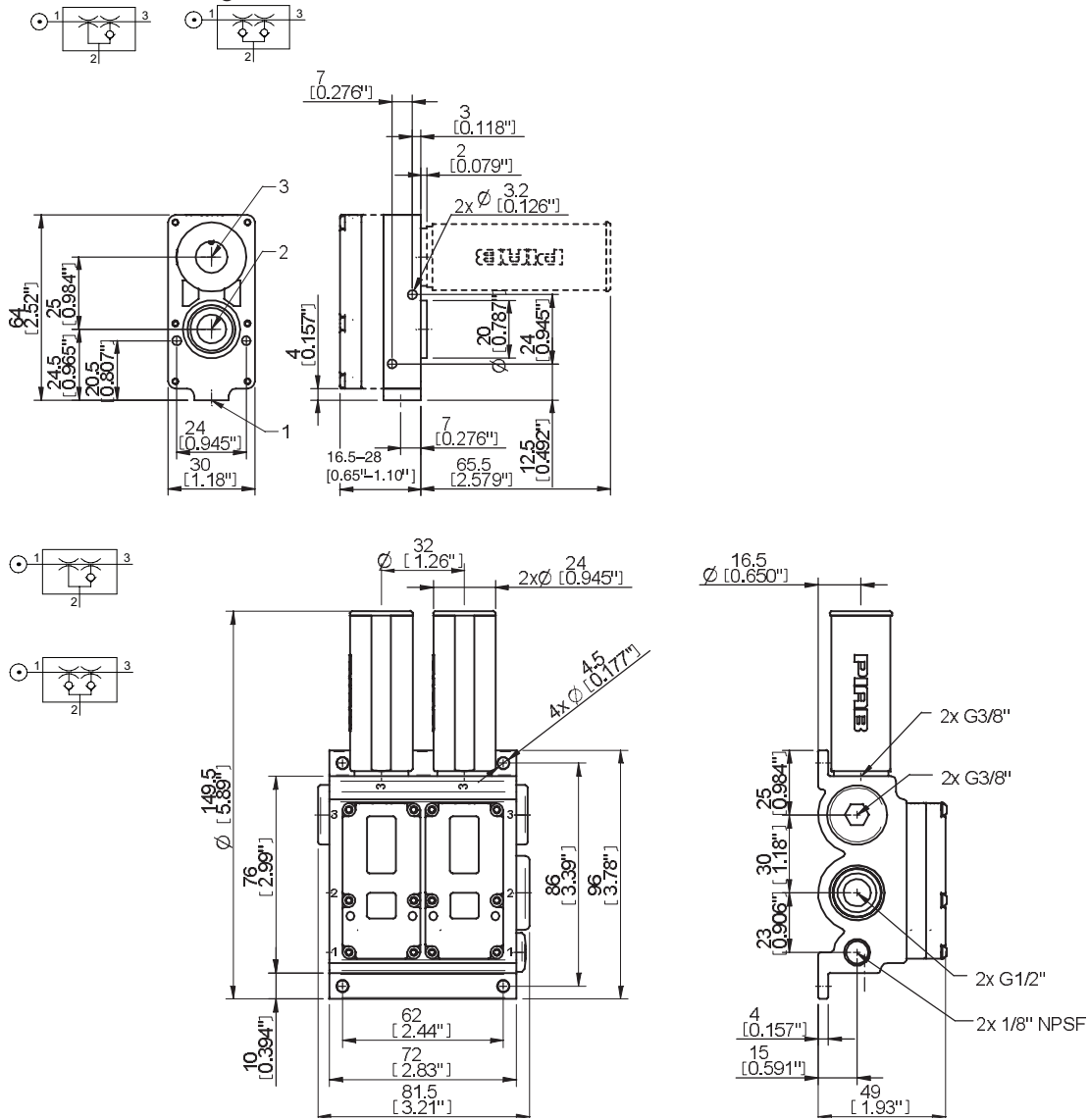
Pump name	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
M5L	55	0.81	1.23	0.64	0.47	0.38	0.30	0.21	0.17	0.08	0.02	23.9
M5L	87	1.17	1.55	1.06	0.55	0.30	0.25	0.21	0.17	0.11	0.04	24.8
M10L	55	1.61	2.33	1.21	0.83	0.74	0.64	0.44	0.25	0.13	0.04	23.9
M10L	87	2.33	2.75	1.93	1.02	0.61	0.55	0.44	0.28	0.19	0.06	24.8
M20L	55	3.18	4.24	2.54	1.61	1.42	1.12	0.87	0.70	0.40	0.04	23.9
M20L	87	4.66	5.09	3.60	2.01	1.21	1.02	0.81	0.61	0.40	0.13	24.8
M40L	55	6.36	8.48	4.66	2.97	2.54	2.12	1.50	0.91	0.40	0.11	23.9
M40L	87	9.32	10.2	6.57	3.60	2.33	1.97	1.57	1.21	0.76	0.23	24.8

EVACUATION TIMES

Pump name	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
M5L	55	0.81	5.66	17.3	34.0	51.0	73.6	108	167	314	23.9
M5L	87	1.17	3.68	10.2	28.3	51.0	79.3	113	161	266	24.8
M10L	55	1.61	3.68	8.78	16.1	25.5	36.8	56.6	90.6	201	23.9
M10L	87	2.33	2.24	5.66	14.2	26.1	39.6	59.5	85.0	142	24.8
M20L	55	3.18	1.47	3.96	7.36	11.9	18.1	28.3	48.1	105	23.9
M20L	87	4.66	1.08	2.83	6.80	12.2	19.3	28.3	42.5	70.8	24.8

Pump name	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
M40L	55	6.36	0.85	2.10	3.68	5.95	9.06	14.2	26.9	45.3	23.9
M40L	87	9.32	0.88	1.81	3.68	6.23	9.63	14.2	19.8	36.8	24.8

Dimensional drawing



ORDERING INFORMATION

Description	Part no.
Vacuum pump MINI M5L, conn. A, NBR sealings	M5A5-AN
Vacuum pump MINI M5L, conn. A, NBR sealings, non-return valve	M5A5-ANA
Vacuum pump MINI M5L, conn. B2, NBR seals	M5A5-B2N
Vacuum pump MINI M5L, conn. C, NBR seals	M5A5-CN
Vacuum pump MINI M5L, conn. Z, NBR seals	M5A5-ZN
Vacuum pump MINI M10L, conn. A, NBR sealings	M10A5-AN
Vacuum pump MINI M10L, conn. A, NBR sealings, non-return valve	M10A5-ANA
Vacuum pump MINI M10L, conn. B2, NBR seals	M10A5-B2N
Vacuum pump MINI M10L, conn. C, NBR seals	M10A5-CN
Vacuum pump MINI M10L, conn. Z, NBR seals	M10A5-ZN
Vacuum pump MINI M20L, conn. B, NBR sealings	M20A5-BN
Vacuum pump MINI M20L, conn. B, NBR sealings, non-return valve	M20A5-BNA
Vacuum pump MINI M20L, conn. B1, NBR sealings	M20A5-B1N
Vacuum pump MINI M20L, conn. B1, NBR sealings, non-return valve	M20A5-B1NA
Vacuum pump MINI M20L, conn. B2N, NBR seals	M20A5-B2N
Vacuum pump MINI M20L, conn. C, NBR sealings	M20A5-CN
Vacuum pump MINI M20L, conn. C, NBR sealings, non-return valve	M20A5-CNA
Vacuum pump MINI M20L, conn. T, NBR seals	M20F5-TN
Vacuum pump MINI M40L, conn. K, NBR sealings	M40F5-KN
Vacuum pump MINI M40L, conn. K, NBR sealings, non-return valve	M40F5-KNA

MINI X-L pumps family



This pump family with its very small size and low weight provide extra vacuum level to 27.9-inHg. Some models are available with the connection plate in aluminium or composite PA. These are recommended to use when the handled product is made of a sealed material or a non-porous material such as plastic, metal or glass.

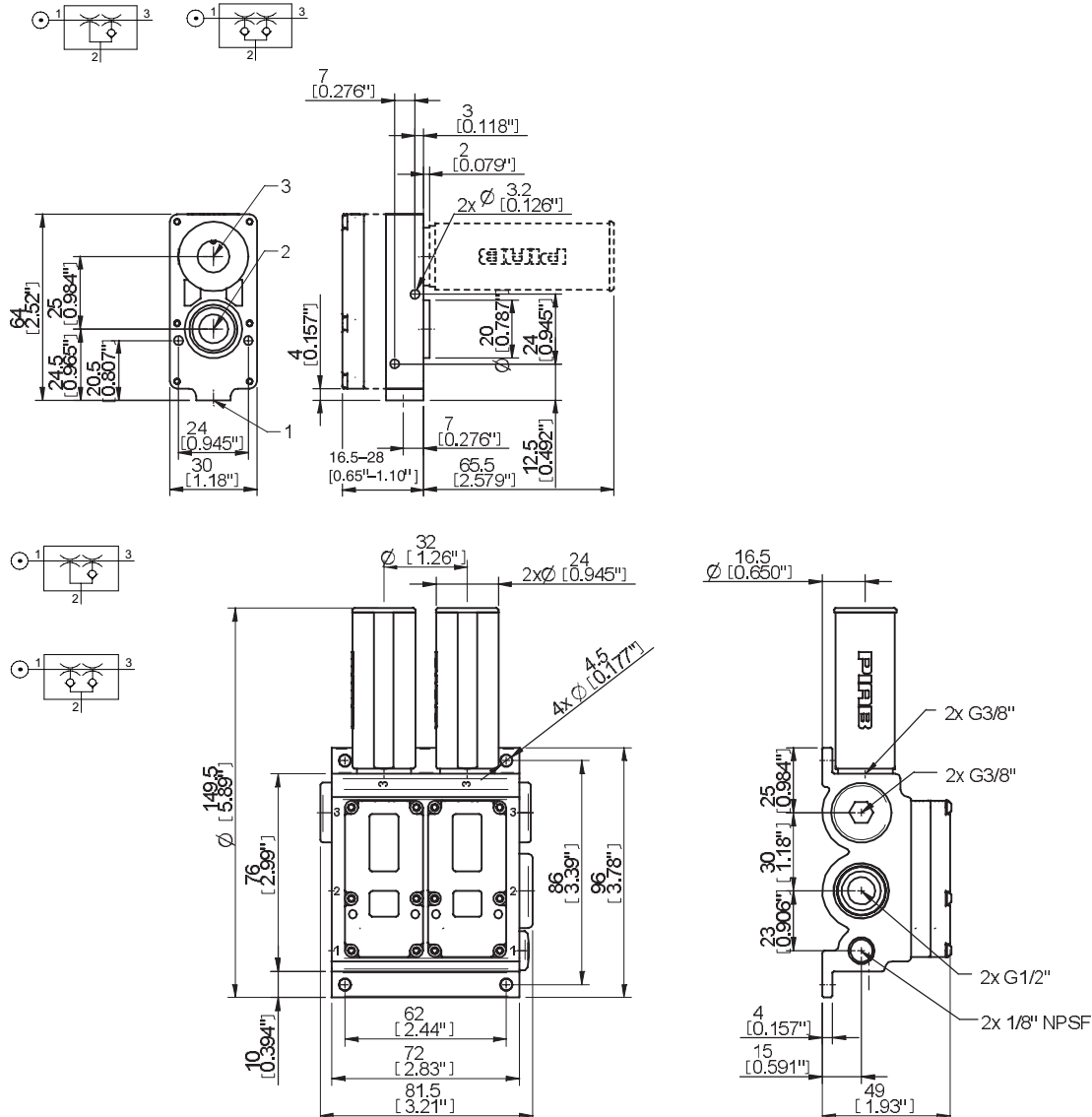
VACUUM FLOW

Pump name	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
X5L	58	0.83	1.02	0.51	0.25	0.23	0.21	0.18	0.15	0.121	0.064	0.013	27.4
X10L	58	1.67	1.61	0.74	0.51	0.44	0.34	0.28	0.21	0.15	0.085	0.021	27.4
X20L	58	3.39	4.03	2.12	1.06	0.93	0.81	0.64	0.53	0.36	0.21	0.042	27.4
X40L	58	6.57	6.78	3.18	2.12	1.91	1.48	1.27	1.06	0.85	0.36	0.081	27.4

EVACUATION TIMES

Pump name	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
X5L	58	0.83	4.81	23.2	48.1	76.5	110	153	210	300	637	27.4
X10L	58	1.67	3.11	13.3	26.6	42.5	62.3	87.8	122	187	396	27.4
X20L	58	3.39	1.56	5.66	11.3	18.4	27.5	39.6	53.8	76.5	144	27.4
X40L	58	6.57	1.08	3.40	6.23	9.34	13.6	19.3	34.0	62.3	90.6	27.4

DIMENSIONAL DRAWING

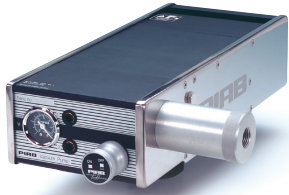


ORDERING INFORMATION

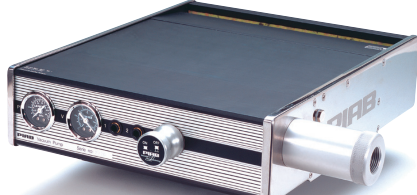
Description	Part no.
Vacuum pump MINI X5L, conn. A, NBR sealings	X5A5-AN
Vacuum pump MINI X5L, conn. A, NBR sealings, non-return valve	X5A5-ANA
Vacuum pump MINI X5L, conn. B2, NBR seals	X5A5-B2N
Vacuum pump MINI X5L, conn. C, NBR seals	X5A5-CN
Vacuum pump MINI X5L, conn. Z, NBR seals	X5A5-ZN

Description	Part no.
Vacuum pump MINI X10L, conn. A, NBR sealings	X10A5-AN
Vacuum pump MINI X10L, conn. A, NBR sealings, non-return valve	X10A5-ANA
Vacuum pump MINI X10L, conn. B2, NBR seals	X10A5-B2N
Vacuum pump MINI X10L, conn. C, NBR seals	X10A5-CN
Vacuum pump MINI X10L, conn. Z, NBR seals	X10A5-ZN
Vacuum pump MINI X20L, conn. B, NBR sealings	X20A5-BN
Vacuum pump MINI X20L, conn. B, NBR sealings, non-return valve	X20A5-BNA
Vacuum pump MINI X20L, conn. B1, NBR sealings	X20A5-B1N
Vacuum pump MINI X20L, conn. B1, NBR sealings, non-return valve	X20A5-B1NA
Vacuum pump MINI X20L, conn. B2, NBR seals	X20A5-B2N
Vacuum pump MINI X20L, conn. C, NBR sealings	X20A5-CN
Vacuum pump MINI X20L, conn. C, NBR sealings, non-return valve	X20A5-CNA
Vacuum pump MINI X20L, conn. T, NBR seals	X20F5-TN
Vacuum pump MINI X40L, conn. K, NBR sealings	X40F5-KN
Vacuum pump MINI X40L, conn. K, NBR sealings, non-return valve	X40F5-KNA

MAXI MLL pumps family



MLL 200/400



MLL800



MLL1200

This is probably the largest compressed-air driven pump in the market. Some of the models have an optional energy saving feature.

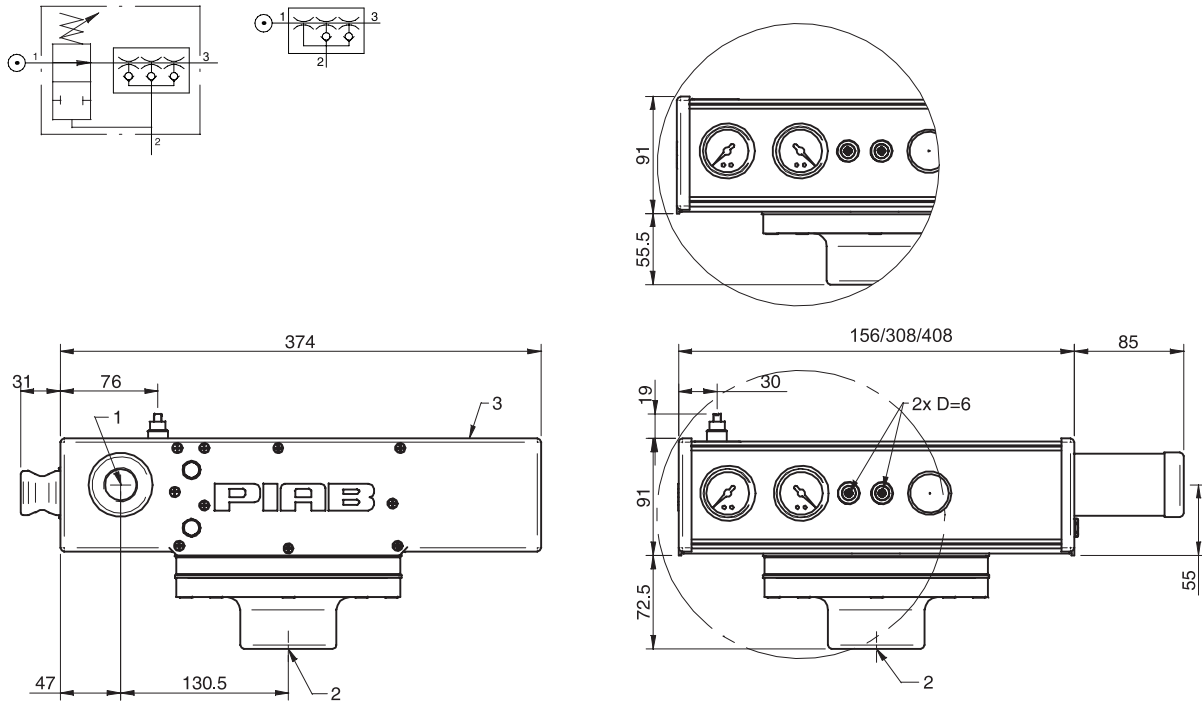
VACUUM FLOW

Pump name	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MLL200	87	29.7	102	57.2	38.4	20.1	10.2	6.99	5.09	2.33	1.02	0.02	26.8
MLL400	87	59.3	195	110	74.2	39.0	19.5	13.6	9.75	4.66	1.95	0.04	26.8
MLL800	87	119	373	210	142	74.2	37.3	26.1	18.6	8.90	3.81	0.08	26.8
MLL1200	87	178	540	303	206	108	55.1	37.9	27.1	12.9	5.51	0.11	26.8

EVACUATION TIMES

Pump name	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MLL200	87	29.7	0.085	0.227	0.396	0.850	1.70	2.83	4.53	8.21	23.2	26.8
MLL400	87	59.3	0.042	0.113	0.198	0.425	0.850	1.42	2.27	4.25	11.6	26.8
MLL800	87	119	0.023	0.051	0.099	0.227	0.396	0.680	1.13	2.04	5.66	26.8
MLL1200	87	178	0.014	0.034	0.065	0.147	0.255	0.453	0.765	1.36	3.96	26.8

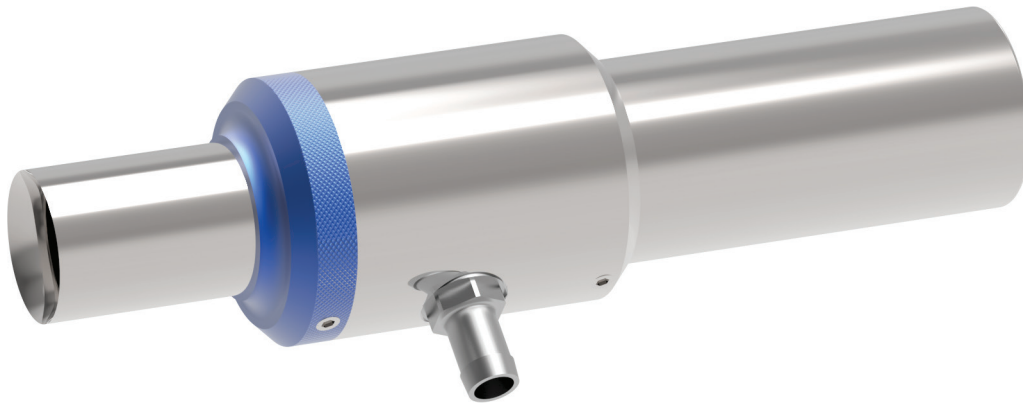
DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Vacuum pump MAXI MLL200, NBR sealings, 1 1/2" NPT	MLL200
Vacuum pump MAXI MLL400, NBR seals	MLL400
Vacuum pump MAXI MLL400, NBR seals, ES	MLL400ES
Vacuum pump MAXI MLL800, NBR sealings, ES	MLL800ES
Vacuum pump MAXI MLL800, NBR seals	MLL800
Vacuum pump MAXI MLL1200, NBR seals	MLL1200
Vacuum pump MAXI MLL1200, NBR sealings, ES	MLL1200ES

Ejector 300

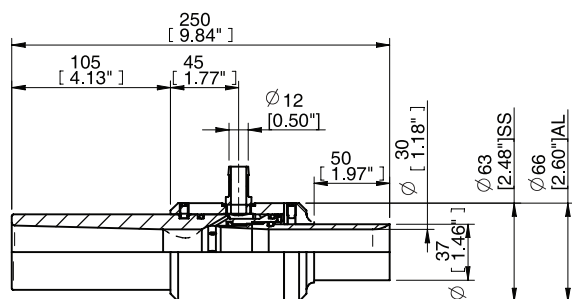


This is a compact ejector pump which is normally used when a large flow with low vacuum is desired. The air consumption and capacity can be adjusted. Small amounts of material and contaminants can be conveyed. This product is available in stainless steel or aluminium. When it is fitted with an insert, the ejector changes characteristics providing higher vacuum at lower flow. It is delivered with a 3/8" hose nipple for the compressed air connection.

VACUUM FLOW

Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at 0 -inHg		Max vacuum (-inHg)	
		Ejector 300	With insert	Ejector 300	With insert
15	17.6	117	67.8	1.03	1.48
29	28.2	180	100	1.77	3.25
44	38.8	233	125	2.36	4.72
58	49.4	267	136	3.10	5.91
73	60.0	299	136	3.54	6.35
87	70.6	322	125	3.69	6.44

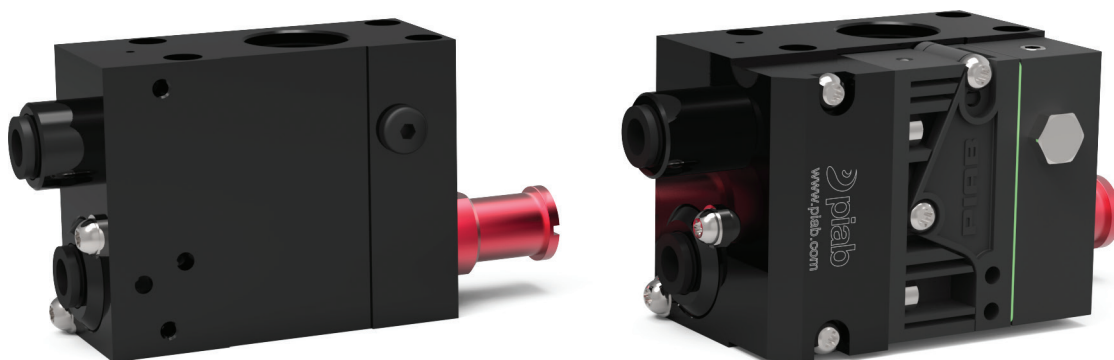
DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Ejector 300 Aluminium	31.08.001
Ejector 300 Stainless steel	31.08.002
Insert 200 Aluminium cpl.	31.08.003
Insert 200 Stainless steel cpl.	31.08.004

piSECURE



This vacuum pump combines high security and the most energy-efficient solution for sealed material, COAX® technology with automatic air-saving function. It has a check valve that traps vacuum in sealed applications and an integrated energy saving device that results in virtually no energy consumption. It is an excellent product when working with vacuum handling devices that have to comply and fulfil legislated lifting norms for handling devices, for example (DIN/SS) – EN 13155, ASME Standard B30.20, etc.

As the piSECURE uses the two stage COAX® MINI Xi10-2 ejector it will provide a fast evacuation to 27.8 -inHg. It is suitable to use as decentralized (one per cup) for maximum safety. It also has an integrated blow-off release valve for fast and reliable release of object. The optional air saving function (piSECURE ES) can save up to 99% of consumption.

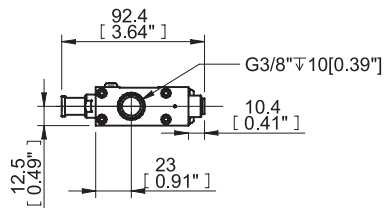
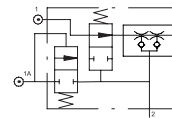
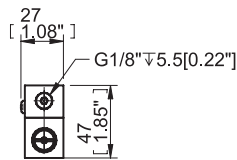
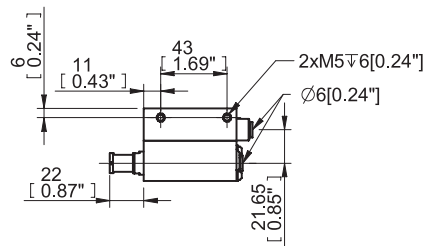
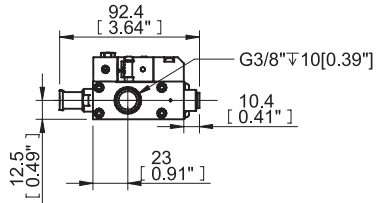
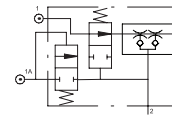
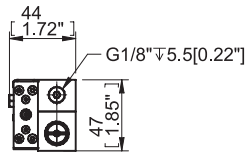
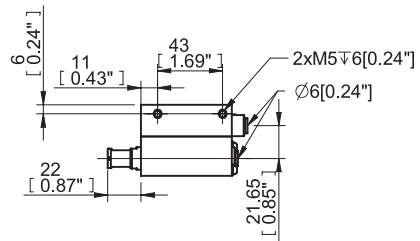
VACUUM FLOW

COAX® cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MINI Xi10-2	65	0.89	1.59	1.29	0.95	0.59	0.40	0.32	0.23	0.15	0.091	0.006	27.1
MINI Xi10-2	73	0.97	1.59	1.33	1.04	0.70	0.40	0.32	0.23	0.15	0.095	0.023	27.7
MINI Xi10-2	87	1.14	1.57	1.33	1.12	0.89	0.64	0.34	0.23	0.17	0.087	0.021	27.4

EVACUATION TIMES

COAX® cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)									Max vacuum -inHg
			3	6	9	12	15	18	21	24	27	
MINI Xi10-2	65	0.89	4.25	8.50	17.0	31.1	45.3	65.1	99.1	150	272	27.1
MINI Xi10-2	73	0.97	3.96	8.50	17.0	28.3	45.3	65.1	99.1	150	252	27.7
MINI Xi10-2	87	1.14	4.25	8.50	14.2	22.7	36.8	56.6	87.8	136	246	27.4

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
piSECURE COAX® X10-2 ES	02.00.984
piSECURE COAX® X10-2	02.00.986

Vacuum Check Valve VT-1H with COAX®



This vacuum pump combines high security and the most energy-efficient solution for sealed material, COAX® technology with automatic air-saving function. It has a check valve that traps vacuum in sealed applications and an integrated energy saving device that results in virtually no energy consumption. It is an excellent product when working with vacuum handling devices that have to comply and fulfil legislated lifting norms for handling devices, for example (DIN/SS) – EN 13155, ASME Standard B30.20, etc.

It has the two-stage COAX® cartridge MINI Pi12-2 integrated and is available in lock pin 16, 19 or ball joint mountings, industry standard. It is also available with level compensator to compensate for differences in level of object.

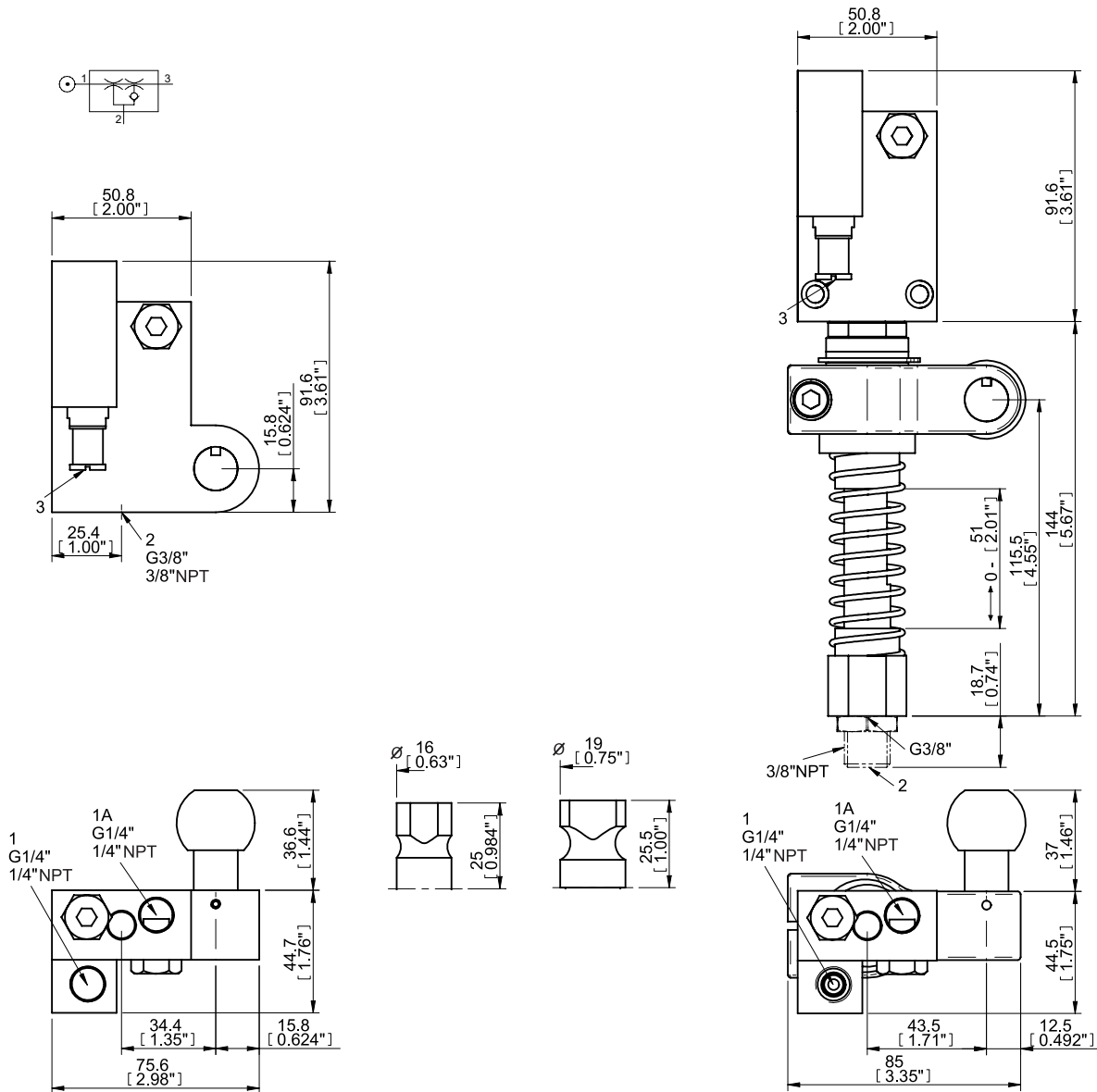
VACUUM FLOW

COAX® cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MINI Pi12-2	46	0.93	1.44	1.27	0.93	0.57	0.4	0.3	0.21	0.13	0.06	26.6

EVACUATION TIMES

COAX® cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MINI Pi12-2	46	0.93	4.81	9.06	16.4	31.1	51	76.5	113	181	26.6

DIMENSIONAL DRAWING

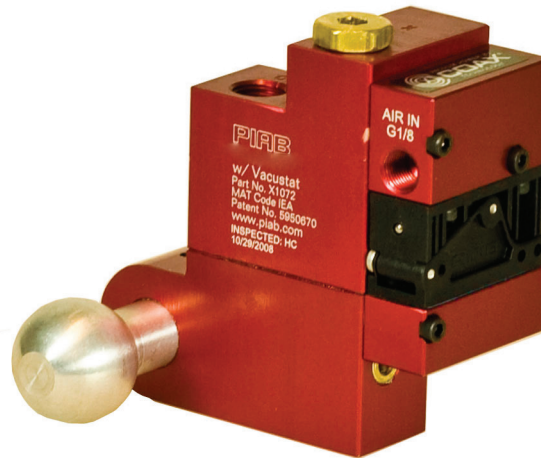


ORDERING INFORMATION

Description	Part no.
Vacuum Check Valve VT-1H COAX®, G threads, Ball joint, Left hand connection	X1045
Vacuum Check Valve VT-1H COAX®, G threads, Ball joint, Right hand connection	X1045RH
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 16, Left hand connection	X1050

Description	Part no.
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 16, Right hand connection	X1050RH
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 19, Left hand connection	X1046
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 19, Right hand connection	X1046RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Ball joint, Left hand connection	1045
Vacuum Check Valve VT-1H COAX®, NPT threads, Ball joint, Right hand connection	1045RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 16, Left hand connection	1050
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 16, Right hand connection	1050RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 19, Left hand connection	1046
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 19, Right hand connection	1046RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Ball joint, Left hand connection	X6019
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Ball joint, Right hand connection	X6019RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Left hand connection	X6016
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Right hand connection	X6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Left hand connection	X6022
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Right hand connection	X6022RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Left hand connection	6019
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Right hand connection	6019RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Left hand connection	6016
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Right hand connection	6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Left hand connection	6022
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Right hand connection	6022RH

Vacuum Check Valve VT-1H Vacustat with COAX®



This vacuum pump combines high security and the most energy-efficient solution for sealed material, COAX® technology with automatic air-saving function. It has a check valve that traps vacuum in sealed applications and an integrated energy saving device that results in virtually no energy consumption. It is an excellent product when working with vacuum handling devices that have to comply and fulfil legislated lifting norms for handling devices, for example (DIN/SS) – EN 13155, ASME Standard B30.20, etc.

It has the two-stage COAX® cartridge MINI Pi12-2 integrated and is available in lock pin 16, 19 or ball joint mountings, industry standard. It is also available with level compensator to compensate for differences in level of object. This pump has an integrated energy-saving device, Vacustat that results in virtually no air consumption in sealed applications.

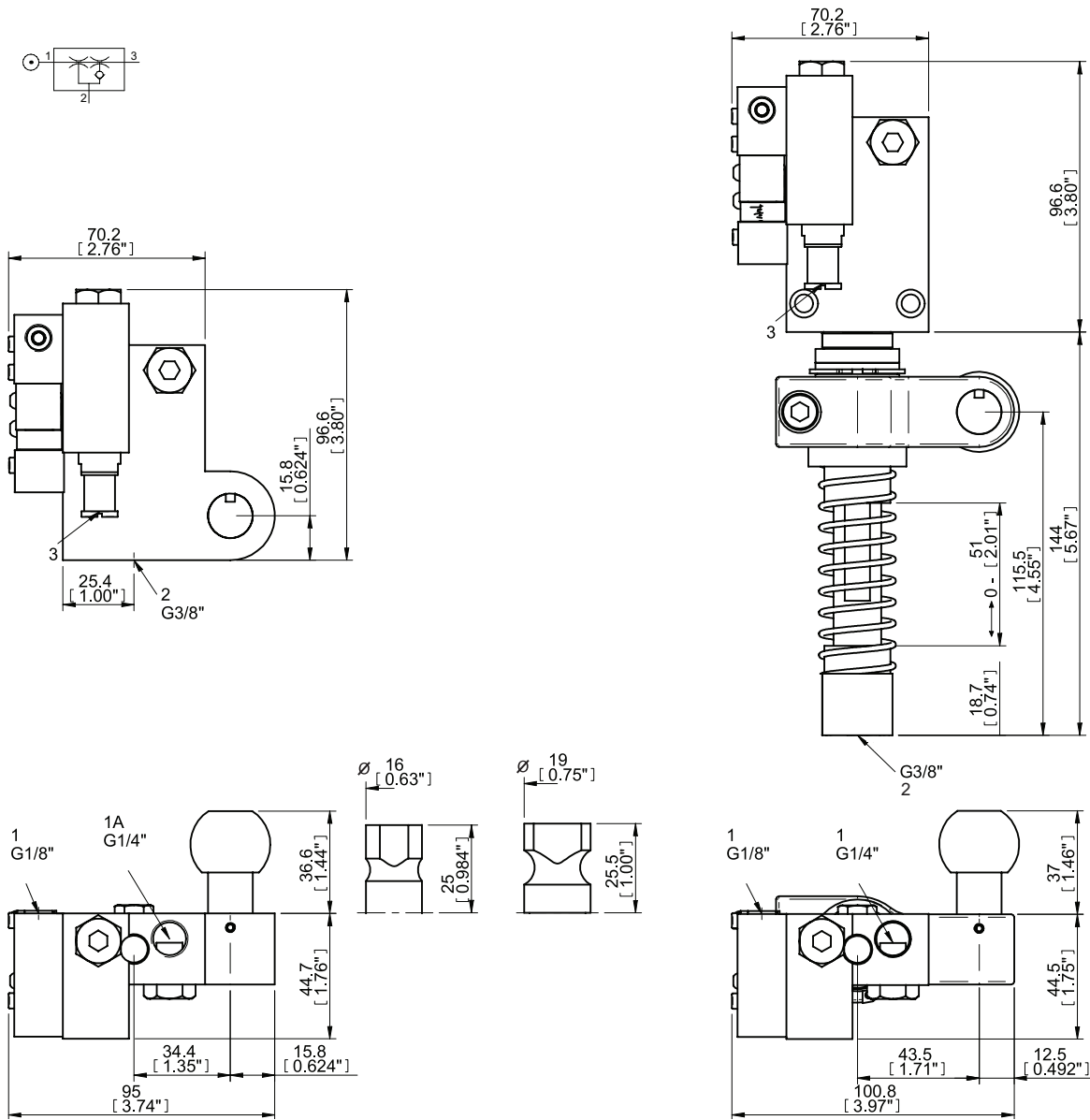
VACUUM FLOW

COAX® cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)									Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	
MINI Pi12-2	46	0.93	1.44	1.27	0.93	0.57	0.4	0.3	0.21	0.13	0.06	26.6

EVACUATION TIMES

COAX® cartridge	Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)								Max vacuum -inHg
			3	6	9	12	15	18	21	24	
MINI Pi12-2	46	0.93	4.81	9.06	16.4	31.1	51	76.5	113	181	26.6

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Ball joint, Left hand connection	X1072
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Ball joint, Right hand connection	X1072RH
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 16, Left hand connection	X1071
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 16, Right hand connection	X1071RH

Description	Part no.
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 19, Left hand connection	X1073
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 19, Right hand connection	X1073RH
Vacuum Check Valve VT-1H Vacustat with COAX®, NPT threads, Ball joint, Left hand connection	1072
Vacuum Check Valve VT-1H Vacustat with COAX®, NPT threads, Ball joint, Right hand connection	1072RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Ball joint, Left hand connection	X6046
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Ball joint, Right hand connection	X6046RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 16, Left hand connection	X6041
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 16, Right hand connection	X6041RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 19, Left hand connection	X6045
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 19, Right hand connection	X6045RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Left hand connection	X6016
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Right hand connection	X6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Left hand connection	X6022
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Right hand connection	X6022RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Left hand connection	6019
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Right hand connection	6019RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Left hand connection	6016
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Right hand connection	6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Left hand connection	6022
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Right hand connection	6022RH

Classic H40



A traditional Piab vacuum pump developed to be used within the chemical industry or in chemically aggressive environments. It can achieve higher vacuum levels, even down to 29.5 -inHg. Vacuum pump Classic H40 is constructed of composite PPS. We recommend it to be used with practically zero leakage present and in nonporous applications.

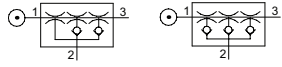
VACUUM FLOW

Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)												Max vacuum -inHg
		0	3	6	9	12	15	18	21	24	27	28	29	
87	5.51	5.93	4.45	3.18	1.91	0.85	0.64	0.42	0.3	0.21	0.2	0.04	0.01	29.5

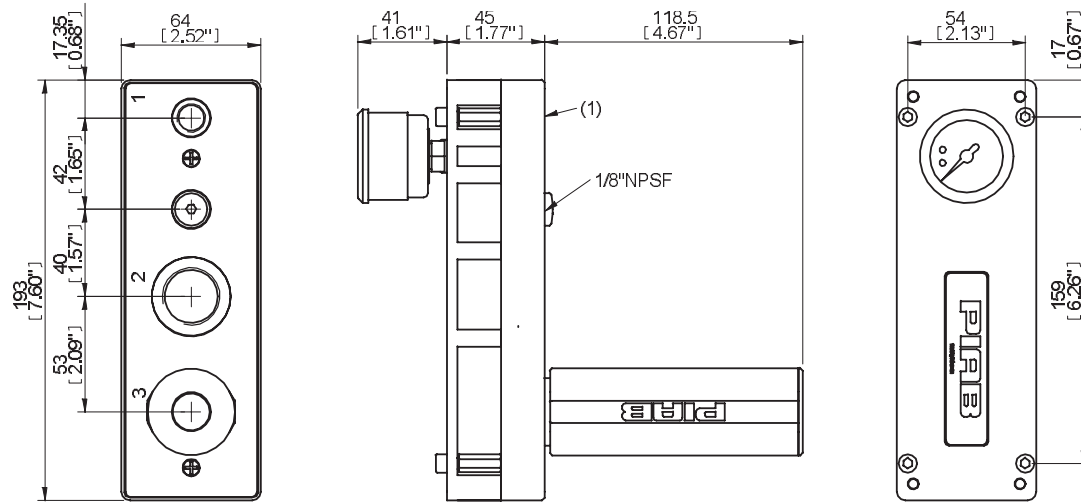
EVACUATION TIMES

Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)												Max vacuum -inHg
		3	6	9	12	15	18	21	24	27	28	29	29.4	
87	5.51	0.91	2.12	4.25	9.06	18.1	31.1	48.1	73.6	110	156	278	340	29.5

DIMENSIONAL DRAWING



	1	2	3
E	1/4"NPT	3/4"NPT	3/4"NPT



ORDERING INFORMATION

Description	Part no.
Vacuum pump CLASSIC H40, composite PPS(D), Viton® sealings	H40B6-DV
Vacuum pump CLASSIC H40, composite PPS(E), NBR seals	H40B6-EN

Classic H120



A traditional Piab vacuum pump developed to be used within the chemical industry or in chemically aggressive environments. It can achieve higher vacuum levels, even down to 29.85 -inHg. It is available with connection plate in composite PPS or aluminium. We recommend it to be used with practically zero leakage present and in nonporous applications.

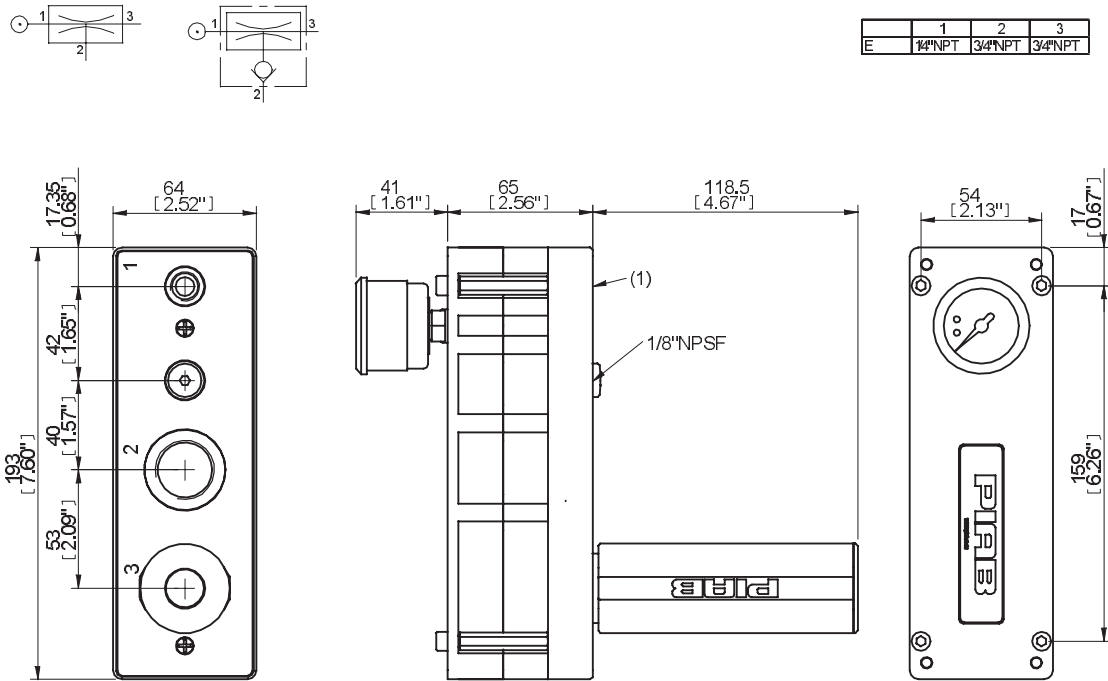
VACUUM FLOW

Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)												Max vacuum -inHg
		0	3	6	9	12	15	18	21	24	27	28	29	
87	16.1	17.8	14	9.96	5.72	3.18	2.54	1.82	1.31	0.91	0.21	0.11	0.02	29.85

EVACUATION TIMES

Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)														Max vacuum -inHg
		3	6	9	12	15	18	21	24	27	28	29	29.4	29.6		
87	16.1	0.51	0.93	1.7	3.11	5.1	7.65	11.9	17.6	36.8	59.5	119	153	235	29.85	

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Vacuum pump CLASSIC H120, connection plate composite PPS(D), Viton® sealings	H120B6-DV
Vacuum pump CLASSIC H120, conn. AD, NBR sealings	H120B6-ADN
Vacuum pump CLASSIC H120, conn. E, NBR seals	H120B6-EN

Lab Vac LVH40



This vacuum pump is tailor-made for laboratory applications, such as degassing, vacuum filtering, gel drying and rotation evaporation. It can achieve high vacuum levels to 20 mbar abs. with a maximum vacuum flow of 5.3 scfm. There is no risk for “back draft” which can cause damaged test samples. Its low noise level, easy installation and maintenance is widely appreciated.

It has a high chemical resistance, with an option to have with Kalrez sealing material which normally makes the chemical resistance unsurpassed.

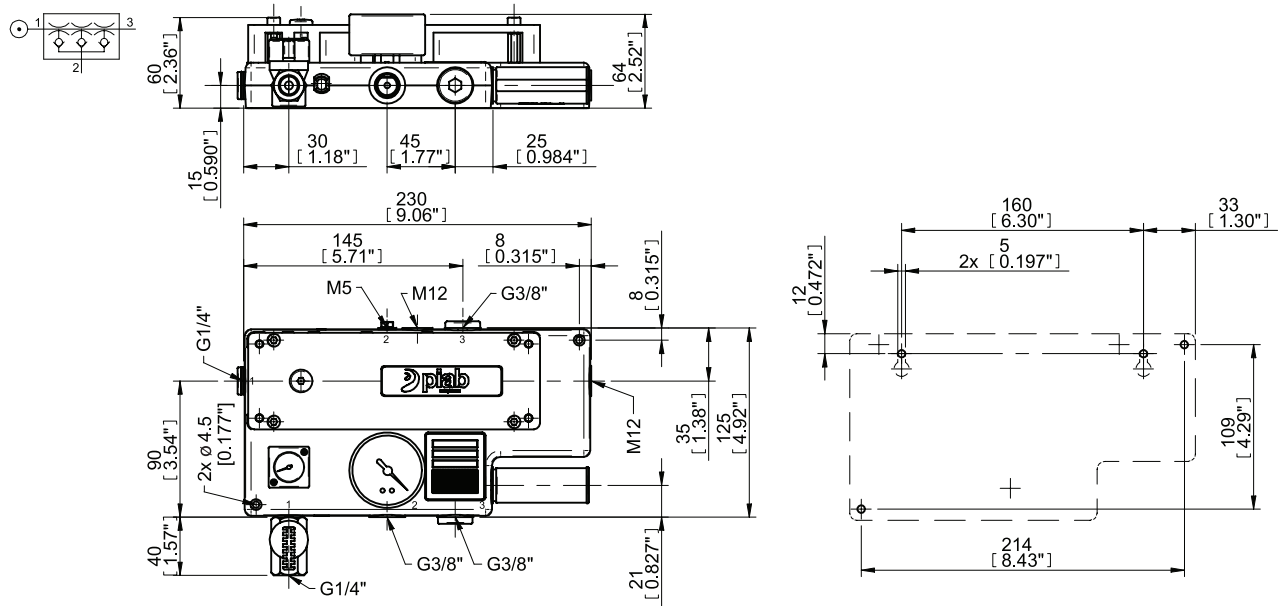
VACUUM FLOW

Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)											Max vacuum -inHg
		0	3	6	9	12	15	18	21	24	27	28	
87	5.51	5.3	3.81	2.75	1.48	1.12	0.74	0.51	0.34	0.25	0.13	0.04	28.9

EVACUATION TIMES

Feed pressure psi	Air consumption scfm	Evacuation time (s/cf) to reach different vacuum levels (-inHg)										Max vacuum -inHg
		3	6	9	12	15	18	21	24	27	28	
87	5.51	1.13	2.55	5.1	11.6	20.1	30.9	46.7	70.2	111	170	28.9

DIMENSIONAL DRAWING



ORDERING INFORMATION

Description	Part no.
Lab Vac LVH40K6, Viton® sealings, Kalrez flap valves	01.03.684
Lab Vac LVH40K6, EPDM sealings, Kalrez flap valves	01.24.540

Pump accessories



PUMP ACCESSORIES

Selection guide – Accessories

Vacuum switches

Valves

Regulators

Silencers

Vacuum Filters

Other

323

324

326

333



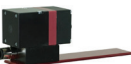



342

344

346

349

Selection guide – Accessories

	Vacuum pump accessories	Features and benefits
1	 <p>Vacuum switches</p>	Our line includes inductive universal, electro-mechanical and pneumatic vacuum switches that are pre-set or adjustable.
2	 <p>Valves</p>	Choose between solenoid, electrically or vacuum-controlled valves. The vacuum controlled valve (Vacustat) shuts off the flow of compressed air to the pump when the pre-set level is reached, and consequently the consumption of compressed air is minimized.
3	 <p>Regulators</p>	Different vacuum pumps need different feed pressure for optimum performance. A filter regulator can easily be manually set to a desired pressure level, and be used to eliminate particles from the compressed air. A pilot regulator can be used to automatically set the feed pressure according to your needs.
4	 <p>Silencers</p>	Reduce noise from exhaust with a flow-through design.
5	 <p>Vacuum filters</p>	To filter dust and other small particles from the vacuum flow. Reduces the risk of operation breakdown or stoppage in the pump.
6	 <p>Other</p>	Body for COAX® cartridges, vacuum gauge, manometer etc.

Vacuum Pump Accessories

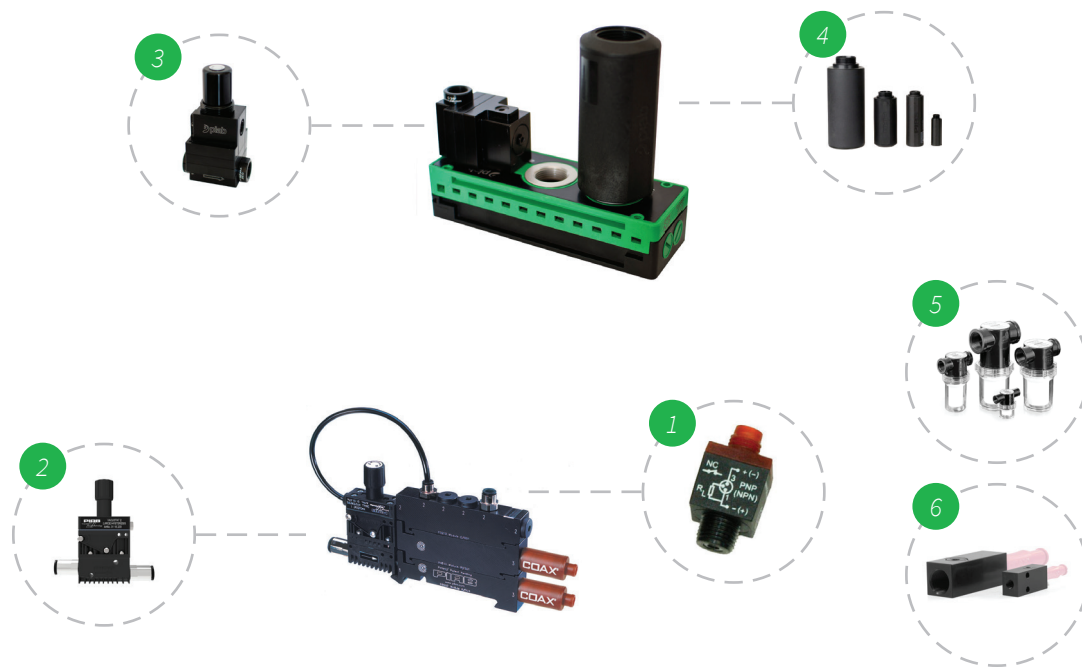
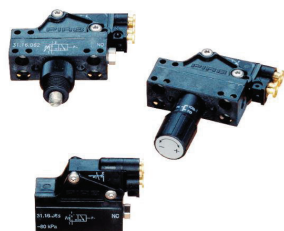


Image only to serve as an example.

- | | |
|--------------------------|-------------------------|
| 1 Vacuum switches | 4 Silencers |
| 2 Valves | 5 Vacuum filters |
| 3 Regulators | 6 Other |

Vacuum switches



Vacuum switches, pneumatic

- Converts a vacuum level to a pneumatic signal.
- Vacuum-actuated membrane linked to a pneumatic switch.
- Available preset or with adjustable vacuum level.



Vacuum switches, electromechanical

- Converts a vacuum level to an electric signal, VAC or VDC.
- Vacuum-actuated membrane linked to an electro-mechanical switch.
- Integrated cable with open ends included.
- Available preset or with adjustable vacuum level.



Vacuum switches, inductive universal

- Converts a vacuum level to a digital signal, 24 VDC.
- Vacuum-actuated membrane linked to a proximity-inductive universal switch.
- Integrated cable with open ends included.
- PNP NO/NC or NPN NO/NC output functions.
- The switch must be connected in series with the load.

TECHNICAL DATA

Description	Hysteresis	Signal range
Vacuum switch, pneumatic, adjustable with screw and knob (NO)	0.90 -inHg	3.00–28.0 -inHg
Vacuum switch, pneumatic, adjustable with screw and knob (NC)	3.50 -inHg	4.50–28.0 -inHg
Vacuum switch, pneumatic, preset (NO 7.5 -inHg)	0.90 -inHg	6.30–8.70 -inHg
Vacuum switch, pneumatic, preset (NO 19.0 -inHg)	0.90 -inHg	16.6–21.4 -inHg
Vacuum switch, pneumatic, preset (NC 9.0 -inHg)	3.50 -inHg	7.50–10.5 -inHg
Vacuum switch, pneumatic, preset (NC 21.0 -inHg)	3.50 -inHg	18.0–24.0 -inHg
Vacuum switch, electro-mechanical, adjustable with screw & knob	3.00 -inHg	4.00–28.0 -inHg
Vacuum switch, electro-mechanical, preset (Signal range 7.5 -inHg)	3.00 -inHg	6.00–9.00 -inHg

Description	Hysteresis	Signal range
Vacuum switch, inductive universal, adjustable with knob Ø6	0.60 -inHg	3.00–28.0 -inHg
Vacuum switch, inductive universal, adjustable with knob	0.60 -inHg	3.00–28.0 -inHg
Vacuum switch, inductive universal, preset (Signal range 3.0 -inHg)	0.60 -inHg	2.70–3.30 -inHg
Vacuum switch, inductive universal, preset (Signal range 9.0 -inHg)	0.60 -inHg	8.10–9.90 -inHg

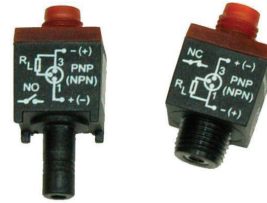
ORDERING INFORMATION

Description	Part no.
Vacuum switch, pneumatic, adjustable with screw and knob (NO)	31.16.062
Vacuum switch, pneumatic, adjustable with screw and knob (NC)	31.16.063
Vacuum switch, pneumatic, preset (NO 7.4 -inHg)	31.16.084
Vacuum switch, pneumatic, preset (NO 19.2 -inHg)	31.16.085
Vacuum switch, pneumatic, preset (NC 9 -inHg)	31.16.087
Vacuum switch, pneumatic, preset (NC 21 -inHg)	31.16.088
Vacuum switch, electro-mechanical, adjustable with screw and knob	31.16.061
Vacuum switch, electro-mechanical, preset (Signal range 7.38 -inHg)	31.16.095
Vacuum switch, inductive universal, adjustable with knob Ø6	01.04.350
Vacuum switch, inductive universal, adjustable with knob	31.16.064
Vacuum switch, inductive universal, preset (Signal range 3 -inHg)	31.16.089
Vacuum switch, inductive universal, preset (Signal range 9 -inHg)	31.16.090



Mini vacuum switch, Al, pre-set VS4118/VS4128

- Pre-set vacuum switch with digital output.
- Durable and compact design with G1/8" 90° angle swivel connection for easy installation.
- VS4118 hardwired enables PNP NO/NC or NPN NO/NC functionality.
- VS4128 suitable for plug in I/Os. Available in PNP NO or NPN NO models.
- Possible to connect several units serially with T-connectors to provide a common output (VS4128 PNP).



Mini vacuum switch, pre-set VS4015/VS4016

- Pre-set vacuum switch with digital output.
- Very low weight and small format, push-in or thread connections.
- PNP NO/NC or NPN NO/NC output functions.

TECHNICAL DATA

Description	Hysteresis	Signal range
Vacuum Switch VS4128 9.0 -inHg, M12 PNP NO	2.36 -inHg	8.10–10.5 -inHg
Vacuum Switch VS4128 15.0 -inHg, M12 PNP NO	2.36 -inHg	14.1–16.5 -inHg
Vacuum Switch VS4118 9.0 -inHg, M8 PNP/NPN NO/NC	2.36 -inHg	20.9–22.5 -inHg
Vacuum Switch VS4118 15.0 -inHg, M8 PNP/NPN NO/NC	2.36 -inHg	8.10–10.5 -inHg
Vacuum Switch VS4118 21.0 -inHg, M8 PNP/NPN NO/NC	2.36 -inHg	14.1–16.5 -inHg
Vacuum Switch VS4128 15.0 -inHg, M12 NPN NO	2.36 -inHg	20.9–22.5 -inHg
Vacuum switch VS4015, Ø6, 9.0 -inHg	1.58–2.08 -inHg	7.80–10.2 -inHg
Vacuum switch VS4015, Ø6, 15.0 -inHg	1.58–2.08 -inHg	13.8–16.2 -inHg
Vacuum switch VS4015, Ø6, 21.0 -inHg	1.58–2.08 -inHg	19.8–22.2 -inHg
Vacuum switch VS4016, G1/8" male, 9.0 -inHg	1.58–2.08 -inHg	7.80–10.2 -inHg

Description	Hysteresis	Signal range
Vacuum switch VS4016, G1/8" male, 15.0 -inHg	1.58–2.08 -inHg	13.8–16.2 -inHg
Vacuum switch VS4016, G1/8" male, 21.0 -inHg	1.58–2.08 -inHg	19.8–22.2 -inHg

ORDERING INFORMATION

Description	Part no.
Vacuum switch VS4015, Ø6, 9 -inHg	01.10.245
Vacuum switch VS4015, Ø6, 15 -inHg	01.10.246
Vacuum switch VS4015, Ø6, 21 -inHg	01.10.247
Vacuum switch VS4016, G1/8" male, 9 -inHg	01.10.248
Vacuum switch VS4016, G1/8" male, 15 -inHg	01.10.249
Vacuum switch VS4016, G1/8" male, 21 -inHg	01.10.250
Vacuum Switch VS4118 9 -inHg, M8 PNP/NPN NO/NC	01.10.730
Vacuum Switch VS4118 15 -inHg, M8 PNP/NPN NO/NC	01.10.731
Vacuum Switch VS4118 21 -inHg, M8 PNP/NPN NO/NC	01.10.732
Vacuum Switch VS4128 9 -inHg, M12 PNP NO	01.10.630
Vacuum Switch VS4128 15 -inHg, M12 NPN NO	01.24.450
Vacuum Switch VS4128 21 -inHg, M12 PNP NO	01.10.631

Vacuum switches



Vacuum switch 3-color digital display M8

- 2 PNP outputs, NO or NC. Independently selectable for each output.
- 3-color LCD display, easy readout.
- 7 programmable vacuum units, for example kPa, inHg, mmHg, etc.
- Dual display allows actual and set value to be displayed at the same time.
- Selectable "Key-Lock mode" with display indicator to avoid unauthorized changes.
- Selectable "Power-Save mode" with display indicator.
- Mounting brackets included.



Vacuum switch, adjustable with analog output

- Converts vacuum to an analog output signal and an adjusted vacuum level to a digital output.
- Adjustable hysteresis.
- Separate cable with open ends included.



Vacuum switch, adjustable with LED-display

- Converts adjusted vacuum levels to 2 separate digital outputs.
- Digital vacuum level display.
- Integrated cable with M8 connector included.

TECHNICAL DATA

Description	Hysteresis	Signal range
Vacuum switch 3-color digital display M8	Adjustable, 0.30–2.40 -inHg	0–29.9 -inHg
Vacuum switch, MM8	1–5 % F.S.	0–29.9 -inHg
Vacuum switch, DM8	2 % F.S.	0–29.9 -inHg

ORDERING INFORMATION

Description	Part no.
Vacuum switch 3-color digital display M8	01.26.934
Vacuum switch, adjustable, PNP NO MM8	01.07.729
Vacuum switch, adjustable, NPN NO MM8	01.07.730
Vacuum switch, adjustable, PNP NO DM8	01.07.732
Vacuum switch, adjustable, NPN NO DM8	01.07.733



Vacuum switch, LM8

- Converts an adjusted vacuum level to a digital output.
- Very low weight and small format with push-in connection.
- Integrated cable with M8 connector included.



Vacuum switch, adjustable for P2010

- Converts an adjusted vacuum level to a digital output signal for pressure or vacuum.
- NC in vacuum range 0–29.9 -inHg. NO in pressure range 0–87 psi.
- Very low weight and small format with M5 90° angle swivel connection.
- Integrated cable with open ends included.



Vacuum Switches, Electric EVS

- EVS 54 with Calibrated Adjustment Dial.
- EVS 100 NEMA 4X.
- SPDT Switch, wired NO or NC.
- Electrical Rating: 15 amps 125/250 VAC resistive.

TECHNICAL DATA

Description	Hysteresis	Signal range
Vacuum switch, LM8	2 % F.S.	0–29.9 -inHg
Vacuum switch, M5	2 % F.S.	0–29.9 -inHg to 87 psi
Vacuum switch, EVS 54 electric	1.5–3.5 -inHg	0–29.9 -inHg
Vacuum switch, EVS 100 electric	1.0–2.0 -inHg	0–29.9 -inHg

ORDERING INFORMATION

Description	Part no.
Vacuum switch, adjustable, PNP NO LM8	01.07.731
Vacuum switch PNP M5	01.10.358
Vacuum switch NPN M5	01.10.359

Valves



piSAVE® release

- Equalizes pressure in the suction cups to provide fast release of the product.
- Extra fast release by accumulating and utilising the feed-air pressure as a boost.
- ON/OFF activated simultaneously with the ejector.
- No additional controls required — use a single 3/2 control valve for the ejector and piSAVE® release.



AQR

- Equalizes pressure in vacuum gripper systems to provide fast release of product.
- Consumes no additional compressed air.
- ON/OFF activated simultaneously with the ejector.
- No additional controls required — use a single 3/2 control valve for the pump and AQR.



QR

- For vacuum pump P3010.
- Quick release by accumulating and utilising the feed-air pressure as a boost.
- ON/OFF activated simultaneously with the P3010
- Three sizes for optimizing release volume with system volume.

TECHNICAL DATA

Description	Flow, atmospheric	Volume (Quick-Release)
piSAVE® release G1/8"	8.16 scfm	–
piSAVE® release G1/4"	16.6 scfm	–
Atmospheric quick-release valve – AQR	6.99 scfm	–
Quick-Release module P3010	–	0.18 in ³
Quick-Release tank module P3010, 30 cm ³	–	1.83 in ³
Quick-Release tank module P3010, 60 cm ³	–	3.66 in ³

ORDERING INFORMATION

Description	Part no.
piSAVE® release G1/4"	01.19.720
piSAVE® release G1/8"	01.19.721
Atmospheric quick-release valve – AQR.	01.11.236
Quick-Release tank module P3010, 30 cm ³	01.04.272
Quick-Release tank module P3010, 60 cm ³	01.04.273



piSAVE® sense

- Vacuum check valves which allows a few suction cups to miss the object(s) and still maintain enough vacuum level in the system with quick response and release times.
- The vacuum check valves shall be used in a centralized vacuum system, one for each suction cup.
- Designing with vacuum check valves will require a smaller vacuum pump and save energy.
- Suitable for handling different size or different number of leaking or sealed objects such as MDF boards, corrugated cardboards or metal sheets with a flexible handling device.
- Also suitable for objects with surface leakage around the lip of the suction cup.
- The smallest sizes are mainly suitable for sealed and smooth materials, such as metal and glass (02/06 for small cups and 03/60 for large cups).
- The valves are supplied separately for integration or mounted in an AI-fitting with female and male threaded connections to facilitate installation.

piSAVE® restrict

- Vacuum flow restrictors which allows a few suction cups to miss the object(s) and still maintain enough vacuum level in the system.
- Suitable for handling different size sealed sheets/ objects with the same flexible lifting device.
- The vacuum flow restrictors shall be used in a centralized vacuum system, one for each suction cup.
- Designing with flow restrictors will require a smaller vacuum pump and save energy.
- Available in three sizes with different flow performance/ characteristics to suit different size suction cups.
- The restrictors are integrated in an AI-fitting with female and male threaded connections to facilitate installation.

TECHNICAL DATA

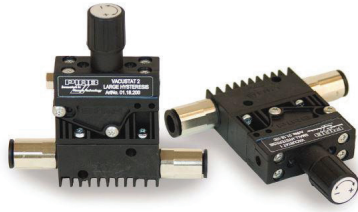
Description	Pump flow/cup min.	Pump flow/cup to close valve	Leakage flow, max.
piSAVE® sense 02/60 (yellow)	0.002 (@ 13.3 -inHg) scfm	0.44 (@ 0.9 -inHg) scfm	–
piSAVE® sense 03/60 (green)	0.13 (@ 13.3 -inHg) scfm	0.78 (@ 0.9 -inHg) scfm	–
piSAVE® sense 04/60 (blue)	0.32 (@ 13.3 -inHg) scfm	1.17 (@ 2.1 -inHg) scfm	–

Description	Pump flow/cup min.	Pump flow/cup to close valve	Leakage flow, max.
piSAVE® sense 05/60 (red)	0.53 (@ 13.3 -inHg) scfm	1.53 (@ 3.3 -inHg) scfm	–
piSAVE® restrict multiple port fitting 0.7	–	–	0.17 scfm
piSAVE® restrict multiple port fitting 1.0	–	–	0.34 scfm
piSAVE® restrict multiple port fitting 1.3	–	–	0.57 scfm

ORDERING INFORMATION

Description	Part no.
piSAVE® sense 02/60 (yellow), 100p, incl. Assembly tool	02.02.395
piSAVE® sense 02/60 (yellow), 10p, incl. Assembly tool	02.02.394
piSAVE® sense 03/60 (green), 100p, incl. Assembly tool	02.02.427
piSAVE® sense 03/60 (green), 10p, incl. Assembly tool	02.02.424
piSAVE® sense 04/60 (blue), 100p, incl. Assembly tool	02.02.428
piSAVE® sense 04/60 (blue), 10p, incl. Assembly tool	02.02.425
piSAVE® sense 05/60 (red), 100p, incl. Assembly tool	02.02.429
piSAVE® sense 05/60 (red), 10p, incl. Assembly tool	02.02.426
piSAVE® sense Assembly tool 16mm	02.02.589
piSAVE® sense Multiple port fitting 02/60 (yellow)	02.02.396
piSAVE® sense Multiple port fitting 03/60 (green)	01.28.719
piSAVE® sense Multiple port fitting 04/60 (blue)	01.28.731
piSAVE® sense Multiple port fitting 05/60 (red)	01.28.733
piSAVE® restrict multiple port fitting 0.7	01.29.339
piSAVE® restrict multiple port fitting 1.0	01.29.340
piSAVE® restrict multiple port fitting 1.3	01.29.341

Valves



piSAVE® onoff

- Independent pneumatic air-saving device for vacuum pumps.
- Adjustable vacuum controlled 2/2 NO valve.
- Available with large hysteresis for object handling and small hysteresis for process applications.
- The Vacustat is recommended for vacuum pumps in non-leaking systems.
- The vacuum pump must be fitted with a non-return valve.

TECHNICAL DATA

Description	Flow	Flow rate
piSAVE® onoff	15.5 scfm	–
Blow-off Check valve G1/8"	–	3.18–5.93 scfm (@ 44–101.5 psi)

ORDERING INFORMATION

Description	Part no.
piSAVE® onoff with small hysteresis	01.18.100
piSAVE® onoff with large hysteresis	01.18.200
Blow-off Check valve 1/8" NPSF female.	01.15.314
Blow-off Check valve G1/4" female	01.17.337



Blow-off Check valve G1/8"

- Prevents vacuum from being pulled through the blow-off lines, which means faster response time and completely independent vacuum units.
- Reliable quick-release function even in larger systems with several units, due to the very low feed pressure required to break away for blow-off.
- Suitable in applications where cleaning of the suction cup filters or cooling of the object to be picked is important.

Valves – Vacuum check valves



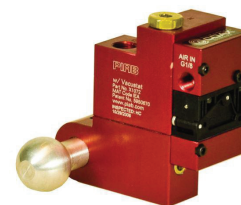
Vacuum Check Valve VT-1H

- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.



Vacuum Check Valve VT-1H with COAX®

- Two-stage COAX® cartridge MINI Pi12-2 integrated.
- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.



Vacuum Check Valve VT-1H Vacustat with COAX®

- Two-stage COAX® cartridge MINI Pi12-2 integrated.
- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Integrated energy-saving device, Vacustat results in virtually no air consumption in sealed applications.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.

TECHNICAL DATA

Description	Vacuum flow, max.
Vacuum Check Valve VT-1H	1.44 scfm
Vacuum Check Valve VT-1H with COAX®	1.44 scfm
Vacuum Check Valve VT-1H Vacustat with COAX®	1.44 scfm

ORDERING INFORMATION

Description	Part no.
Vacuum Check Valve VT-1H, NPT threads, Lock pin 19, Right hand connection	1042RH
Vacuum Check Valve VT-1H, NPT threads, Lock pin 19, Left hand connection	1042

Description	Part no.
Vacuum Check Valve VT-1H, NPT threads, Lock pin 16, Right hand connection	1025RH
Vacuum Check Valve VT-1H, NPT threads, Lock pin 16, Left hand connection	1025
Vacuum Check Valve VT-1H, NPT threads, Ball joint, Right hand connection	1020RH
Vacuum Check Valve VT-1H, NPT threads, Ball joint, Left hand connection	1020
Vacuum Check Valve VT-1H, G threads, Lock pin 19, Right hand connection	X1042RH
Vacuum Check Valve VT-1H, G threads, Lock pin 19, Left hand connection	X1042
Vacuum Check Valve VT-1H, G threads, Lock pin 16, Right hand connection	X1025RH
Vacuum Check Valve VT-1H, G threads, Lock pin 16, Left hand connection	X1025
Vacuum Check Valve VT-1H, G threads, Ball joint, Right hand connection	X1020RH
Vacuum Check Valve VT-1H, G threads, Ball joint, Left hand connection	X1020
Vacuum Check Valve VT-1H with level compensator, NPT threads, Lock pin 19, Right hand connection	6024RH
Vacuum Check Valve VT-1H with level compensator, NPT threads, Lock pin 19, Left hand connection	6024
Vacuum Check Valve VT-1H with level compensator, NPT threads, Lock pin 16, Right hand connection	6015RH
Vacuum Check Valve VT-1H with level compensator, NPT threads, Lock pin 16, Left hand connection	6015
Vacuum Check Valve VT-1H with level compensator, NPT threads, Ball joint, Right hand connection	6023RH
Vacuum Check Valve VT-1H with level compensator, NPT threads, Ball joint, Left hand connection	6023
Vacuum Check Valve VT-1H with level compensator, G threads, Lock pin 19, Right hand connection	X6024RH
Vacuum Check Valve VT-1H with level compensator, G threads, Lock pin 19, Left hand connection	X6024LH
Vacuum Check Valve VT-1H with level compensator, G threads, Lock pin 16, Right hand connection	X6015RH
Vacuum Check Valve VT-1H with level compensator, G threads, Lock pin 16, Left hand connection	X6015LH
Vacuum Check Valve VT-1H with level compensator, G threads, Ball joint, Right hand connection	X6023RH

Description	Part no.
Vacuum Check Valve VT-1H with level compensator, G threads, Ball joint, Left hand connection	X6023LH
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 19, Right hand connection	1046RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 19, Left hand connection	1046
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 16, Right hand connection	1050RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Lock pin 16, Left hand connection	1050
Vacuum Check Valve VT-1H COAX®, NPT threads, Ball joint, Right hand connection	1045RH
Vacuum Check Valve VT-1H COAX®, NPT threads, Ball joint, Left hand connection	1045
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 19, Right hand connection	X1046RH
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 19, Left hand connection	X1046
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 16, Right hand connection	X1050RH
Vacuum Check Valve VT-1H COAX®, G threads, Lock pin 16, Left hand connection	X1050
Vacuum Check Valve VT-1H COAX®, G threads, Ball joint, Right hand connection	X1045RH
Vacuum Check Valve VT-1H COAX®, G threads, Ball joint, Left hand connection	X1045
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Right hand connection	6022RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 19, Left hand connection	6022
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Right hand connection	6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Lock pin 16, Left hand connection	6016
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Right hand connection	6019RH
Vacuum Check Valve VT-1H COAX® with level compensator, NPT threads, Ball joint, Left hand connection	6019
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Right hand connection	X6022RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 19, Left hand connection	X6022

Description	Part no.
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Right hand connection	X6016RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Lock pin 16, Left hand connection	X6016
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Ball joint, Right hand connection	X6019RH
Vacuum Check Valve VT-1H COAX® with level compensator, G threads, Ball joint, Left hand connection	X6019
Vacuum Check Valve VT-1H Vacustat with COAX®, NPT threads, Ball joint, Right hand connection	1072RH
Vacuum Check Valve VT-1H Vacustat with COAX®, NPT threads, Ball joint, Left hand connection	1072
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 19, Right hand connection	X1073RH
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 19, Left hand connection	X1073
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 16, Right hand connection	X1071RH
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Lock pin 16, Left hand connection	X1071
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Ball joint, Right hand connection	X1072RH
Vacuum Check Valve VT-1H Vacustat with COAX®, G threads, Ball joint, Left hand connection	X1072
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 19, Right hand connection	X6045RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 19, Left hand connection	X6045
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 16, Right hand connection	X6041RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Lock pin 16, Left hand connection	X6041
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Ball joint, Right hand connection	X6046RH
Vacuum Check Valve VT-1H Vacustat with COAX® with level compensator, G threads, Ball joint, Left hand connection	X6046

Regulators



piSAVE® optimize

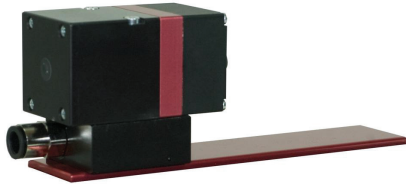
- Vacuum controlled proportional pressure regulator, a fully pneumatic device suitable for air-driven ejectors/pumps.
- The feed pressure to the vacuum pump/ejector is automatically regulated and controlled to maintain the set vacuum level. Air/energy usage is kept to a minimum for the application (optimized).
- Recommended for leaking and sealed applications to save energy and secure the right vacuum level.
- Extra port for Vacuum gauge.
- Air ventilation port with filter.
- Swivel compressed air connections.
- piSAVE® optimize gives maximum feed pressure/flow to vacuum pump/ejector until vacuum level starts to build up.
- Separate mounting bracket kit.
- Upgrade kit - available as an integrated module for piCLASSIC and Classic vacuum pumps.

TECHNICAL DATA

Description	Vacuum flow
piSAVE® optimize	3.54–31.78 scfm (@ recommended ejector/pump feed pressure)

ORDERING INFORMATION

Description	Part no.
piSAVE® optimize stand-alone 7.5–21 -inHg G3/8"	01.28.999
piSAVE® optimize standalone 7.5–21 -inHg 3/8" NPT	01.29.000
piSAVE® optimize upgrade kit piCLASSIC/Classic	01.29.002



PCC (Piab Cruise Control)

- For vacuum pump P6010.
- Programmable for constant vacuum level.
- The signal input regulates the feed pressure to maintain a constant vacuum level.
- Integrated analog vacuum sensor.



Pilot regulator

- Pilot-operated pressure regulator with secondary pressure relief and flow compensation.
- Suitable for remote control.



Regulator

- Regulator for optimizing feed pressure to vacuum pumps or smaller vacuum systems.
- Manometer for feed pressure control.

TECHNICAL DATA

Description	Flow
PCC (Piab Cruise Control)	0–38.8 scfm
Pressure regulator, pilot operated, G1/4"	19.1 scfm
Regulator 1/4", manometer	19.1 scfm

ORDERING INFORMATION

Description	Part no.
PCC (Piab Cruise Control)	PCC (Piab Cruise Control)
Pressure regulator, pilot operated, G1/4"	01.14.283
Regulator 1/4", manometer	01.13.123

Silencers



Silencer MINI/MIDI

- Reduces noise from exhaust on MINI/MIDI piINLINE®.



Silencers

- Reduce noise from exhaust.
- Flow-through design.



Silencer COAX®

- Reduces noise from the exhaust.
- Compatible with aluminium holders for MINI and MIDI COAX® cartridges.
- Simple snap locking when mounting.
- Through-flow design that eliminates the risk of impaired performance due to clogging of the silencer.

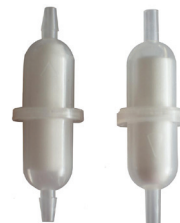
TECHNICAL DATA

Description	Noise level, reduction
Silencer piINLINE® MINI	10 dBA
Silencer piINLINE® MIDI	15 dBA
Silencer	10 dBA
Silencer COAX®	> 10 dBA

ORDERING INFORMATION

Description	Part no.
Silencer piINLINE® MINI	01.25.466
Silencer piINLINE® MIDI	01.23.031
Silencer 1" NPSF	01.13.003
Silencer G1"	01.12.499
Silencer G1½"	01.03.224
Silencer G2½"	01.17.782
Silencer G¾" with thread insert 1" - ¾"	01.26.362
Silencer G¾"	32.16.009
Silencer G¾"	32.16.002
Silencer COAX® MINI	01.11.977
Silencer COAX® MIDI	01.11.976

Vacuum Filters



Vacuum filters – plastic

- To filter dust and other small particles from the vacuum flow.
- Reduces the risk of operation breakdown or stoppage in the pump.
- Replaceable filter element.
- Available with special filter element with increased filter area.

Vacuum filters – metal

- To filter dust and other small particles from the vacuum flow.
- Reduces the risk of operation breakdown or stoppage in the pump.

Inline filters

- Translucent, inert polypropylene housing allows for visual inspection.
- These miniature filters can be used on compressed air lines or vacuum lines to protect vacuum pumps, vacuum switches and valves from contamination.
- Filter is constructed of chemically inert porous polyethylene and has a recommended working pressure up to 65 psi.

TECHNICAL DATA

Description	Pressure	Removal efficiency	Flow, nominal
Vacuum filter G1/2" (5 µm) & G3/4" (5 µm)	-14.5–0 psi	5 µm	12.3 scfm
Vacuum filter G1½" (5 µm)	-14.5–0 psi	5 µm	19.1 scfm
Vacuum filter G1/8", 1/8" NPT & 1/4" NPT	-14.5–0 psi	10 µm	2.97 scfm
Vacuum filter G3/8" & 3/8" NPT	-14.5–0 psi	10 µm	5.30 scfm
Vacuum filter G1/2", G3/4", 1/2" NPT & 3/4" NPT	-14.5–0 psi	10 µm	31.8 scfm
Vacuum filter G1", G1½", 1" NPT & 1 1/2" NPT	-14.5–0 psi	10 µm	89.0 scfm
Vacuum filter, 3/8" NPT steel, 3/4" NPT steel	-14.5–0 psi	5 µm	13.8 scfm
Vacuum filter, 1/2" NPT steel	-14.5–0 psi	5 µm	21.0 scfm
Vacuum filter, 1" NPT steel	-14.5–0 psi	5 µm	35.0 scfm

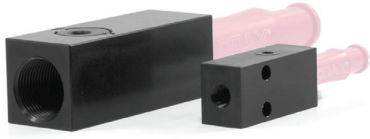
Description	Pressure	Removal efficiency	Flow, nominal
Vacuum filter, 1 1/2" NPT steel	-14.5–0 psi	5 µm	79.9 scfm
Vacuum filter, 2" NPT steel	-14.5–0 psi	5 µm	175 scfm
Vacuum filter, 2 1/2" NPT steel	-14.5–0 psi	5 µm	212 scfm
Inline filter	-14.69–65 psi	10 µm	0.42 scfm
Inline filter	-14.69–65 psi	25 µm	1.06 scfm

ORDERING INFORMATION

Description	Part no.
Vacuum filter G1" (10 µm)	31.16.672
Vacuum filter G1/2" (10 µm)	31.16.651
Vacuum filter G1/2" (5 µm)	01.10.521
Vacuum filter G1/8" (10 µm)	31.16.670
Vacuum filter G1½" (10 µm)	31.16.653
Vacuum filter G1½" (5 µm)	01.10.523
Vacuum filter G3/4" (10 µm)	31.16.652
Vacuum filter G3/4" (5 µm)	01.10.522
Vacuum filter G3/8" (10 µm)	31.16.671
Vacuum filter 1 1/2", steel	31.16.654
Vacuum filter 1", steel	31.16.709
Vacuum filter 2 1/2", steel	01.11.311
Vacuum filter G2", steel	31.16.710
Vacuum filter, 1 1/2" NPT steel	PSF1.5

Description	Part no.
Vacuum filter, 1" NPT steel	PSF1.0
Vacuum filter, 1/2" NPT steel	PSF.5B
Vacuum filter, 2 1/2" NPT steel	PSF2.5
Vacuum filter, 2" NPT steel	PSF2.0
Vacuum filter, 3/4" NPT Steel	PSF.75B
Vacuum filter, 3/8" NPT steel	PSF.375
In-line filter 25 micron, barbed	X7439
In-line filter 25 micron, luer	X6618
In-line filter 10 micron, barbed	X7438
In-line filter 10 micron, luer	X6621

Other



Body for COAX® cartridge

- Aluminium bodies for COAX® MINI and MIDI cartridges.
- All 2-stage and 3-stage cartridges, equipped with a red aluminium holder, will fit.
- The mini body has a stackable design with extra port for sensing or blow-off.
- The midi body has a special vacuum-exhaust inline design, which minimizes the influence of dust on the cartridge.
- Cartridge has to be ordered separately.



Vacuum gauge and manometers

- Analog indicator, springjoint – lever system.
- The instruments include nut for installation on a panel.
- Vacuum gauge to 30 -inHg, Manometers to 36.25 and 150 psi.



POREX™ mufflers

- The POREX™ muffler is designed to specifically reduce air blast noise created at exhaust ports of pneumatic valves.
- The porous plastic body is made of high density porous polyethylene.
- The muffler is available in three (3) air flows: fine flow (FF-red base-35 micron), standard flow (black base-70 micron) and coarse flow (CF-green base-250 micron).

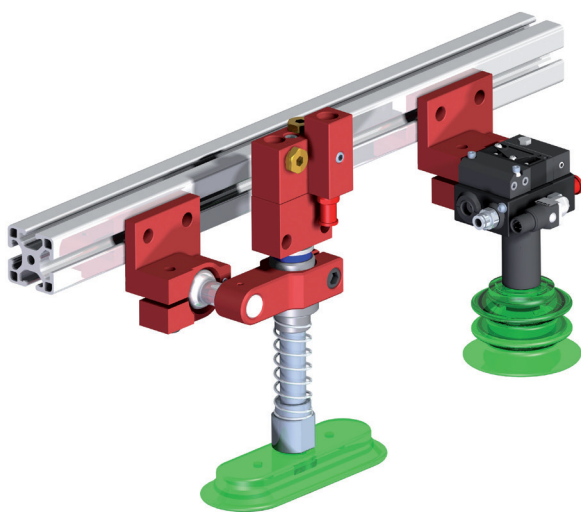
TECHNICAL DATA

Description	Noise level, reduction
POREX™ Muffler 1/8"	8-13 dBA
POREX™ Muffler 1/4"	4-16 dBA
POREX™ Muffler 3/8"	4-10 dBA
POREX™ Muffler 1/2"	10-20 dBA
POREX™ Muffler 3/4"	8-16 dBA
POREX™ Muffler 1"	14-18 dBA

ORDERING INFORMATION

Description	Part no.
Body for COAX® MIDI cartridge Inline	01.19.309
Body for COAX® MINI cartridge 2x1/8" V	01.29.473
Manometer 150 psi/1 MPa	31.01.603
Manometer 36.25 psi/250 kPa	31.01.626
Vacuum gauge 100 -kPa, with nut / -30 inHg	31.01.602
POREX™ 1/8" Standard flow 70 micron muffler	N125
POREX™ 1/4" Standard flow 70 micron muffler	N250
POREX™ 3/8" Standard flow 70 micron muffler	N375
POREX™ 1/2" Standard flow 70 micron muffler	N500
POREX™ 3/4" Standard flow 70 micron muffler	N750
POREX™ 1" Standard flow 70 micron muffler	N1000
POREX™ 1/8" Fine flow 35 micron muffler	N125FF
POREX™ 1/4" Fine flow 35 micron muffler	N250FF
POREX™ 3/8" Fine flow 35 micron muffler	N375FF
POREX™ 1/2" Fine flow 35 micron muffler	N500FF
POREX™ 3/4" Fine flow 35 micron muffler	N750FF
POREX™ 1" Fine flow 35 micron muffler	N1000FF
POREX™ 1/8" Coarse flow 250 micron muffler	N125CF
POREX™ 1/4" Coarse flow 250 micron muffler	N250CF
POREX™ 3/8" Coarse flow 250 micron muffler	N375CF
POREX™ 1/2" Coarse flow 250 micron muffler	N500CF
POREX™ 3/4" Coarse flow 250 micron muffler	N750CF
POREX™ 1" Coarse flow 250 micron muffler	N1000CF

PMAT – Piab Modular Automation Tooling

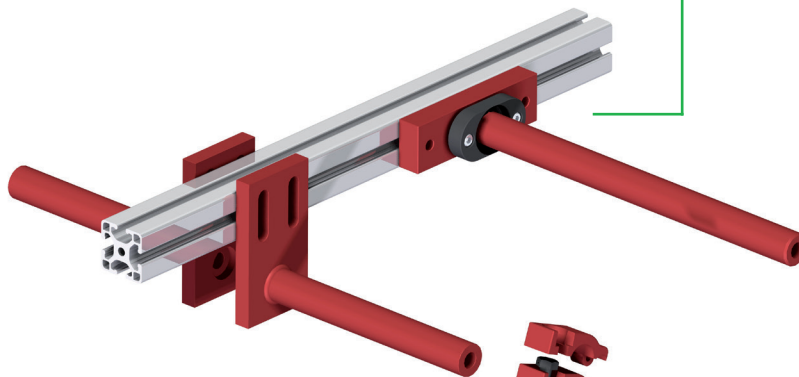


PMAT

PMAT – Piab Modular Automation Tooling	354
Connections to main frame of the end-effector	356
Swivel arms	357
Function attachments	358
Accessories	361
PMAT Configurable Products	362

353

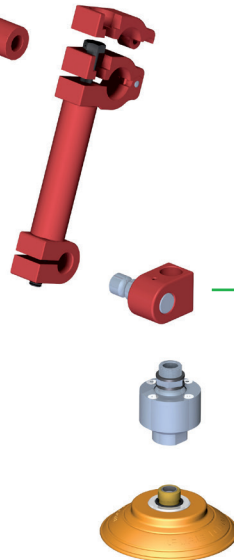
PMAT – Piab Modular Automation Tooling



CONNECTIONS TO MAIN FRAME/ STRUCTURE OF THE END-EF- FECTOR

Durable mounting bars, clamp blocks with tubes and special parts that will all fit to any type of welded frames or extrusions.

They form the structure of the PMAT end-effector and interfaces nicely with the swivel arms and in some cases directly with a function attachment.



CENTRALIZED VACUUM CONNECTION

Connect your PMAT system to a centralized vacuum pump.

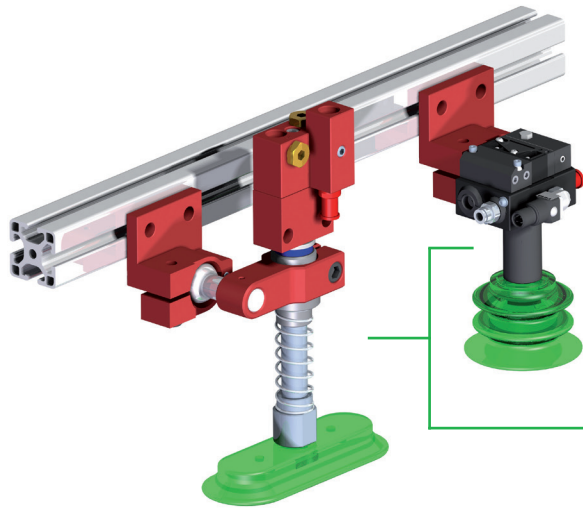
BALL JOINT

SWIVEL ARMS

The swivel arm is the part which allows for unlimited positioning of the suction cup. A single-bolt on the swivel arm will tighten the entire assembly of arm, function attachment and cup in the right position. Swivel arms are available in different lengths for increased flexibility and they can be mounted to a rod/bar by a slide-on function or be clamped to the rod/bar.

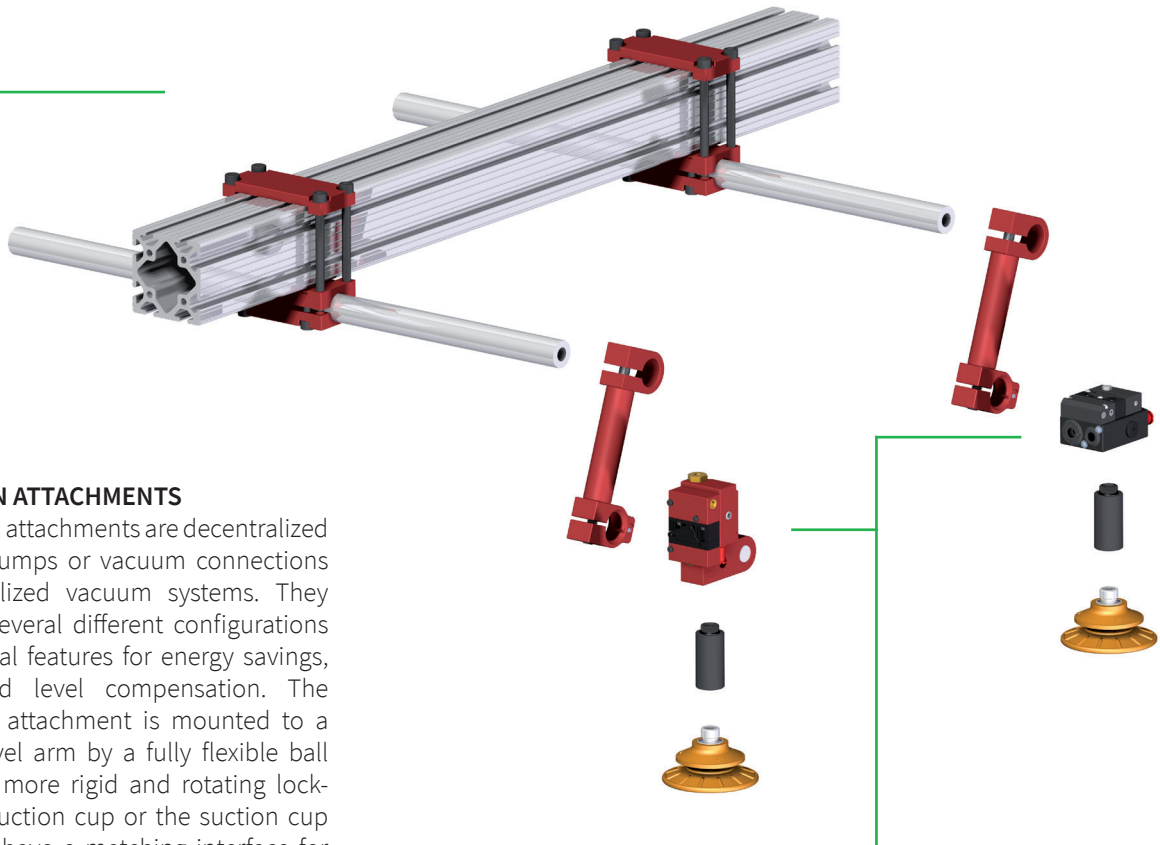
PIAB SUCTION CUPS

Piab suction cups are available in a variety of sizes and materials to efficiently handle your application. To prevent damage to the surface of metal sheets common in automotive and large appliance applications, Piab's DURAFLEX® cups feature a dual-hardness design and soft cup body. Lower vacuum force is needed to seal the cups to part surfaces for gentler handling. The soft lip of Piab's DURAFLEX® cups also molds easily to curved surfaces for less vacuum leakage and stronger grip.



ACCESSORIES FOR SUCTION CUPS

The PMAT offers a wide range of suction cup accessories to optimize and facilitate the installation. For instance, the accessories can help to avoid bending stress on the suction cup when lifting heavy objects, extend the cup to reach areas in cramped spaces or simply height adjust the cup to the right level.



FUNCTION ATTACHMENTS

Functional attachments are decentralized vacuum pumps or vacuum connections for centralized vacuum systems. They come in several different configurations with special features for energy savings, safety and level compensation. The functional attachment is mounted to a PMAT swivel arm by a fully flexible ball joint or a more rigid and rotating lock-pin. The suction cup or the suction cup accessory have a matching interface for the function attachment.

Connections to main frame of the end-effector



Mounting bar – welded

- Rigid mounting with low deflection.
- Slotted mounting for adjustability.
- 100–600 mm (4”-24”) lengths.



Profile mount ball clamp

- Fits on standard size extrusion.
- Used with any Ball joint style function attachment.

TECHNICAL DATA

Description	Torsional twist	Load, vertical, max.	Load, torque, max.
Mounting bar welded L=100	1°	–	–
Mounting bar welded L=150	1.2°	–	–
Mounting bar welded L=200	1.6°	–	–
Mounting bar welded L=300	2.5°	–	–
Mounting bar welded L=600	4.6°	–	–
Profile mount ball clamp, left hand	–	180 lbf	29.5 lb ft
Profile mount ball clamp, right hand	–	180 lbf	29.5 lb ft

ORDERING INFORMATION

Description	Part no.
Mounting bar welded L=100 mm	X4038-100
Mounting bar welded L=150 mm	X4038-150
Mounting bar welded L=200 mm	X4038-200
Mounting bar welded L=300 mm	X4038-300
Mounting bar welded L=600 mm	X4038-600
Profile mount ball clamp, left hand	X2066
Profile mount ball clamp, right hand	X2066RH

Swivel arms



Swivel arm – clamp on

- Standard mounting to 25 mm and 1" bars, easily removable connection.
- Easy single screw adjustment.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.



Swivel arm – slide on

- Standard mounting to 25 mm or 1" bars.
- Easy single screw adjustment.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.

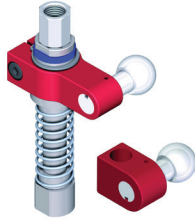
TECHNICAL DATA

Description	Load, vertical, max.	Load, torque, max.
Swivel arm – clamp on	89.9 lbf	29.5 lb ft
Swivel arm – slide on	89.9 lbf	29.5 lb ft

ORDERING INFORMATION

For a complete list of available PMAT products visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

Function attachments



Centralized vacuum connection

- Connects centralized vacuum to suction cup.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.



Vacuum Check Valve VT-1H

- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.

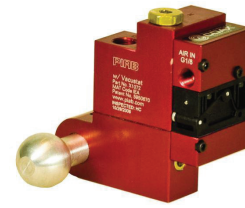
ORDERING INFORMATION

Description	Part no.
Centralized vacuum connection with level compensator, G threads, Ball joint, Left hand connection	01.21.002
Centralized vacuum connection with level compensator, NPT threads, Ball joint, Left hand connection	01.21.070
Centralized vacuum connection with level compensator, G threads, Ball joint, Right hand connection	01.21.210
Centralized vacuum connection with level compensator, NPT threads, Ball joint, Right hand connection	01.21.211
Centralized vacuum connection with level compensator, G threads, Lock pin 16, Left hand connection	01.09.230
Centralized vacuum connection with level compensator, NPT threads, Lock pin 16, Left hand connection	01.21.067
Centralized vacuum connection with level compensator, G threads, Lock pin 16, Right hand connection	01.21.212
Centralized vacuum connection with level compensator, NPT threads, Lock pin 16, Right hand connection	01.21.213
Centralized vacuum connection with level compensator, G threads, Lock pin 19, Left hand connection	01.21.001
Centralized vacuum connection with level compensator, NPT threads, Lock pin 19, Left hand connection	01.21.069
Centralized vacuum connection with level compensator, G threads, Lock pin 19, Right hand connection	01.21.208
Centralized vacuum connection with level compensator, NPT threads, Lock pin 19, Right hand connection	01.21.209
Centralized vacuum connection, G threads, Ball joint, Left or Right hand connection	01.10.433
Centralized vacuum connection, NPT threads, Ball joint, Left or Right hand connection	01.20.716
Centralized vacuum connection, G threads, Lock pin 16, Left or Right hand connection	01.19.498
Centralized vacuum connection, NPT threads, Lock pin 16, Left or Right hand connection	01.21.066
Centralized vacuum connection, G threads, Lock pin 19, Left or Right hand connection	01.10.434
Centralized vacuum connection, NPT threads, Lock pin 19, Left or Right hand connection	01.21.068



Vacuum Check Valve VT-1H with COAX®

- Two-stage COAX® cartridge MINI Pi12-2 integrated.
- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.



Vacuum Check Valve VT-1H Vacustat with COAX®

- Two-stage COAX® cartridge MINI Pi12-2 integrated.
- Check valve that traps vacuum in sealed applications for safe operation.
- Built-in blow off check valve for fast release of object.
- Integrated energy-saving device, Vacustat results in virtually no air consumption in sealed applications.
- Available in lock pin 16, 19 or ball joint mountings, industry standard.
- Available with level compensator to compensate for differences in level of object.

TECHNICAL DATA

Description	Vacuum flow, max.
Vacuum Check Valve VT-1H	1.44 scfm
Vacuum Check Valve VT-1H with COAX®	1.44 scfm
Vacuum Check Valve VT-1H Vacustat with COAX®	1.44 scfm

ORDERING INFORMATION

For a complete list of available PMAT products visit piab.com. On our webpage you will also be able to find dimensional drawings, CAD-drawings and much more. Register and get full access to all resources available.

Accessories



Cross connector

- Connects 25 mm bars at any angle.
- Can be used with a Suction cup extension.



Level compensator – profile mount

- Compensates for differences in height.
- Provides certain degree of shock absorption.
- Fits on standard size extrusion.



Proximity mounting bracket

- For mounting of sensors or visions systems.
- Multiple interfaces.

TECHNICAL DATA

Description	Load, vertical, max.	Load, torque, max.	Load, horizontal, max.
Cross connector 25-25/65	89.9 lbf	88.5 lb ft	–
Level compensator – profile mount	157 lbf	–	157 lbf

ORDERING INFORMATION

Description	Part no.
Cross connector 25-25/65	01.21.170
LCS 200 profile mounted level compensator G3/8" female x G3/8" female	01.21.220
LCS 200 profile mounted level compensator 3/8" NPT female x 3/8" NPT male	01.21.219
Proximity mounting bracket	01.21.176

PMAT Configurable Products

Facilitate the selection of our great assortment of function attachments and swivel arm options by using the combined swivel arm and function attachment code configurator. Note that all function attachments are not presented in the code.

Select rod extension	PMAT code
Rod extension 50	AA
Rod extension 100	AB
Rod extension 150	AC

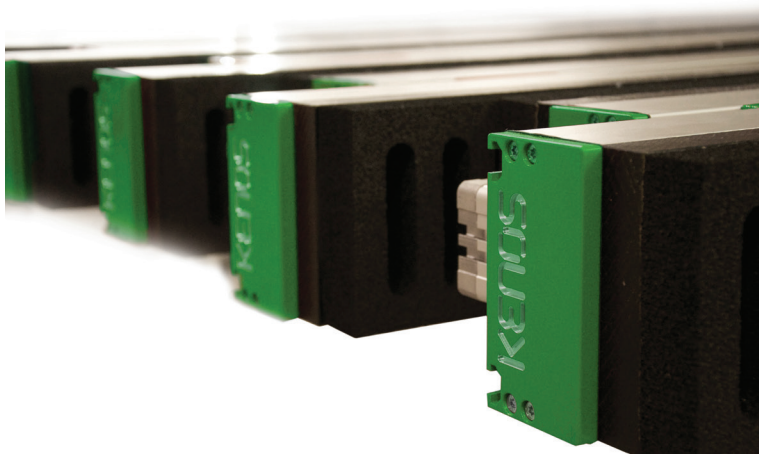
Bar mounting style	PMAT code
Bar clamp, clamp-on 25	00
Bar clamp, slide-on 25	01
Bar clamp, slide-on 1", pin 16	02
Bar clamp, slide-on 1", pin 19	14
Bar clamp, slide-on 1", ball joint	04

Swivel style	PMAT code
Swivel style pin 16	P
Swivel style pin 19	C
Swivel style ball joint	I

Function attachment	PMAT code			
	Left hand		Right hand	
No attachment	00			
		LCS *		LCS *
Centralized vacuum connection, G	XX1	XX2	XX1RH	XX2RH
Centralized vacuum connection, NPT	X1	X2	X1RH	X2RH
Vacuum Check Valve VT-1H, G	XAB	XAM	XABRH	XAMRH
Vacuum Check Valve VT-1H, NPT	AB	AM	ABRH	AMRH
Vacuum Check Valve VT-1H COAX® cartridge MINI Pi12-2, G	XAA	XAL	XAARH	XALRH
Vacuum Check Valve VT-1H COAX® cartridge MINI Pi12-2, NPT	AA	AL	AARH	ALRH
Vacuum Check Valve VT-1H Vacustat COAX® cartridge MINI Pi12-2, G	XEA	XBTF	XEARH	XBTFRH
Vacuum Check Valve VT-1H Vacustat COAX® cartridge MINI Pi12-2, NPT	EA	BTF	EARH	BTFRH

* With level compensator, LCS.

Kenos®

**KENOS®**

KVG 60 family
KVG 120 family
KHVG series
KSG series
KBC series
KVGL-S series
KVGL-CJ series
KRV series

365

367
374
392
396
400
404
410
412

KVG 60 family



KVG series represents a flexible solution for the handling manipulation of several products with different shapes, dimensions and compactness due to the double technology available. Check valves or flow reducers can fulfill the needs of many industrial sector applications. The KVG gripping system can be equipped with integrated vacuum generation or suitable for separated vacuum generation (Pump or Side channel blower). The integrated vacuum generator is a modular multi-stage COAX® ejector of easy maintenance. The multi-stage COAX® ejector used offers the possibility to be simply increased even after the installation if necessary. The mat of the KVG gripping system is made of a technical foam (FDA mat approved available), with different pitch holes and thickness or pads.

LIFTING FORCES

Theoretic gripping force on rigid and stable surface with completely covered module, without safety factor (lbf).

Type	Foam step	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
KVG200	1-2 (fine or medium)	21.1	28.3	35.3	42.3	49.5
KVG300	1-2 (fine or medium)	31.7	42.3	53.1	63.6	74.2
KVG400	1-2 (fine or medium)	42.3	56.4	70.6	84.8	98.9
KVG500	1-2 (fine or medium)	53.1	70.6	88.4	106	124
KVG600	1-2 (fine or medium)	63.6	84.8	106	127	148
KVG700	1-2 (fine or medium)	74.2	98.9	124	148	173
KVG800	1-2 (fine or medium)	84.8	113	141	170	198
KVG900	1-2 (fine or medium)	95.3	127	159	191	223
KVG1000	1-2 (fine or medium)	106	141	176	212	247
KVG1100	1-2 (fine or medium)	116	155	194	233	272
KVG1200	1-2 (fine or medium)	127	170	212	254	297
KVG1300	1-2 (fine or medium)	138	184	230	275	321
KVG1400	1-2 (fine or medium)	148	198	247	297	346
KVG1600	1-2 (fine or medium)	170	226	283	339	395

Type	Foam step	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
KVG1800	1-2 (fine or medium)	191	254	318	381	445
KVG2000	1-2 (fine or medium)	212	283	353	424	494
KVG200	3 (medium oval)	29.7	39.8	49.7	59.6	69.5
KVG300	3 (medium oval)	44.7	59.6	74.4	89.2	104
KVG400	3 (medium oval)	59.6	79.4	99.1	119	139
KVG500	3 (medium oval)	74.4	99.1	124	149	174
KVG600	3 (medium oval)	89.2	119	149	178	208
KVG700	3 (medium oval)	104	139	174	208	243
KVG800	3 (medium oval)	119	159	199	238	278
KVG900	3 (medium oval)	134	178	223	268	312
KVG1000	3 (medium oval)	149	199	248	298	347
KVG1100	3 (medium oval)	164	218	273	328	382
KVG1200	3 (medium oval)	178	238	298	357	417
KVG1300	3 (medium oval)	194	258	322	387	451
KVG1400	3 (medium oval)	208	278	347	417	486
KVG1600	3 (medium oval)	238	317	397	476	556
KVG1800	3 (medium oval)	268	357	446	536	625
KVG2000	3 (medium oval)	298	397	496	595	695
KVG200	6 (extra fine)	16.9	22.7	28.3	33.9	39.6
KVG300	6 (extra fine)	25.4	33.9	42.5	50.8	59.3
KVG400	6 (extra fine)	33.9	45.2	56.4	67.9	79.1
KVG500	6 (extra fine)	42.5	56.4	70.6	84.8	98.9
KVG600	6 (extra fine)	50.8	67.9	84.8	102	119
KVG700	6 (extra fine)	59.3	79.1	98.9	119	138
KVG800	6 (extra fine)	67.9	90.4	113	136	158
KVG900	6 (extra fine)	76.2	102	127	153	178
KVG1000	6 (extra fine)	84.8	113	141	170	198

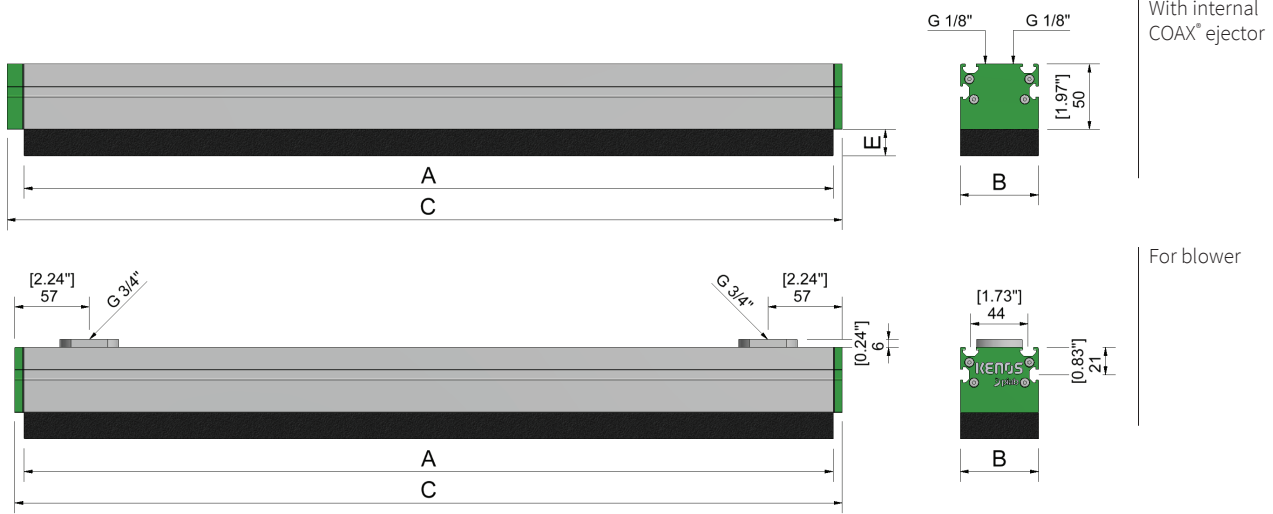
Type	Foam step	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
KVG1100	6 (extra fine)	93.3	124	155	186	218
KVG1200	6 (extra fine)	102	136	170	203	237
KVG1300	6 (extra fine)	110	147	184	220	257
KVG1400	6 (extra fine)	119	158	198	237	277
KVG1600	6 (extra fine)	136	181	226	271	317
KVG1800	6 (extra fine)	153	203	254	305	356
KVG2000	6 (extra fine)	170	226	283	339	395

VACUUM FLOW

Air consumption/vacuum flow data related to number of COAX® ejectors.

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 ×1	87	3.71	12.71	7.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
MIDI Si32-3 ×2	87	7.42	25.42	14.8	11	7.2	3.8	2.6	2.2	1.4	—	—	22.1
MIDI Si32-3 ×4	87	14.84	50.84	29.6	22	14.4	7.6	5.2	4.4	2.8	—	—	22.1

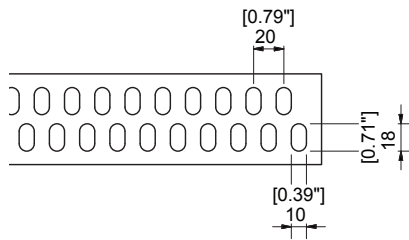
DIMENSIONS FOR KVG 60 WITH FOAM



ATTENTION: for foam step 6 (extra fine), dimensions A, B and C are 0.39” shorter.

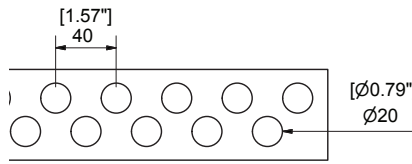
Length (mm)	A (mm [inch])	C COAX® ejector (mm [inch])	C Blower (mm [inch])	E (mm)	Weight (lb)			
					COAX® ejector CV	COAX® ejector FR	blower CV	blower FR
KVG200	220 [8.66]	240 [9.45]	234 [9.21]	10/20	2.43	1.98	1.98	1.54
KVG300	320 [12.6]	340 [13.4]	334 [13.2]	10/20	3.09	2.65	2.43	2.20
KVG400	420 [16.5]	440 [17.3]	434 [17.1]	10/20	3.75	3.09	3.53	2.65
KVG500	520 [20.5]	540 [21.3]	534 [21]	10/20	4.63	3.75	4.19	3.31
KVG600	620 [24.4]	640 [25.2]	634 [24.9]	10/20	5.29	4.19	4.85	3.75
KVG700	720 [28.4]	740 [29.1]	734 [28.9]	10/20	5.95	4.85	5.73	4.41
KVG800	820 [32.3]	840 [33.2]	834 [32.8]	10/20	6.83	5.29	6.39	4.85
KVG900	920 [36.2]	940 [37]	934 [36.8]	10/20	7.50	5.95	7.05	5.51
KVG1000	1020 [40.2]	1040 [41]	1034 [40.7]	10/20	8.38	6.61	7.94	6.17
KVG1100	1120 [44.1]	1140 [44.9]	1134 [44.6]	10/20	9.04	7.05	8.60	6.61
KVG1200	1220 [48]	1240 [48.8]	1234 [48.6]	10/20	9.70	7.72	9.26	7.28
KVG1300	1320 [52]	1340 [52.8]	1334 [52.5]	10/20	10.6	8.16	10.1	7.72
KVG1400	1420 [55.9]	1440 [56.7]	1434 [56.5]	10/20	11.2	8.82	10.8	8.38
KVG1600	1620 [63.8]	1640 [64.6]	1634 [64.3]	10/20	12.8	9.92	12.3	9.48
KVG1800	1820 [71.7]	1840 [72.4]	1834 [72.2]	10/20	14.1	11.0	13.7	10.6
KVG2000	2020 [79.5]	2040 [80.3]	2034 [80.1]	10/20	15.7	12.1	15.2	11.7

KVG 60 FOAM DESCRIPTIONS



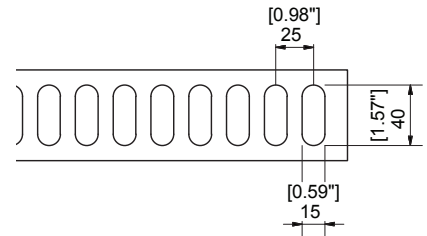
Fine (step 1)

Suitable for narrow parts like strips of wood, metal, plastic.



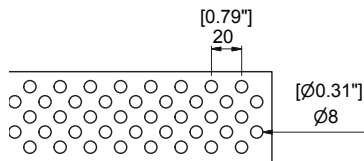
Medium (step 2)

Suitable for general purpose, typical application for panels.



Medium oval (step 3)

Suitable for general purpose, typical application for heavier panels.



Extra fine (step 6)

Suitable for small pieces larger than 1" like very narrow strips of wood.

KVG 60 – CUSTOMER CODE

KVG . 400 . 60 . N211 . CVL . S1

Code	Model
KVG	KVG

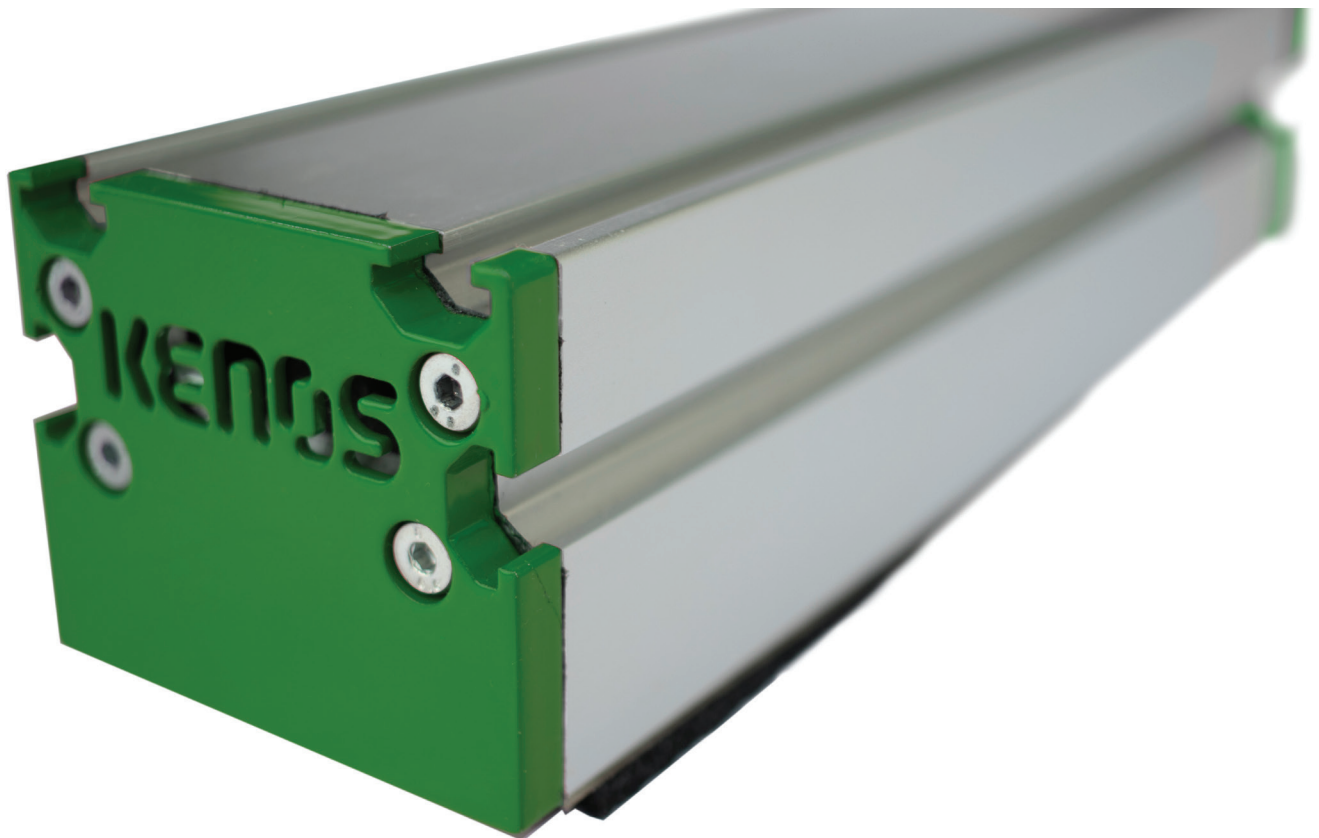
Code	Length
200	200 mm (7.87")
300	300 mm (11.8")
400	400 mm (15.8")
500	500 mm (19.7")
600	600 mm (23.6")
700	700 mm (27.6")
800	800 mm (31.5")
900	900 mm (35.4")
1000	1000 mm (39.4")
1100	1100 mm (43.3")
1200	1200 mm (47.2")
1300	1300 mm (51.2")
1400	1400 mm (55.2")
1600	1600 mm (63")
1800	1800 mm (70.9")
2000	2000 mm (78.7")

Code	Width
60	60 mm (2.36")

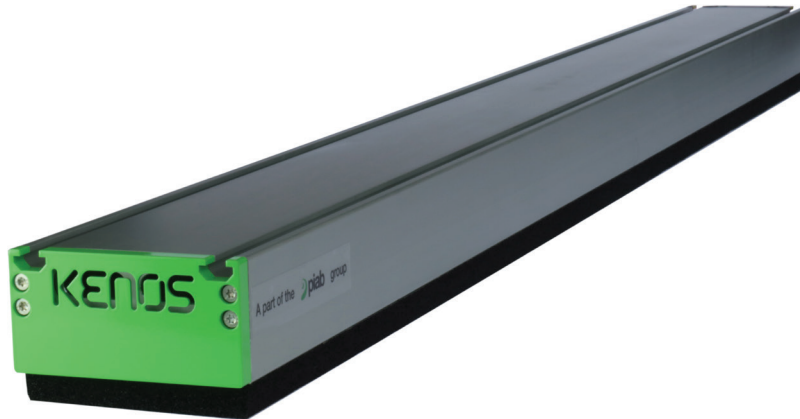
Code	Type
N	Foam
Code	Thickness
2	Foam 20 mm (0.79")
1	Foam 10 mm (0.39")
Code	Filter
0	Without filter
1	With filter
Code	Step
1	Fine step
2	Medium step
3	Medium oval step
6	Extra fine step

Code	Technology
CVL	Check Valves Low flow
CVM	Check Valves Medium flow
CVH	Check Valves High flow
CV19	piSAVE® Sense 02/60
FR5	Flow Reduction 0.5 mm (0.020")
FR6	Flow Reduction 0.6 mm (0.024")
FR8	Flow Reduction 0.8 mm (0.03")

Code	Vacuum generator
S1	×1 cartridge Si32-3
S2	×2 cartridge Si32-3
S4	×4 cartridge Si32-3
BL	Blower connection



KVG 120 family



KVG series represents a flexible solution for the handling manipulation of several products with different shapes, dimensions and compactness due to the double technology available. Check valves or flow reducers can fulfill the needs of many industrial sector applications. The KVG gripping system can be equipped with integrated vacuum generation or suitable for separated vacuum generation (Pump or Side channel blower). The integrated vacuum generator is a modular multi-stage COAX® ejector of easy maintenance. The multi-stage COAX® ejector used offers the possibility to be simply increased even after the installation if necessary. The mat of the KVG gripping system is made of a technical foam (FDA mat approved available), with different pitch holes and thickness or pads.

LIFTING FORCES

Theoretic gripping force on rigid and stable surface with completely covered module, without safety factor (lbf).

Type	Foam step	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
KVG200	1-2 (fine or medium)	38.2	50.8	63.6	76.2	89.0
KVG300	1-2 (fine or medium)	59.3	79.1	98.9	119	138
KVG400	1-2 (fine or medium)	80.5	107	134	161	188
KVG500	1-2 (fine or medium)	102	136	170	203	237
KVG600	1-2 (fine or medium)	123	164	205	246	287
KVG700	1-2 (fine or medium)	144	192	240	288	336
KVG800	1-2 (fine or medium)	165	220	275	330	385
KVG900	1-2 (fine or medium)	186	248	311	373	435
KVG1000	1-2 (fine or medium)	207	277	346	415	484
KVG1100	1-2 (fine or medium)	229	305	381	457	534
KVG1200	1-2 (fine or medium)	250	333	417	500	583
KVG1300	1-2 (fine or medium)	271	361	452	542	632
KVG1400	1-2 (fine or medium)	292	390	487	585	682
KVG1600	1-2 (fine or medium)	335	446	558	669	781

Type	Foam step	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
KVG1800	1-2 (fine or medium)	377	503	628	754	879
KVG2000	1-2 (fine or medium)	419	559	699	839	978
KVG200	6 (extra fine)	37.3	49.7	62.0	74.6	87.0
KVG300	6 (extra fine)	56.0	74.6	93.1	112	130
KVG400	6 (extra fine)	74.6	99.4	124	149	174
KVG500	6 (extra fine)	93.1	124	155	186	217
KVG600	6 (extra fine)	112	149	186	224	261
KVG700	6 (extra fine)	130	174	217	261	304
KVG800	6 (extra fine)	149	199	248	298	348
KVG900	6 (extra fine)	168	224	279	335	391
KVG1000	6 (extra fine)	186	248	311	373	435
KVG1100	6 (extra fine)	205	273	342	410	478
KVG1200	6 (extra fine)	224	298	373	447	522
KVG1300	6 (extra fine)	242	323	404	484	565
KVG1400	6 (extra fine)	261	348	435	522	609
KVG1600	6 (extra fine)	298	397	497	596	696
KVG1800	6 (extra fine)	335	447	559	671	783
KVG2000	6 (extra fine)	373	497	621	745	870

Theoretic gripping force on rigid and stable surface with completely covered module. without safety factor (lbf). Gripping forces at 30%, 40%, 50% and 70% were obtained from theoretical calculations based on the declared values (gripping force at 20%, 60% and 90%). with the exception of values for VL60BX.

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG200 with B35XP PU60	68.3	98.5	126	151	173	193
KVG300 with B35XP PU60	103	148	189	226	259	290
KVG400 with B35XP PU60	137	197	252	301	345	386
KVG500 with B35XP PU60	171	246	315	377	432	483
KVG600 with B35XP PU60	205	295	378	452	518	579

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG700 with B35XP PU60	239	345	441	527	604	676
KVG800 with B35XP PU60	273	394	504	602	691	772
KVG900 with B35XP PU60	308	443	567	678	777	869
KVG1000 with B35XP PU60	342	492	629	753	863	965
KVG1100 with B35XP PU60	376	542	692	828	950	1062
KVG1200 with B35XP PU60	410	591	755	904	1036	1158
KVG1300 with B35XP PU60	444	640	818	979	1122	1255
KVG1400 with B35XP PU60	478	689	881	1055	1209	1351
KVG1600 with B35XP PU60	547	788	1007	1205	1381	1544
KVG1800 with B35XP PU60	615	886	1133	1356	1554	1737
KVG2000 with B35XP PU60	683	985	1259	1506	1727	1930
KVG200 with B35XP PU30/60	61.1	86.3	108	126	140	152
KVG300 with B35XP PU30/60	91.7	129	162	189	210	228
KVG400 with B35XP PU30/60	122	173	216	252	281	303
KVG500 with B35XP PU30/60	153	216	270	315	351	379
KVG600 with B35XP PU30/60	183	259	324	378	421	455
KVG700 with B35XP PU30/60	214	302	378	441	491	531
KVG800 with B35XP PU30/60	245	345	432	504	561	607
KVG900 with B35XP PU30/60	275	388	486	567	631	683
KVG1000 with B35XP PU30/60	306	432	540	629	701	759
KVG1100 with B35XP PU30/60	336	475	593	692	772	835
KVG1200 with B35XP PU30/60	367	518	647	755	842	911
KVG1300 with B35XP PU30/60	397	561	701	818	912	987
KVG1400 with B35XP PU30/60	428	604	755	881	982	1062
KVG1600 with B35XP PU30/60	489	691	863	1007	1122	1214
KVG1800 with B35XP PU30/60	550	777	971	1133	1263	1366
KVG2000 with B35XP PU30/60	611	863	1079	1259	1403	1518

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG200 with BX35P PU60	54.0	71.9	83.9	86.3	89.9	94.4
KVG300 with BX35P PU60	80.9	108	126	129	135	142
KVG400 with BX35P PU60	108	144	168	173	180	189
KVG500 with BX35P PU60	135	180	210	216	225	236
KVG600 with BX35P PU60	162	216	252	259	270	283
KVG700 with BX35P PU60	189	252	294	302	315	330
KVG800 with BX35P PU60	216	288	336	345	360	378
KVG900 with BX35P PU60	243	324	378	388	405	425
KVG1000 with BX35P PU60	270	360	420	432	450	472
KVG1100 with BX35P PU60	297	396	462	475	495	519
KVG1200 with BX35P PU60	324	432	504	518	540	567
KVG1300 with BX35P PU60	351	468	546	561	585	614
KVG1400 with BX35P PU60	378	504	588	604	629	661
KVG1600 with BX35P PU60	432	576	672	691	719	755
KVG1800 with BX35P PU60	486	648	756	777	809	850
KVG2000 with BX35P PU60	540	720	839	863	899	944
KVG200 with BX35P PU30/60	43.2	57.6	67.2	68.3	71.9	81.2
KVG300 with BX35P PU30/60	64.7	86.3	101	103	108	122
KVG400 with BX35P PU30/60	86.3	115	134	137	144	162
KVG500 with BX35P PU30/60	108	144	168	171	180	203
KVG600 with BX35P PU30/60	129	173	201	205	216	243
KVG700 with BX35P PU30/60	151	201	235	239	252	284
KVG800 with BX35P PU30/60	173	230	269	273	288	325
KVG900 with BX35P PU30/60	194	259	302	308	324	365
KVG1000 with BX35P PU30/60	216	288	336	342	360	406
KVG1100 with BX35P PU30/60	237	317	369	376	396	446
KVG1200 with BX35P PU30/60	259	345	403	410	432	487

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG1300 with BX35P PU30/60	281	374	437	444	468	527
KVG1400 with BX35P PU30/60	302	403	470	478	504	568
KVG1600 with BX35P PU30/60	345	460	537	547	576	649
KVG1800 with BX35P PU30/60	388	518	604	615	647	730
KVG2000 with BX35P PU30/60	432	576	672	683	719	812
KVG200 with B52XP PU60	76.4	111	142	170	196	219
KVG300 with B52XP PU60	115	166	213	255	294	329
KVG400 with B52XP PU60	153	221	283	341	392	439
KVG500 with B52XP PU60	191	276	355	426	490	548
KVG600 with B52XP PU60	229	332	425	511	588	658
KVG700 with B52XP PU60	268	387	496	596	686	768
KVG800 with B52XP PU60	306	442	567	681	784	877
KVG900 with B52XP PU60	344	497	638	766	882	987
KVG1000 with B52XP PU60	382	553	709	852	980	1096
KVG1100 with B52XP PU60	420	608	780	937	1078	1206
KVG1200 with B52XP PU60	459	663	851	1022	1176	1316
KVG1300 with B52XP PU60	497	718	922	1107	1274	1425
KVG1400 with B52XP PU60	535	774	993	1192	1372	1535
KVG1600 with B52XP PU60	611	884	1134	1362	1568	1754
KVG1800 with B52XP PU60	688	995	1276	1533	1764	1973
KVG2000 with B52XP PU60	764	1105	1418	1703	1960	2193
KVG200 with B52XP PU30/60	64.7	91.7	115	135	151	159
KVG300 with B52XP PU30/60	97.1	138	173	202	227	239
KVG400 with B52XP PU30/60	129	183	230	270	302	319
KVG500 with B52XP PU30/60	162	229	288	337	378	399
KVG600 with B52XP PU30/60	194	275	345	405	453	478
KVG700 with B52XP PU30/60	227	321	403	472	529	558

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG800 with B52XP PU30/60	259	367	460	540	604	638
KVG900 with B52XP PU30/60	291	413	518	607	680	718
KVG1000 with B52XP PU30/60	324	459	576	674	755	797
KVG1100 with B52XP PU30/60	356	504	633	742	831	877
KVG1200 with B52XP PU30/60	388	550	691	809	906	957
KVG1300 with B52XP PU30/60	421	596	748	877	982	1037
KVG1400 with B52XP PU30/60	453	642	806	944	1058	1116
KVG1600 with B52XP PU30/60	518	734	921	1079	1209	1276
KVG1800 with B52XP PU30/60	583	826	1036	1214	1360	1435
KVG2000 with B52XP PU30/60	647	917	1151	1349	1511	1595
KVG200 with BX52P PU60	62.9	84.1	98.2	103	106	118
KVG300 with BX52P PU60	94.4	126	147	154	159	177
KVG400 with BX52P PU60	126	168	197	205	212	236
KVG500 with BX52P PU60	157	210	246	256	265	295
KVG600 with BX52P PU60	189	252	295	308	318	354
KVG700 with BX52P PU60	220	294	344	359	371	413
KVG800 with BX52P PU60	252	336	393	410	424	471
KVG900 with BX52P PU60	283	378	442	461	477	530
KVG1000 with BX52P PU60	315	420	492	513	531	589
KVG1100 with BX52P PU60	346	462	541	564	584	648
KVG1200 with BX52P PU60	378	504	590	615	637	707
KVG1300 with BX52P PU60	409	547	639	666	690	766
KVG1400 with BX52P PU60	441	589	688	718	743	825
KVG1600 with BX52P PU60	504	673	787	820	849	943
KVG1800 with BX52P PU60	567	757	885	923	955	1061
KVG2000 with BX52P PU60	629	841	983	1025	1061	1178
KVG200 with BX52P PU30/60	57.6	77.3	91.0	96.0	101	111

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG300 with BX52P PU30/60	86.3	116	137	144	151	167
KVG400 with BX52P PU30/60	115	155	182	192	201	222
KVG500 with BX52P PU30/60	144	193	228	240	252	278
KVG600 with BX52P PU30/60	173	232	273	288	302	334
KVG700 with BX52P PU30/60	201	271	319	336	353	389
KVG800 with BX52P PU30/60	230	309	364	384	403	445
KVG900 with BX52P PU30/60	259	348	410	432	453	500
KVG1000 with BX52P PU30/60	288	387	456	480	504	556
KVG1100 with BX52P PU30/60	317	425	501	528	554	612
KVG1200 with BX52P PU30/60	345	464	547	576	604	667
KVG1300 with BX52P PU30/60	374	503	592	624	655	723
KVG1400 with BX52P PU30/60	403	541	638	672	705	778
KVG1600 with BX52P PU30/60	460	619	729	768	806	890
KVG1800 with BX52P PU30/60	518	696	820	863	906	1001
KVG2000 with BX52P PU30/60	576	773	911	959	1007	1112
KVG200 with VL60BX	-	-	-	54.0	-	-
KVG300 with VL60BX	-	-	-	80.9	-	-
KVG400 with VL60BX	-	-	-	108	-	-
KVG500 with VL60BX	-	-	-	135	-	-
KVG600 with VL60BX	-	-	-	162	-	-
KVG700 with VL60BX	-	-	-	189	-	-
KVG800 with VL60BX	-	-	-	216	-	-
KVG900 with VL60BX	-	-	-	243	-	-
KVG1000 with VL60BX	-	-	-	270	-	-
KVG1100 with VL60BX	-	-	-	297	-	-
KVG1200 with VL60BX	-	-	-	324	-	-
KVG1300 with VL60BX	-	-	-	351	-	-

Type	Force, lbf, at a vacuum of					
	20%	30%	40%	50%	60%	70%
KVG1400 with VL60BX	-	-	-	378	-	-
KVG1600 with VL60BX	-	-	-	432	-	-
KVG1800 with VL60BX	-	-	-	486	-	-
KVG2000 with VL60BX	-	-	-	540	-	-

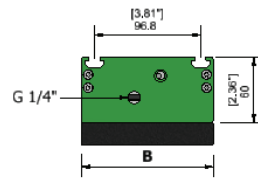
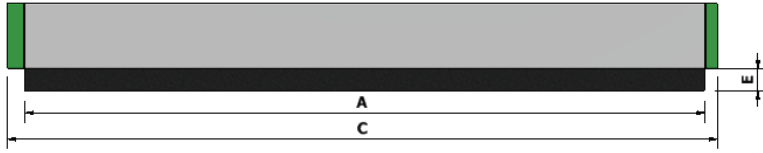
VACUUM FLOW

Air consumption/vacuum flow data related to number of COAX® ejectors.

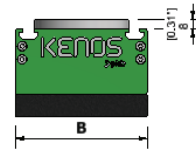
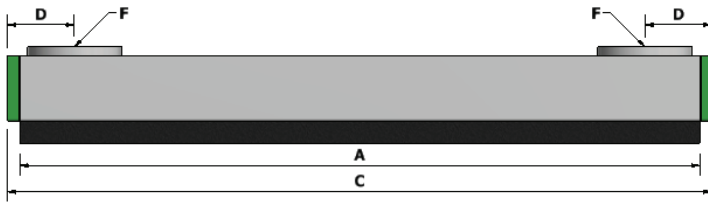
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 ×1	87	3.71	12.71	7.4	5.5	3.6	1.9	1.3	1.1	0.7	—	—	22.1
MIDI Si32-3 ×2	87	7.42	25.42	14.8	11	7.2	3.8	2.6	2.2	1.4	—	—	22.1
MIDI Si32-3 ×3	87	11.13	38.13	22.2	16.5	10.8	5.7	3.9	3.3	2.1	—	—	22.1
MIDI Si32-3 ×4	87	14.84	50.84	29.6	22	14.4	7.6	5.2	4.4	2.8	—	—	22.1
MIDI Si32-3 ×6	87	22.26	76.26	44.4	33	21.6	11.4	7.8	6.6	4.2	—	—	22.1/15.3*
MIDI Si32-3 ×8	87	29.68	101.68	59.2	44	28.8	15.2	10.4	8.8	5.6	—	—	22.1/15.3*

*Without/with 1×flap valve

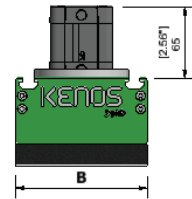
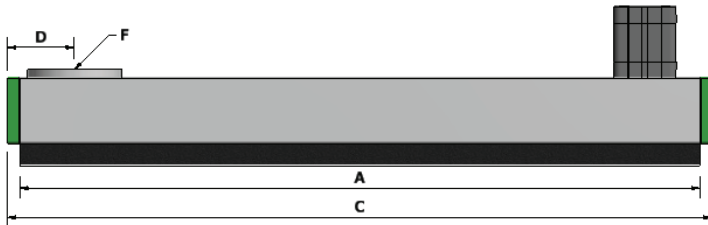
DIMENSIONS FOR KVG120 WITH FOAM



With internal
COAX® ejector



For blower



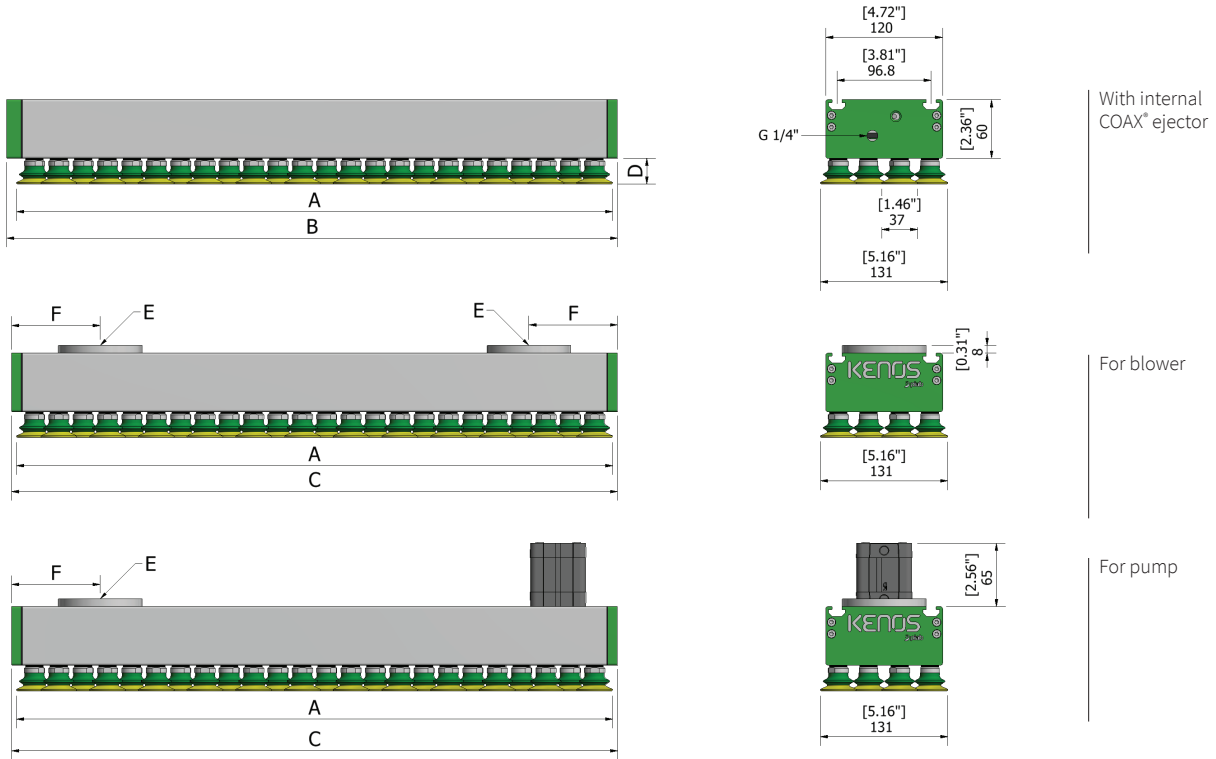
For pump

Length (mm)	A (mm [inch])	C ejector (mm [inch])	C blower (mm [inch])	D (mm [inch])	E (mm)	F	Weight (lb)					
							COAX® ejector CV	COAX® ejector FR	Blower CV	Blower FR	Pump CV	Pump FR
KVG200	220 [8.66]	247 [9.72]	242 [9.53]	61 [2.40]	10/20/30/40	G 1-1/4"	5.73	5.29	5.29	4.63	5.51	4.85
KVG300	320 [12.6]	347 [13.7]	342 [13.5]	61 [2.40]	10/20/30/40	G 1-1/4"	7.94	6.17	7.28	5.51	7.50	5.73
KVG400	420 [16.5]	447 [17.6]	442 [17.4]	61 [2.40]	10/20/30/40	G 1-1/4"	9.92	7.50	9.26	6.83	9.48	7.05
KVG500	520 [20.5]	547 [21.5]	542 [21.3]	61 [2.40]	10/20/30/40	G 1-1/4"	11.7	9.04	11.0	8.38	11.2	8.60
KVG600	620 [24.4]	647 [25.5]	642 [25.3]	61 [2.40]	10/20/30/40	G 1-1/4"	13.7	10.6	13.0	9.92	13.2	10.1
KVG700	720 [28.4]	747 [29.4]	742 [29.2]	91 [3.58]	10/20/30/40	G 2"	15.9	12.1	15.2	11.5	15.4	11.7
KVG800	820 [32.3]	847 [33.3]	842 [33.2]	91 [3.58]	10/20/30/40	G 2"	17.6	13.7	17.0	13.0	17.2	13.2
KVG900	920 [36.2]	947 [37.3]	942 [37.1]	91 [3.58]	10/20/30/40	G 2"	19.6	15.0	19.0	14.3	19.2	14.6
KVG1000	1020 [40.2]	1047 [41.2]	1042 [41.0]	91 [3.58]	10/20/30/40	G 2"	21.6	16.3	20.9	15.7	21.2	15.9
KVG1100	1120 [44.1]	1147 [45.2]	1142 [45.0]	91 [3.58]	10/20/30/40	G 2"	23.6	17.6	22.9	17.0	23.1	17.2
KVG1200	1220 [48.0]	1247 [49.1]	1242 [48.9]	91 [3.58]	10/20/30/40	G 2"	25.6	18.7	24.9	18.1	25.1	18.3
KVG1300	1320 [52.0]	1347 [53.0]	1342 [52.8]	91 [3.58]	10/20/30/40	G 2"	27.3	19.8	26.7	19.0	26.9	19.2
KVG1400	1420 [55.9]	1447 [57.0]	1442 [56.8]	91 [3.58]	10/20/30/40	G 2"	29.1	21.2	27.8	19.8	28.4	20.1
KVG1600	1620 [63.8]	1647 [64.8]	1642 [64.7]	91 [3.58]	10/20/30/40	G 2"	33.1	23.6	31.7	22.3	32.2	22.5
KVG1800	1820 [71.7]	1847 [72.7]	1842 [72.5]	91 [3.58]	10/20/30/40	G 2"	37.0	26.0	35.7	24.7	35.7	24.9
KVG2000	2020 [79.5]	2047 [80.6]	2042 [80.4]	91 [3.58]	10/20/30/40	G 2"	41.0	28.7	39.7	27.3	39.5	27.8

ATTENTION: B = 120 mm [4.72"]

ATTENTION: with double ejector, "C" dimension is 5 mm [0.2"] longer.
ATTENTION: for type N206, dimensions A and C are 10 mm [0.4"] shorter.

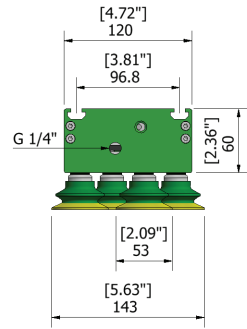
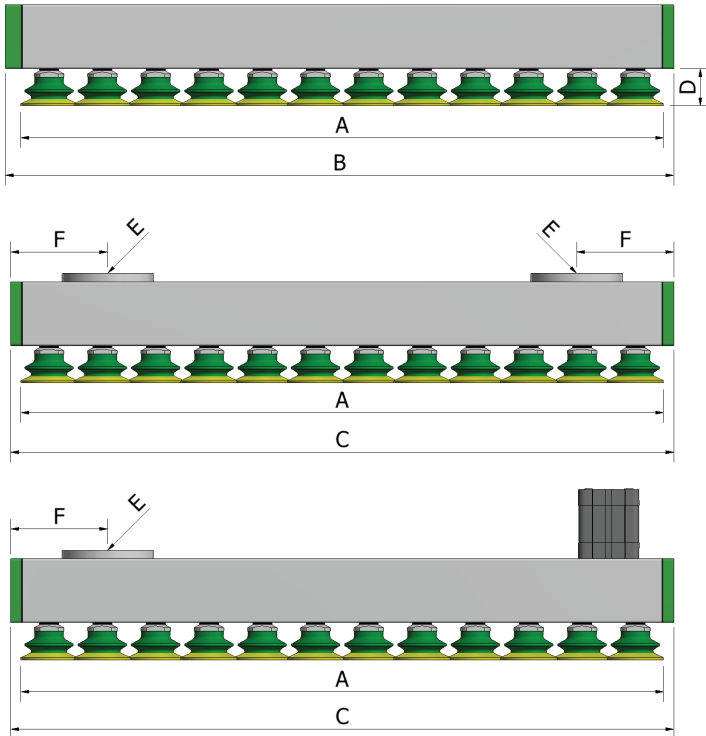
DIMENSIONS FOR KVG120 WITH BX35P & B35XP SUCTION CUPS



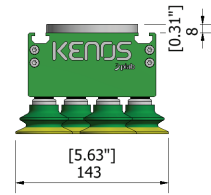
Length (mm)	A (mm [inch])	B* (mm [inch])	C (mm [inch])	D** (mm [inch])	E (inch)	F	Number of Pads	Weight (lb)		
								COAX* ejector	Blower	Pump
KVG 200	212 [8.34]	227 [8.94]	222 [8.74]	26.4 [1.04]	1-1/4"	2.40"	16	5.89	5.42	5.67
KVG 300	312 [12.3]	327 [12.9]	322 [12.7]	26.4 [1.04]	1-1/4"	2.40"	24	7.94	7.45	7.72
KVG 400	412 [16.2]	427 [16.8]	422 [16.6]	26.4 [1.04]	1-1/4"	2.40"	32	10.1	9.48	9.74
KVG 500	512 [20.2]	527 [20.8]	522 [20.6]	26.4 [1.04]	1-1/4"	2.40"	40	12.1	11.5	11.8
KVG 600	612 [24.1]	627 [24.7]	622 [24.5]	26.4 [1.04]	1-1/4"	2.40"	48	14.1	13.5	13.9
KVG 700	712 [28.1]	727 [28.6]	722 [28.4]	26.4 [1.04]	2"	3.58"	56	16.2	15.6	15.9
KVG 800	812 [32.0]	827 [32.6]	822 [32.4]	26.4 [1.04]	2"	3.58"	64	19.4	17.7	17.9
KVG 900	912 [35.9]	927 [36.5]	922 [36.3]	26.4 [1.04]	2"	3.58"	72	21.5	19.7	19.9
KVG 1000	1012 [39.8]	1027 [40.4]	1022 [40.2]	26.4 [1.04]	2"	3.58"	80	23.5	21.8	22.0
KVG 1100	1112 [43.8]	1127 [44.4]	1122 [44.2]	26.4 [1.04]	2"	3.58"	88	25.6	23.8	24.0
KVG 1200	1212 [47.7]	1227 [48.3]	1222 [48.1]	26.4 [1.04]	2"	3.58"	96	27.7	25.9	26.0
KVG 1300	1312 [51.7]	1327 [52.2]	1322 [52.1]	26.4 [1.04]	2"	3.58"	104	29.7	27.9	28.1
KVG 1400	1412 [55.6]	1427 [56.2]	1422 [56.0]	26.4 [1.04]	2"	3.58"	112	31.8	29.9	30.1
KVG 1600	1612 [63.5]	1627 [64.1]	1622 [63.9]	26.4 [1.04]	2"	3.58"	128	35.8	34.0	34.2
KVG 1800	1812 [71.3]	1827 [71.9]	1822 [71.7]	26.4 [1.04]	2"	3.58"	144	39.9	38.1	38.3
KVG 2000	2012 [79.2]	2027 [79.8]	2022 [79.6]	26.4 [1.04]	2"	3.58"	160	44.0	42.2	42.4

*with double ejector. "B" dimension is 5 mm [0.2"] longer. **with BX35P PU30/60 and BX35P PU60 cups. "D" is 34.6 mm [1.36"].

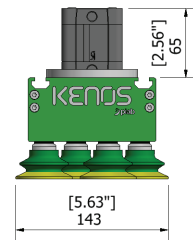
DIMENSIONS FOR KVG120 WITH BX52P & B52XP SUCTION CUPS



With internal COAX® ejector



For blower

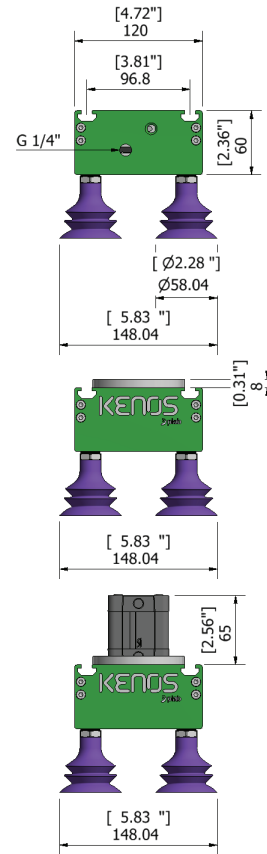
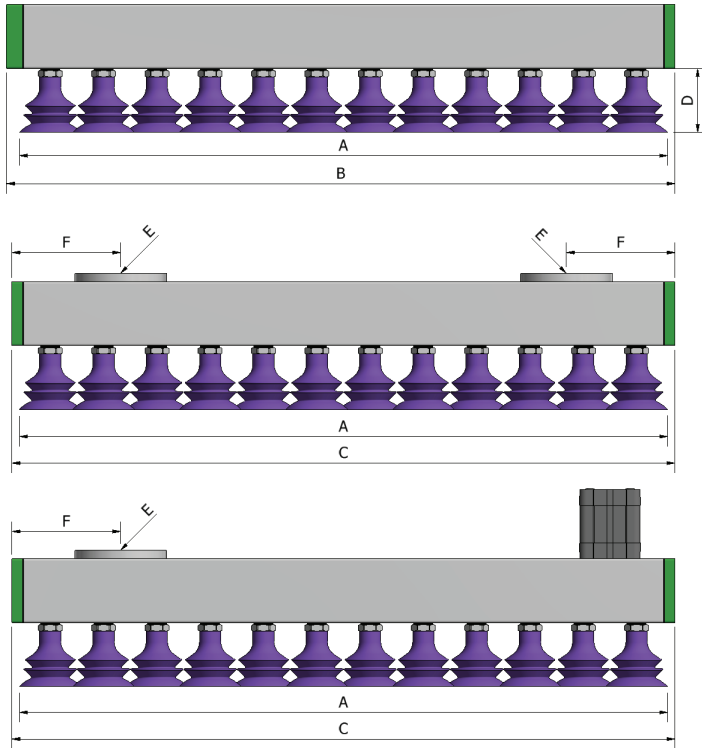


For pump

Length (mm)	A (mm [inch])	B* (mm [inch])	C (mm [inch])	D** (mm [inch])	E (inch)	F	Number of Pads	Weight (lb)		
								COAX* ejector	Blower	Pump
KVG 200	203 [7.99]	227 [8.94]	222 [8.74]	34.8 [1.37]	1-1/4"	2.40"	8	5.97	5.45	5.69
KVG 300	303 [11.9]	327 [12.9]	322 [12.7]	34.8 [1.37]	1-1/4"	2.40"	12	8.09	7.52	7.76
KVG 400	403 [15.9]	427 [16.8]	422 [16.6]	34.8 [1.37]	1-1/4"	2.40"	16	10.2	9.52	9.81
KVG 500	503 [19.8]	527 [20.8]	522 [20.6]	34.8 [1.37]	1-1/4"	2.40"	20	12.3	11.6	11.9
KVG 600	603 [23.7]	627 [24.7]	622 [24.5]	34.8 [1.37]	1-1/4"	2.40"	24	14.4	13.6	13.9
KVG 700	703 [27.8]	727 [28.6]	722 [28.4]	34.8 [1.37]	2"	3.58"	28	16.4	15.7	16.0
KVG 800	803 [31.6]	827 [32.6]	822 [32.4]	34.8 [1.37]	2"	3.58"	32	18.5	17.8	18.1
KVG 900	903 [35.6]	927 [36.5]	922 [36.3]	34.8 [1.37]	2"	3.58"	36	20.7	19.9	20.1
KVG 1000	1003 [39.5]	1027 [40.4]	1022 [40.2]	34.8 [1.37]	2"	3.58"	40	22.7	22.0	22.2
KVG 1100	1103 [43.4]	1127 [44.4]	1122 [44.2]	34.8 [1.37]	2"	3.58"	44	24.8	24.1	24.2
KVG 1200	1203 [47.4]	1227 [48.3]	1222 [48.1]	34.8 [1.37]	2"	3.58"	48	27.9	26.3	26.3
KVG 1300	1303 [51.3]	1327 [52.2]	1322 [52.1]	34.8 [1.37]	2"	3.58"	52	30.0	28.3	28.4
KVG 1400	1403 [55.2]	1427 [56.2]	1422 [56.0]	34.8 [1.37]	2"	3.58"	56	32.1	30.4	30.4
KVG 1600	1603 [63.1]	1627 [64.1]	1622 [63.9]	34.8 [1.37]	2"	3.58"	64	36.1	34.5	34.5
KVG 1800	1803 [71.0]	1827 [71.9]	1822 [71.7]	34.8 [1.37]	2"	3.58"	72	40.4	38.1	38.6
KVG 2000	2003 [78.9]	2027 [79.8]	2022 [79.6]	34.8 [1.37]	2"	3.58"	80	44.6	42.2	42.7

*with double ejector. "B" dimension is 5mm [0.2"] longer. **with BX52P PU30 / 60 and BX52P PU60 cups. "D" is 47mm [1.84"].

DIMENSIONS FOR KVG120 WITH VL60BX SUCTION CUPS



With internal
COAX® ejector

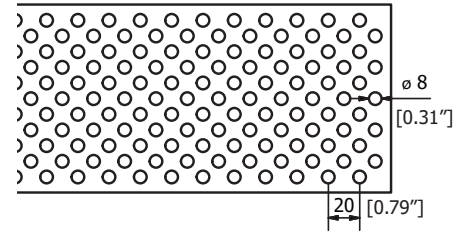
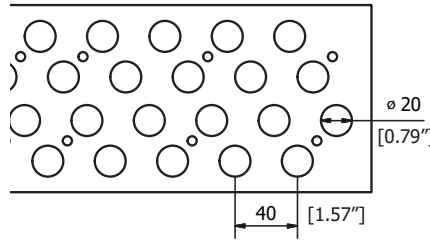
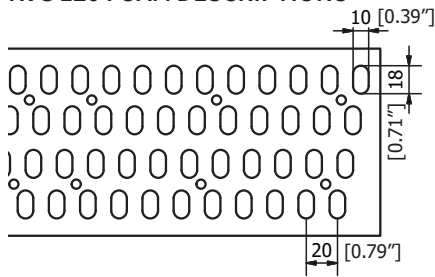
For blower

For pump

Length (inch)	A (mm [inch])	B* (mm [inch])	C (mm [inch])	D** (mm [inch])	E (inch)	F	Number of Pads	Weight (lb)		
								COAX ejector	Blower	Pump
KVG 200	208 [8.19]	227 [8.94]	222 [8.74]	60 [2.36]	1-1/4"	2.40"	4	5.75	5.25	5.47
KVG 300	308 [12.1]	327 [12.9]	322 [12.7]	60 [2.36]	1-1/4"	2.40"	6	7.76	7.19	7.43
KVG 400	408 [16.1]	427 [16.8]	422 [16.6]	60 [2.36]	1-1/4"	2.40"	8	9.72	9.13	9.39
KVG 500	508 [20.0]	527 [20.8]	522 [20.6]	60 [2.36]	1-1/4"	2.40"	10	11.7	11.1	11.3
KVG 600	608 [23.9]	627 [24.7]	622 [24.5]	60 [2.36]	1-1/4"	2.40"	12	13.7	13.1	13.3
KVG 700	708 [27.9]	727 [28.6]	722 [28.4]	60 [2.36]	2"	3.58"	14	15.7	15.0	15.2
KVG 800	808 [31.8]	827 [32.6]	822 [32.4]	60 [2.36]	2"	3.58"	16	17.7	16.9	17.2
KVG 900	908 [35.8]	927 [36.5]	922 [36.3]	60 [2.36]	2"	3.58"	18	19.6	18.8	19.1
KVG 1000	1008 [39.7]	1027 [40.4]	1022 [40.2]	60 [2.36]	2"	3.58"	20	21.6	20.8	21.1
KVG 1100	1108 [43.6]	1127 [44.4]	1122 [44.2]	60 [2.36]	2"	3.58"	22	23.6	22.7	23.0
KVG 1200	1208 [47.6]	1227 [48.3]	1222 [48.1]	60 [2.36]	2"	3.58"	24	25.5	24.6	25.0
KVG 1300	1308 [51.5]	1327 [52.2]	1322 [52.1]	60 [2.36]	2"	3.58"	26	27.5	26.6	26.9
KVG 1400	1408 [55.4]	1427 [56.2]	1422 [56.0]	60 [2.36]	2"	3.58"	28	29.5	28.5	28.9
KVG 1600	1608 [63.3]	1627 [64.1]	1622 [63.9]	60 [2.36]	2"	3.58"	32	34.5	32.3	32.7
KVG 1800	1808 [71.2]	1827 [71.9]	1822 [71.7]	60 [2.36]	2"	3.58"	36	38.4	36.2	36.6
KVG 2000	2008 [79.1]	2027 [79.8]	2022 [79.6]	60 [2.36]	2"	3.58"	40	42.4	40.1	40.5

*with double ejector. "B" dimension is 5 mm [0.2"] longer.

KVG 120 FOAM DESCRIPTIONS



Fine (step 1)

Medium (step 2)

Extra fine (step 6)

Suitable for narrow parts bigger than 35 mm [1.37"] wide like strips of wood, metal, plastic, round shape like tubes especially with a thicker foam.

Suitable for general purpose with wide bigger than 60 mm [2.36"], typical application for panels.

Suitable for small pieces larger than 25 mm [0.1"] like very narrow strips of wood.

KVG 120 – CUSTOMER CODE



Code	Model
KVG	KVG

Code	Length
200	200 mm (7.87")
300	300 mm (11.8")
400	400 mm (15.8")
500	500 mm (19.7")
600	600 mm (23.6")
700	700 mm (27.6")
800	800 mm (31.5")
900	900 mm (35.4")
1000	1000 mm (39.4")
1100	1100 mm (43.3")
1200	1200 mm (47.3")
1300	1300 mm (51.2")
1400	1400 mm (55.2")
1600	1600 mm (63.0")
1800	1800 mm (70.9")
2000	2000 mm (78.7")

Code	Width
120	120 mm (4.72")

Code	Type
N	Foam

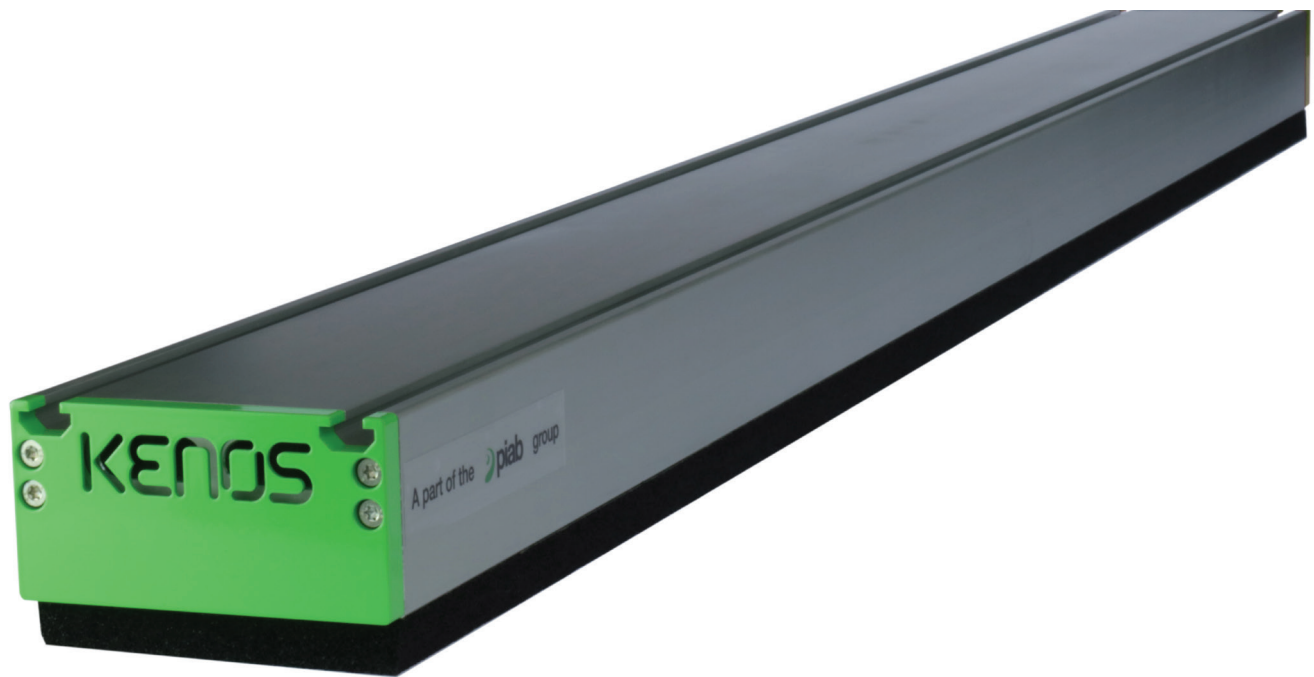
Code	Thickness
4	Foam 40 mm (1.57")
3	Foam 30 mm (1.18")
2	Foam 20 mm (0.79")
1	Foam 10 mm (0.39")

Code	Filter
0	Without filter
1	With filter

Code	Step
1	Fine step
2	Medium step
6	Extra fine step

Code	Thickness
B35XP	Cups 1.5 bellows BX35P PU30/60
B35XP60	Cups 1.5 bellows BX35P PU60
B52XP	Cups 1.5 bellows BX52P PU 30/60
B52XP60	Cups 1.5 bellows BX52P PU 60
BX35P	Cups 2.5 bellows BX35P PU 30/60
BX35P60	Cups 2.5 bellows BX35P PU 60
BX52P	Cups 2.5 bellows BX52P PU 30/60
BX52P60	Cups 2.5 bellows BX52P PU 60
VL60BX	Cups 2.5 bellows VL60BX

Code	Technology
CVL	Check Valves Low flow
CVM	Check Valves Medium flow
CVH	Check Valves High flow
FR5	Flow Reduction 0.5 mm (0.020")
FR6	Flow Reduction 0.6 mm (0.024")
FR8	Flow Reduction 0.8 mm (0.03")

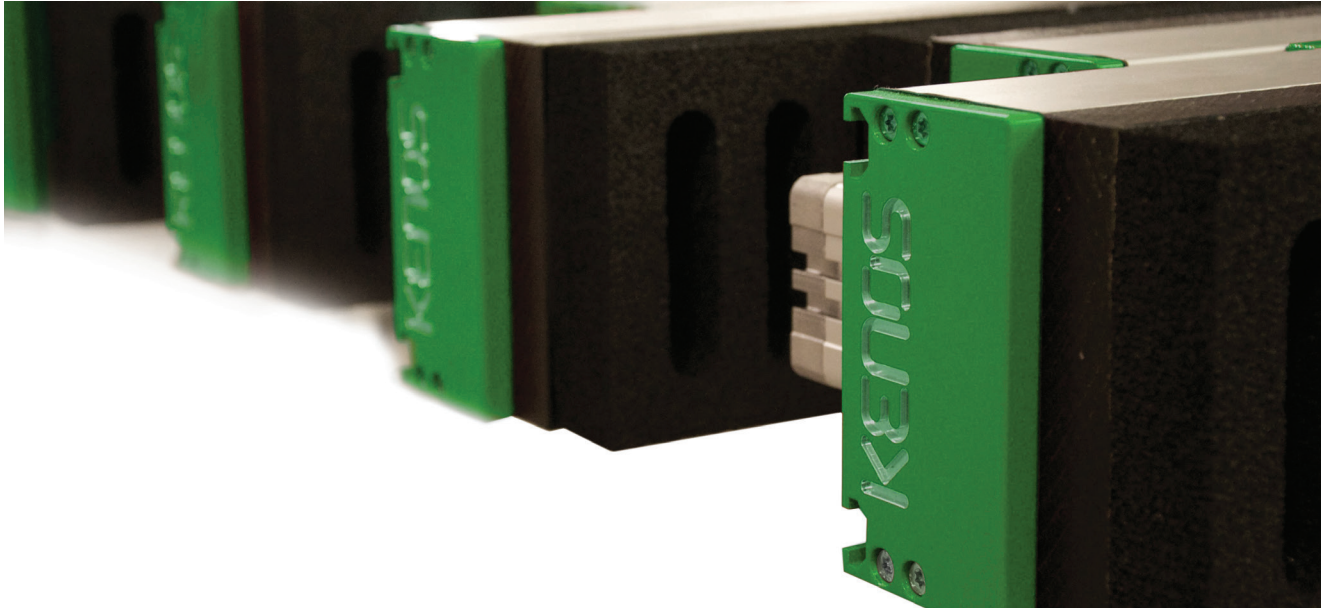


Code	Vacuum generator
S1	1 cartridge Si32-3
S2	2 cartridge Si32-3
S3	3 cartridge Si32-3
S4	4 cartridge Si32-3
S6	6 cartridge Si32-3
S8	8 cartridge Si32-3
PU	Pump connection (with cylinder)
BL1	Blower connection G1-1/4"
BL2	Blower connection G2"

Code	Control valves
V1	EV vacuum N.C.
V2	EV vacuum N.C. / EV blow-off N.C.
V3	EV vacuum N.O.
V4	EV vacuum N.O. / EV blow-off N.C.
A1	PV vacuum N.C.
A2	PV vacuum N.C. / PV blow-off N.C.
A3	PV vacuum N.O.
A4	PV vacuum N.O. / PV blow-off N.C.
TV	Vertical supply cover
X	Without control

Code	Monitoring
M1	Vacuum and pressure gauge
M2	Digital vacuum switch
M3	Vacuum Gauge
X	Without monitoring

KHVG series



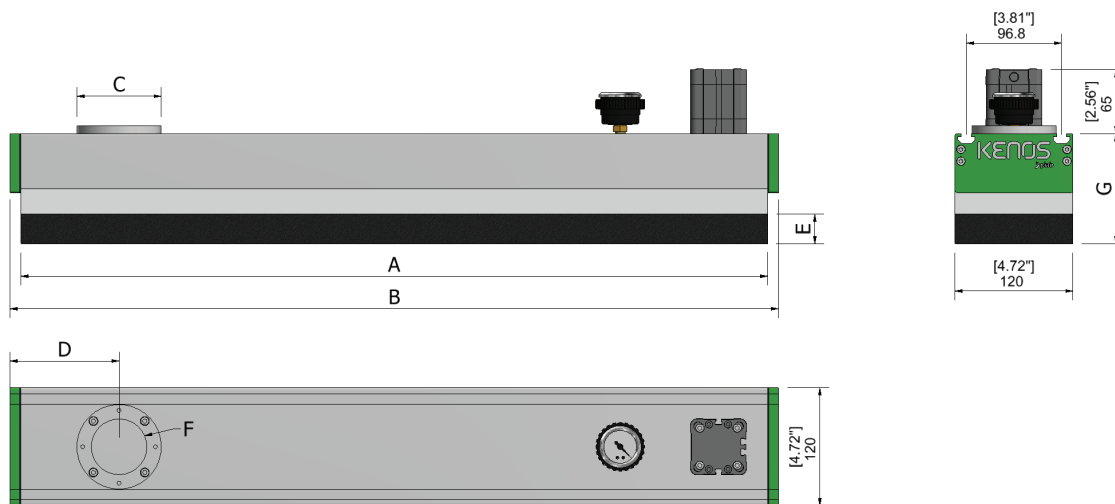
KHVG series products, Kenos® Heavy Vacuum Gripper, are designed for heavy duty applications in the wood and stone industry. KHVG gripping systems are suitable for handling, normally complete layer, of sawn timber, heavy planking, raw wood and materials for building, such as bricks. They are also useful to handle very long and arcuate workpieces. KHVG systems are prepared for external vacuum generation with side channel blower. Provided with shutter check valve technology with low sensibility to the dust.

LIFTING FORCES

Theoretic gripping force on rigid and stable surface with completely covered module, without safety factor (lbf).

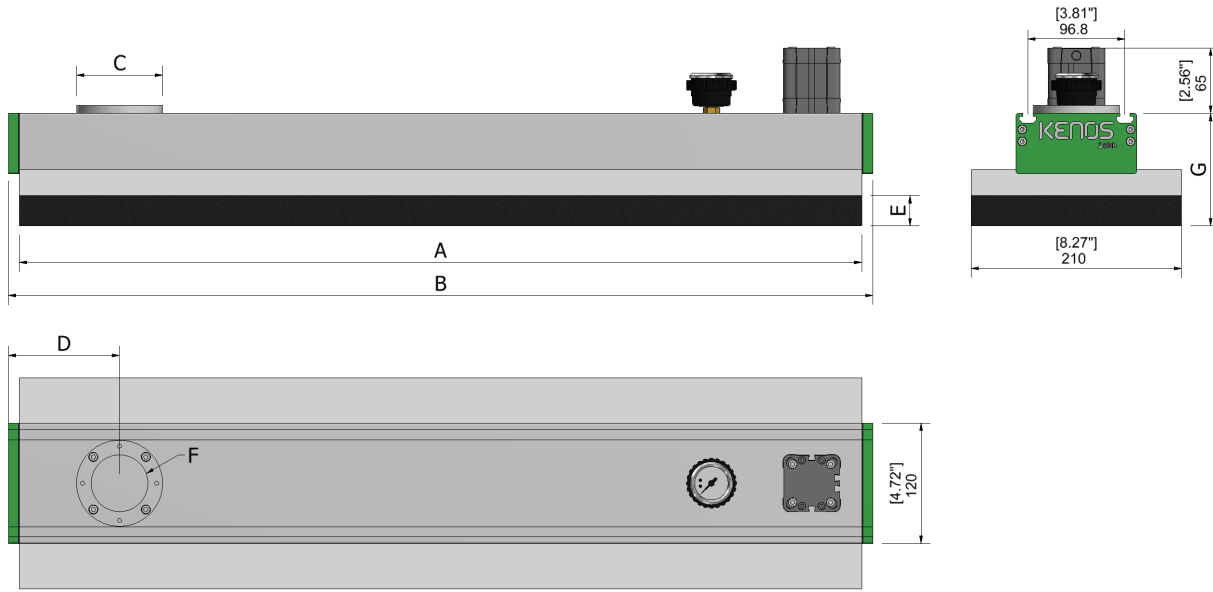
Type	Force, lbf, at a vacuum of				
	30%	40%	50%	60%	70%
KHVG.600.120 with step 35	163	218	272	327	381
KHVG.800.120 with step 35	221	295	368	442	515
KHVG.1000.120 with step 35	279	371	464	557	650
KHVG.1200.120 with step 35	336	448	560	672	785
KHVG.1400.120 with step 35	384	512	640	768	897
KHVG.600.120 with step 40	144	192	240	288	336
KHVG.800.120 with step 40	192	256	320	384	448
KHVG.1000.120 with step 40	240	320	400	480	560
KHVG.1200.120 with step 40	288	384	480	576	672
KHVG.1400.120 with step 40	336	448	560	672	785
KHVG.600.210 with step 35	327	435	544	653	762

Type	Force, lbf, at a vacuum of				
	30%	40%	50%	60%	70%
KHVG.800.210 with step 35	423	564	705	845	986
KHVG.1000.210 with step 35	538	717	897	1076	1255
KHVG.1200.210 with step 35	653	871	1089	1306	1524
KHVG.1400.210 with step 35	749	999	1249	1499	1748
KHVG.600.210 with step 40	288	384	480	576	672
KHVG.800.210 with step 40	384	512	640	768	897
KHVG.1000.210 with step 40	480	640	801	961	1121
KHVG.1200.210 with step 40	576	768	961	1153	1345
KHVG.1400.210 with step 40	672	897	1121	1345	1569



	Type	A (mm [inch])	B (mm [inch])	C (mm [inch])	D (mm [inch])	E (mm)	F (inch)	G (mm [inch])	Weight (lb)
type 120	KHVG600-120	640 [25,2]	662 [26,1]	70/86 [2,76/3,39]	111 [4,37]	20/30/40	G1-1/4"/2"	112 [4.41]	19.2
	KHVG800-120	840 [33,1]	862 [33,9]	70/86 [2,76/3,39]	111 [4,37]	20/30/40	G1-1/4"/2"	112 [4.41]	24.7
	KHVG1000-120	1040 [40,9]	1062 [41,8]	86 [3,39]	111 [4,37]	20/30/40	G2"	112 [4.41]	30.2
	KHVG1200-120	1240 [48,8]	1262 [49,7]	86 [3,39]	111 [4,37]	20/30/40	G2"	112 [4.41]	35.7
	KHVG1400-120	1440 [56,7]	1462 [57,6]	86 [3,39]	111 [4,37]	20/30/40	G2"	112 [4.41]	38.4

*The total dimension (G) is related with 30 mm [1.18"] foam.



	Type	A (mm [inch])	B (mm [inch])	C (mm [inch])	D (mm [inch])	E (mm)	F (inch)	G (mm [inch])	Weight (lb)
type 210	KHVG600-210	640 [25.2]	662 [26.1]	70/86 [2.76/3.39]	111 [4.37]	20/30/40	G1-1/4"/2"	112 [4.41]	19.2
	KHVG800-210	840 [33.1]	862 [33.9]	70/86 [2.76/3.39]	111 [4.37]	20/30/40	G1-1/4"/2"	112 [4.41]	24.7
	KHVG1000-210	1040 [40.9]	1062 [41.8]	86 [3.39]	111 [4.37]	20/30/40	G2"	112 [4.41]	30.2
	KHVG1200-210	1240 [48.8]	1262 [49.7]	86 [3.39]	111 [4.37]	20/30/40	G2"	112 [4.41]	35.7
	KHVG1400-210	1440 [56.7]	1462 [57.6]	86 [3.39]	111 [4.37]	20/30/40	G2"	112 [4.41]	38.4

*The total dimension (G) is related with 30 mm [1.18"] foam.

KHVG – CUSTOMER CODE

KHVG . 600 . 120 . N335 . BL1

Code	Model
KHVG	KHVG

Code	Length
600	600 mm (23.6")
800	800 mm (31.5")
1000	1000 mm (39.4")
1200	1200 mm (47.2")
1400	1400 mm (55.2")

Code	Width
120	120 mm (4.72")
210	120 mm (8.27")

Code	type
N	Foam

Code	Thickness
4	Foam 40 mm (1.57")
3	Foam 30 mm (1.18")
2	Foam 20 mm (0.79")

Code	Step
35	Step 35 mm (1.38")
40	Step 40 mm (1.57")

Code	Vacuum generator
BL1	Blower connection G1-1/4"
BL2	Blower connection G2"

KSG series



KSG series products. Kenos® Sack Gripper, are suitable to handle sacks with different shapes, weights and materials. The specific knowhow in this segment, has driven us to develop systems dedicated to all the different applications of this industry. The integrated and modular vacuum generation makes the KSG flexible and reliable. The version for external vacuum generator is available. We have version for palletization or de-palletization.

LIFTING FORCES

We can calculate the force generated by the gripping area for the vacuum value, but considering that the gripper handles bags and not rigid surfaces or pieces, these values could lead to a wrong selection of the product.

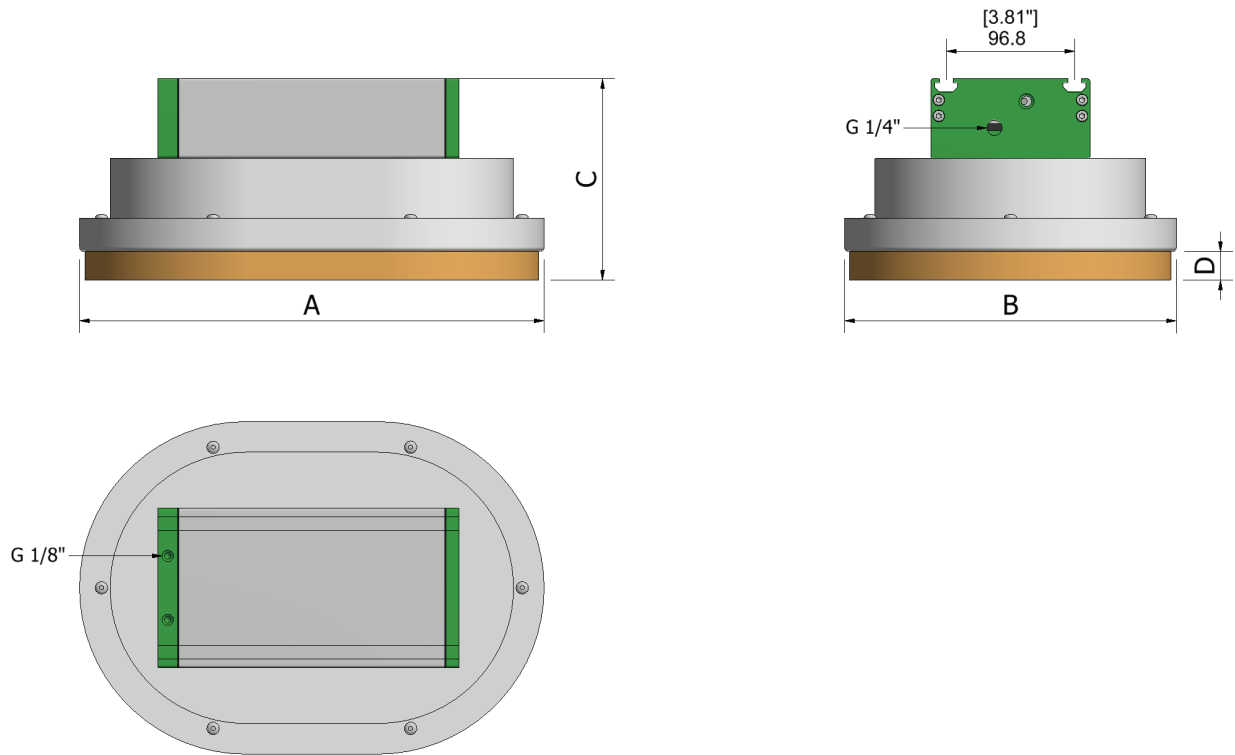
These types of grippers are designed to handle from 55 to 110 lbs bags and the selection is made through the size of the bag and not on the basis of the gripping force.

VACUUM FLOW

Air consumption/vacuum flow data related to number of COAX® ejectors.

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 x2	87	7.42	25.4	14.8	11	7.2	3.8	2.6	2.2	1.4	—	—	22.1
MIDI Si32-3 x3	87	11.13	38.1	22.2	16.5	10.8	5.7	3.9	3.3	2.1	—	—	22.2
MIDI Si32-3 x4	87	14.84	50.8	29.6	22	14.4	7.6	5.2	4.4	2.8	—	—	22.3

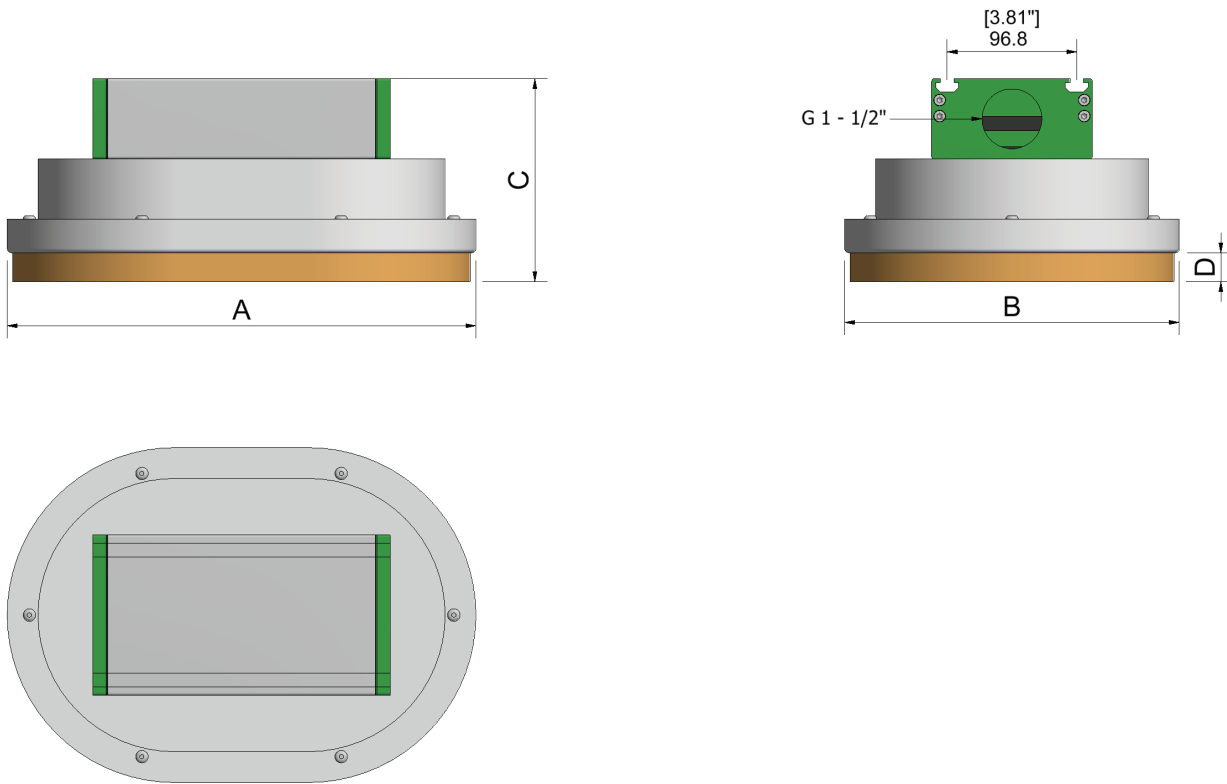
DIMENSIONS FOR KSG WITH EJECTOR



Type	A (inch)	B (inch)	C (inch)	D* (inch)	Weight (lb)
KSG-E-260-180	10.24"	7.09"	5.96"	0.85"	7.94
KSG-E-310-210	12.20"	8.27"	5.96"	0.85"	9.04
KSG-E-350-250	13.78"	9.84"	5.96"	0.85"	10.4
KSG-E-400-250	15.75"	9.84"	5.96"	0.85"	11.2

*The value "D" is based on sealing ring G1. For metallic ring (G3) the value "D" is 5 mm [0.2"].

DIMENSIONS FOR KSG WITH BLOWER



Type	A (inch)	B (inch)	C (inch)	D* (inch)	Weight (lb)
KSG-E-260-180	10.24"	7.09"	5.96"	0.85"	6.83
KSG-E-310-210	12.20"	8.27"	5.96"	0.85"	7.94
KSG-E-350-250	13.78"	9.84"	5.96"	0.85"	9.26
KSG-E-400-250	15.75"	9.84"	5.96"	0.85"	10.1

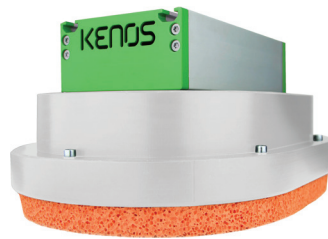
*The value "D" is based on sealing ring G1. For metallic ring (G3) the value "D" is 5 mm [0.2"].

SEALING RINGS



Metal ring (G3)

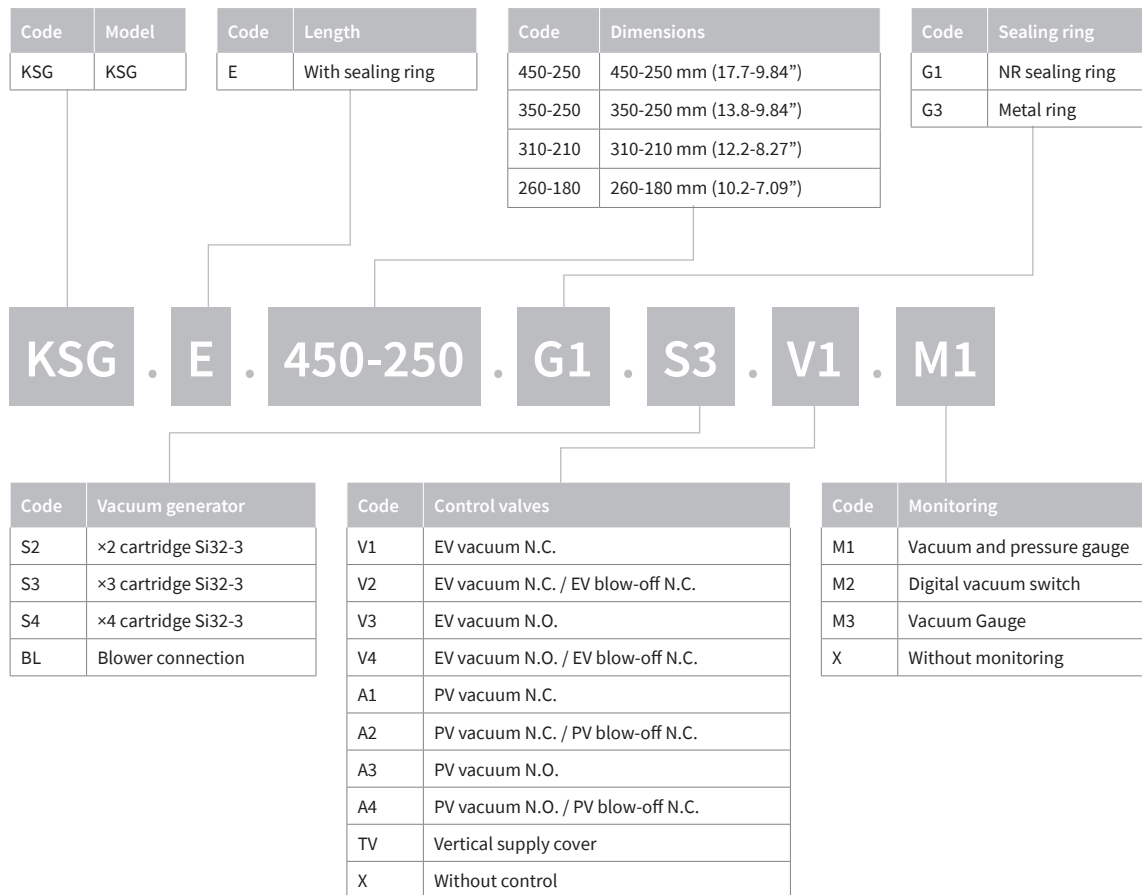
A big advantage of the metal sealing ring is wear resistance. The sealing capacity is less compared with G1 type. For this reason, we recommend to combine with a blower.



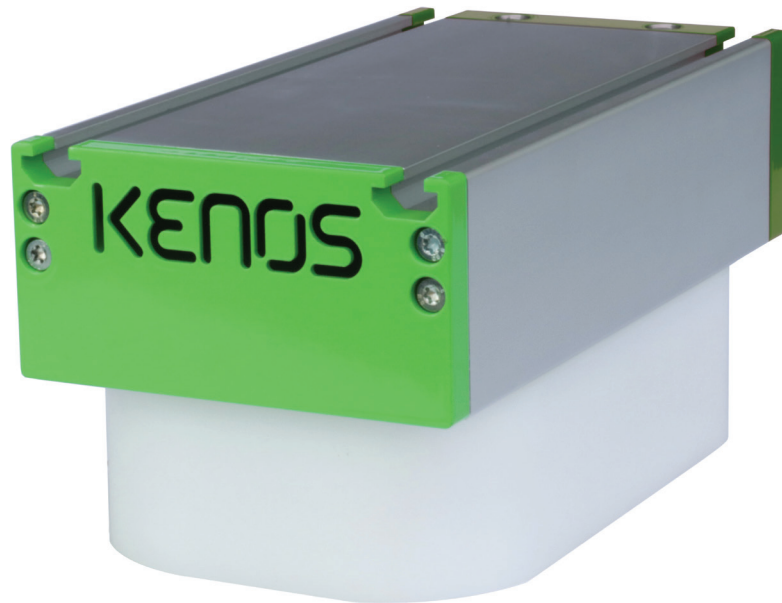
NR Sealing ring (G1)

The NR sealing ring is suitable for all kinds of sacks thanks to its sealing capacity. This type of ring is subject to wear which may be very short in the presence of abrasive bags or intensive cycling.

KSG – CUSTOMER CODE



KBC series



KBC series products, Kenos® Bag Cup, born from the need of handling alimentary and not liquid bags, but are suitable also in the flowpack application. In KBC vacuum gripping systems, the integrated and modular COAX® vacuum cartridge gives the module flexibility. A version for external vacuum generation is available. A side channel blower is used when the application condition suggest it.

LIFTING FORCES

We can calculate the force generated by the gripping area for the vacuum value, but considering that the gripper handles bags and not rigid surfaces or pieces, these values could lead to a wrong selection of the product.

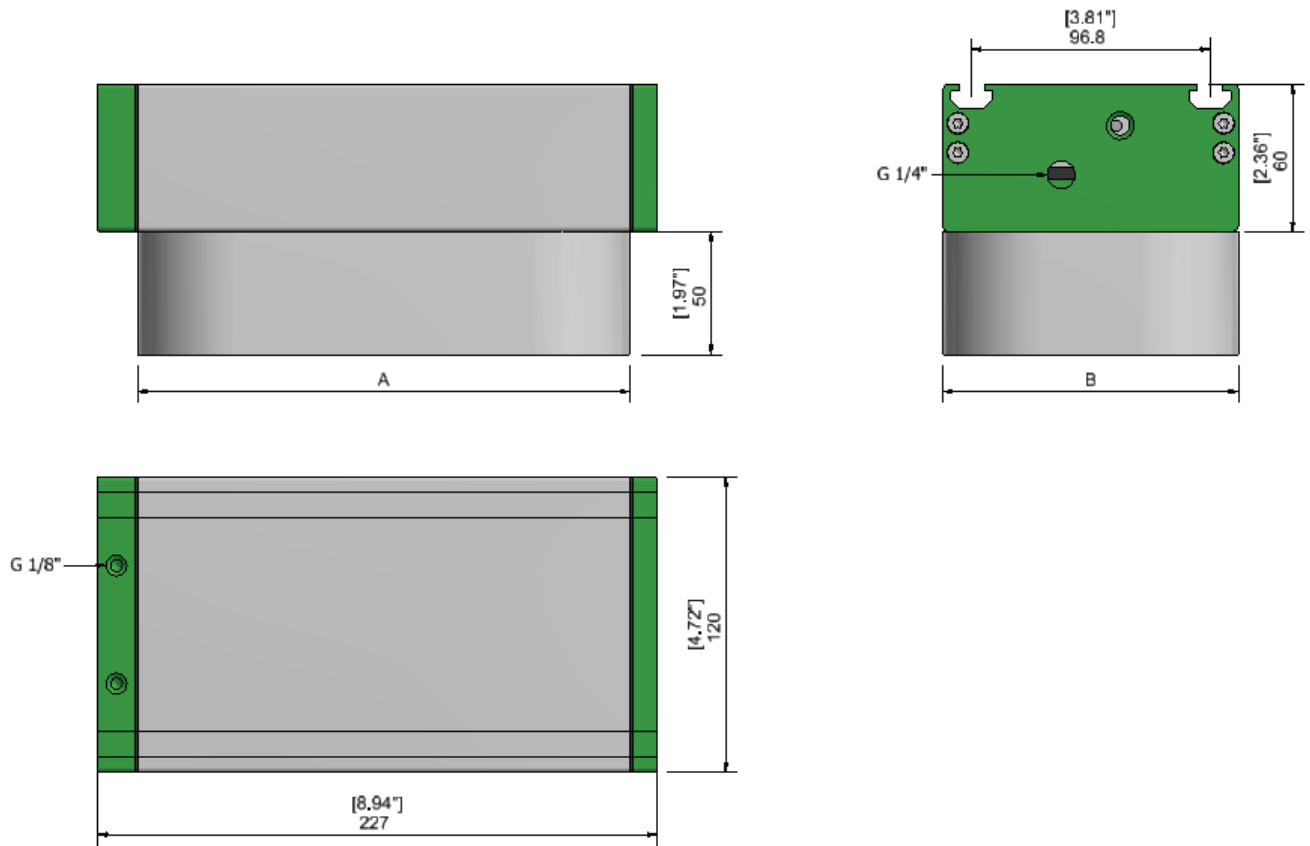
These types of grippers are designed to handle from 55 to 110 lbs bags and the selection is made through the size of the bag and not on the basis of the gripping force – test on the product is mandatory to get the correct configuration.

VACUUM FLOW

Air consumption/vacuum flow data related to number of COAX® ejectors.

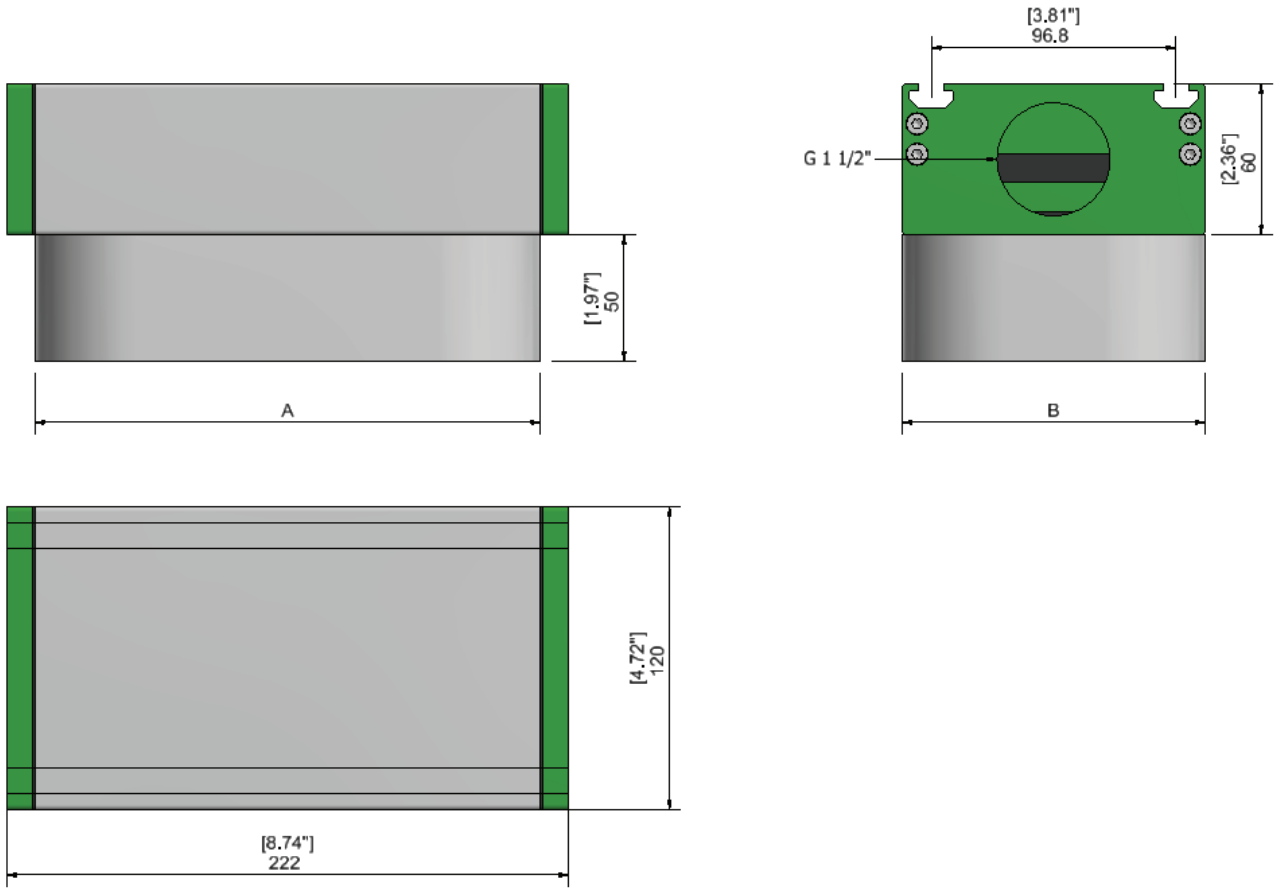
COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3 x2	87	7.42	25.42	14.8	11	7.2	3.8	2.6	2.2	1.4	—	—	22.1
MIDI Si32-3 x3	87	11.13	38.13	22.2	16.5	10.8	5.7	3.9	3.3	2.1	—	—	22.2
MIDI Si32-3 x4	87	14.84	50.84	29.6	22	14.4	7.6	5.2	4.4	2.8	—	—	22.3

DIMENSIONS FOR KBC WITH EJECTOR



Type	A (inch)	B (inch)	Weight (lb)
KBC200-BC150-80	5.91"	3.15"	5.07
KBC200-BC200-100	7.87"	3.94"	5.51
KBC200-BC200-120	7.87"	4.72"	5.73
KBC200-BC200-180	7.87"	17.09"	6.39
KBC200-BC250-120	9.84"	4.72"	5.95
KBC200-BC300-120	11.81"	4.72"	6.39
KBC200-BC300-180	11.81"	17.09"	7.50
KBC200-BC350-150	13.78"	5.91"	7.50
KBC200-BC350-180	13.78"	17.09"	8.38
KBC200-BC350-250	13.78"	9.84"	9.04

DIMENSIONS FOR KBC WITH BLOWER



Type	A (inch)	B (inch)	Weight (lb)
KBC200-BC150-80	5.91"	3.15"	3.97
KBC200-BC200-100	7.87"	3.94"	4.41
KBC200-BC200-120	7.87"	4.72"	4.63
KBC200-BC200-180	7.87"	17.09"	5.29
KBC200-BC250-120	9.84"	4.72"	4.85
KBC200-BC300-120	11.81"	4.72"	5.29
KBC200-BC300-180	11.81"	17.09"	6.39
KBC200-BC350-150	13.78"	5.91"	6.39
KBC200-BC350-180	13.78"	17.09"	7.28
KBC200-BC350-250	13.78"	9.84"	7.94

KBC – CUSTOMER CODE

Code	Model
KBC	KBC

Code	Profile length
200	200 mm (7.87")

Code	Cup length
150	150 mm (5.91")
200	200 mm (7.87")
250	250 mm (9.84")
300	300 mm (11.8")
350	350 mm (13.8")

Code	Cup width
80	80 mm (3.15")
100	100 mm (3.94")
120	120 mm (4.72")
150	180 mm (5.91")
180	150 mm (7.09")
250	250 mm (9.84")

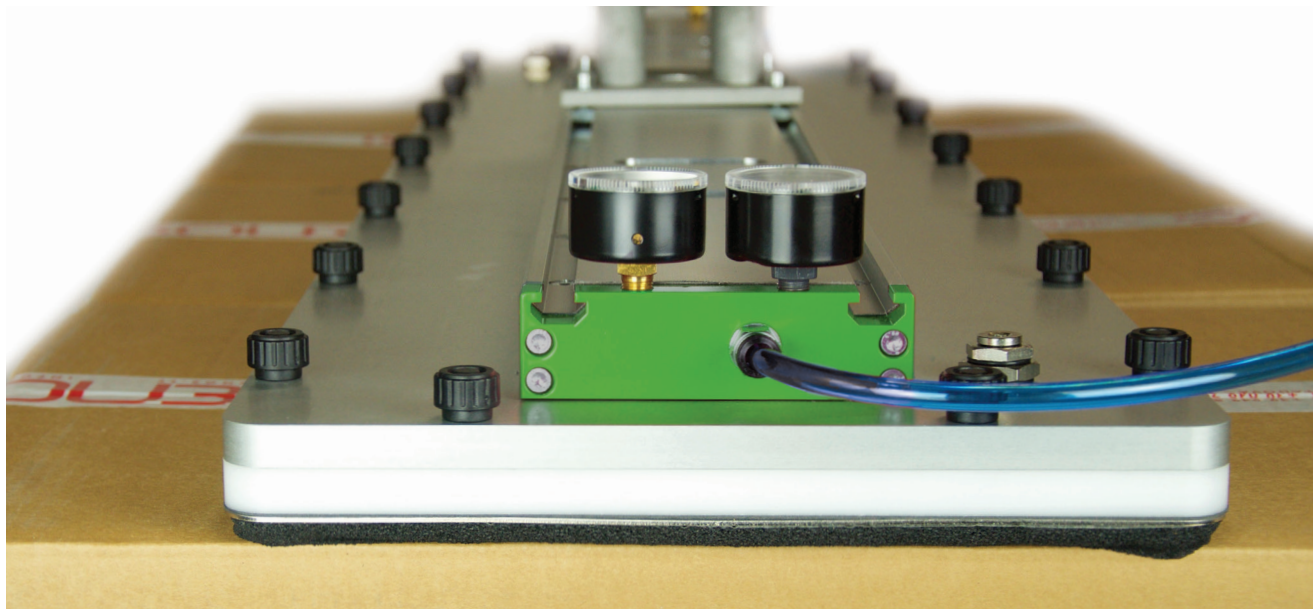
KBC . 200 . 150 . 80 . S2 . V1 . M1

Code	Vacuum generator
S2	2 cartridge Si32-3
S3	3 cartridge Si32-3
S4	4 cartridge Si32-3
BL	Blower connection

Code	Control valves
V1	EV vacuum N.C.
V2	EV vacuum N.C. / EV blow-off N.C.
V3	EV vacuum N.O.
V4	EV vacuum N.O. / EV blow-off N.C.
A1	PV vacuum N.C.
A2	PV vacuum N.C. / PV blow-off N.C.
A3	PV vacuum N.O.
A4	PV vacuum N.O. / PV blow-off N.C.
TV	Vertical supply cover
X	Without control

Code	Monitoring
M1	Vacuum and pressure gauge
M2	Digital vacuum switch
M3	Vacuum gauge
X	Without monitoring

KVGL-S series



KVGL-S product series, Kenos® Vacuum Gripper Layer - Standard, looks at the wide world of packaging, end line automation and other applications. Our adjustable check valve technology and the H40mm technical foam allows for superior gripping on different kind of boxes, wrap around packaging and primary ones. The large availability of standard dimensioning and the modularity, make this series highly effective.

LIFTING FORCES

Theoretic gripping force on rigid and stable surface with completely covered module, without safety factor (lbf).

	Type	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
width 240	KVGL400-240	178	237	297	356	415
	KVGL600-240	282	375	469	563	657
	KVGL800-240	385	514	642	771	899
	KVGL1000-240	474	632	791	904	1107
	KVGL1200-240	593	791	988	1186	1383
width 300	KVGL400-300	229	305	381	457	534
	KVGL600-300	362	483	604	724	845
	KVGL800-300	495	661	826	991	1156
	KVGL1000-300	610	813	1017	1220	1423
	KVGL1200-300	762	1017	1271	1525	1779

	Type	Force, lbf, at a vacuum of				
		30%	40%	50%	60%	70%
width 400	KVGL400-400	305	407	508	610	712
	KVGL600-400	483	644	805	966	1127
	KVGL800-400	661	881	1101	1321	1542
	KVGL1000-400	813	1084	1355	1627	1897
	KVGL1200-400	1017	1355	1694	2033	2372

VACUUM FLOW

Air consumption/vacuum flow data related to number of COAX® ejectors.

COAX® Cartridge	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)										Max vacuum -inHg
			0	3	6	9	12	15	18	21	24	27	
MIDI Si32-3×3	87	11.13	38.13	22.2	16.5	10.8	5.7	3.9	3.3	2.1	—	—	22.1
MIDI Si32-3×4	87	14.84	50.84	29.6	22	14.4	7.6	5.2	4.4	2.8	—	—	22.1
MIDI Si32-3×6	87	22.26	76.26	44.4	33	21.6	11.4	7.8	6.6	4.2	—	—	22.1/15.3*
MIDI Si32-3×8	87	29.68	101.68	59.2	44	28.8	15.2	10.4	8.8	5.6	—	—	22.1/15.3*

*Without/with 1×flap valve

HOW TO ORDER

Code	Model	Code	Length
KVGL	KVGL-S	400	400 mm (15.8")
		600	600 mm (23.6")
		800	800 mm (31.5")
		1000	1000 mm (39.4")
		1200	1200 mm (47.3")

Code	Width
240	240 mm (9.45")
300	300 mm (11.8")
400	400 mm (15.8")

Code	Type
N	Foam

Code	Thickness
4	Foam 40 mm (1.57")
3	Foam 30 mm (1.18")
2	Foam 20 mm (0.79")
1	Foam 10 mm (0.39")

Code	Filter
0	Without filter

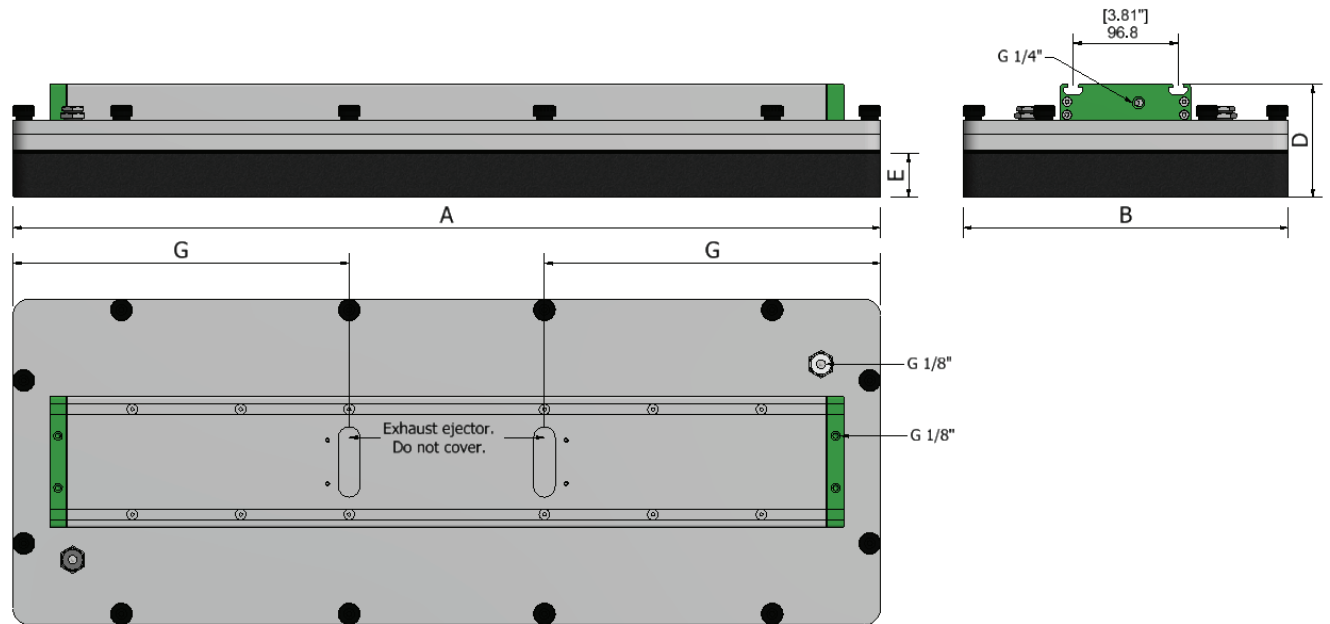
Code	Step
5	Step 30 mm (1.18")

KVGL . 400 . 240 . N405 . CVL . S3

Code	Technology
CVL	Check Valves Low flow
CVM	Check Valves Medium flow
CVH	Check Valves High flow

Code	Vacuum generator
S3	3 cartridge Si32-3
S4	4 cartridge Si32-3
S6	6 cartridge Si32-3
S8	8 cartridge Si32-3
PU	Pump connection (with cylinder)
BL1	Blower connection G1-1/4"
BL2	Blower connection G2"

DIMENSIONS FOR KVGL-S WITH EJECTOR

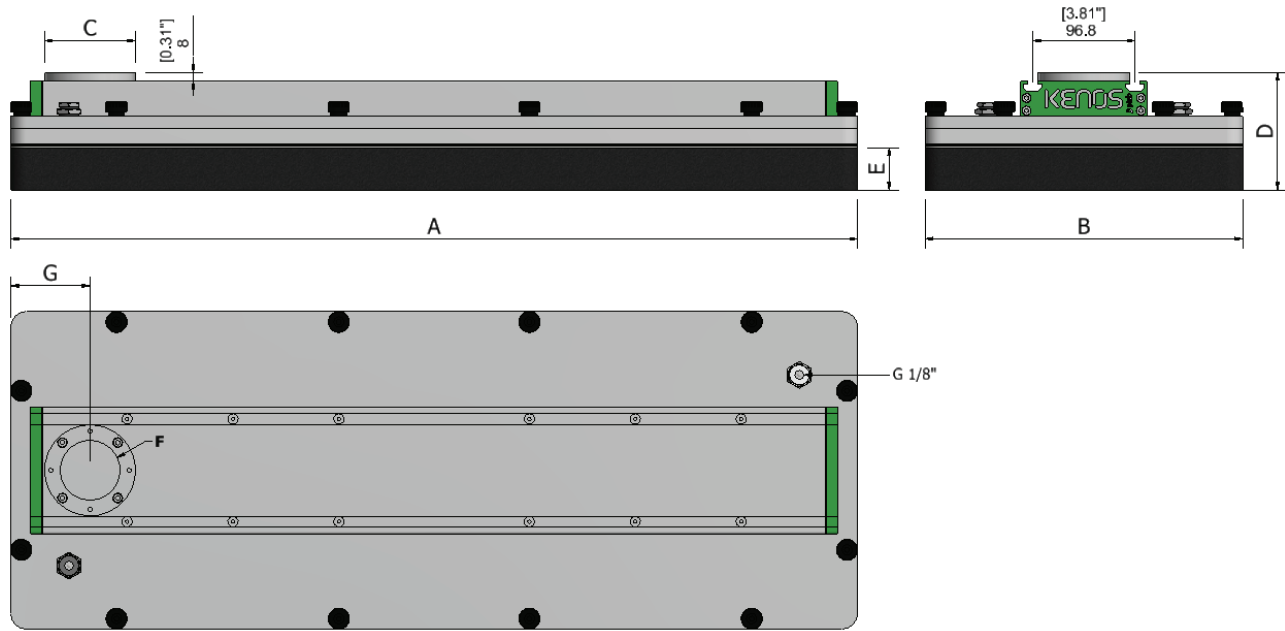


	Type	A (inch)	B (inch)	D* (inch)	E (inch)	G** (inch)	Weight (lb)
type 240	KVGL400-240	15.75"	9.45"	4.09"	10/20/30/40	-	16.3
	KVGL600-240	23.62"	9.45"	4.09"	10/20/30/40	-	24.0
	KVGL800-240	31.50"	9.45"	4.09"	10/20/30/40	12.20"	32.4
	KVGL1000-240	39.37"	9.45"	4.09"	10/20/30/40	12.20"	40.1
	KVGL1200-240	48.03"	9.45"	4.09"	10/20/30/40	12.20"	48.5
type 300	KVGL400-300	15.75"	11.81"	4.09"	10/20/30/40	-	19.2
	KVGL600-300	23.62"	11.81"	4.09"	10/20/30/40	-	28.9
	KVGL800-300	31.50"	11.81"	4.09"	10/20/30/40	12.20"	36.8
	KVGL1000-300	39.37"	11.81"	4.09"	10/20/30/40	12.20"	45.6
	KVGL1200-300	48.03"	11.81"	4.09"	10/20/30/40	12.20"	55.1
type 400	KVGL400-400	15.75"	15.75"	4.09"	10/20/30/40	-	23.6
	KVGL600-400	23.62"	15.75"	4.09"	10/20/30/40	-	35.7
	KVGL800-400	31.50"	15.75"	4.09"	10/20/30/40	12.20"	47.2
	KVGL1000-400	39.37"	15.75"	4.09"	10/20/30/40	12.20"	58.6
	KVGL1200-400	48.03"	15.75"	4.09"	10/20/30/40	12.20"	71.4

*The total dimension (D) is calculated with 40 mm [1.58"] foam.

**On KVGL400 and KVGL600 grippers there are no exhaust holes because the exhaust takes place axially.

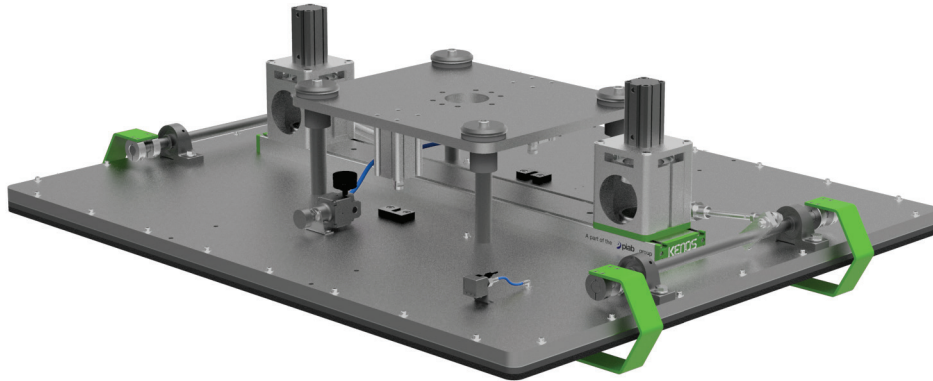
DIMENSIONS FOR KVGL-S WITH BLOWER



	Type	A (inch)	B (inch)	C (inch)	D* (inch)	E (inch)	F (inch)	G (inch)	Weight (lb)
type 240	KVGL400-240	15.75"	9.45"	2.76"/3.39"	4.41"	10/20/30/40	G1-1/4" /2"	2.56"/2.95"	15.9
	KVGL600-240	23.62"	9.45"	2.76"/3.39"	4.41"	10/20/30/40	G1-1/4" /2"	2.56"/2.95"	22.5
	KVGL800-240	31.50"	9.45"	2.76"/3.39"	4.41"	10/20/30/40	G1-1/4" /2"	2.56"/2.95"	31.1
	KVGL1000-240	39.37"	9.45"	3.39"	4.41"	10/20/30/40	G2"	2.95"	39.0
	KVGL1200-240	48.03"	9.45"	3.39"	4.41"	10/20/30/40	G2"	2.95"	47.4
type 300	KVGL400-300	15.75"	11.81"	2.76"/3.39"	4.41"	10/20/30/40	G1-1/4" /2"	2.56"/2.95"	18.5
	KVGL600-300	23.62"	11.81"	2.76"/3.39"	4.41"	10/20/30/40	G1-1/4" /2"	2.56"/2.95"	27.6
	KVGL800-300	31.50"	11.81"	2.76"/3.39"	4.41"	10/20/30/40	G2"	2.56"/2.95"	35.7
	KVGL1000-300	39.37"	11.81"	3.39"	4.41"	10/20/30/40	G2"	2.95"	44.5
	KVGL1200-300	48.03"	11.81"	3.39"	4.41"	10/20/30/40	G2"	2.95"	54.2
type 400	KVGL400-400	15.75"	15.75"	3.39"	4.41"	10/20/30/40	G2"	2.95"	23.1
	KVGL600-400	23.62"	15.75"	3.39"	4.41"	10/20/30/40	G2"	2.95"	34.4
	KVGL800-400	31.50"	15.75"	3.39"	4.41"	10/20/30/40	G2"	2.95"	46.1
	KVGL1000-400	39.37"	15.75"	3.39"	4.41"	10/20/30/40	G2"	2.95"	57.5
	KVGL1200-400	48.03"	15.75"	3.39"	4.41"	10/20/30/40	G2"	2.95"	70.1

*The total dimension (D) is calculated with 40 mm [1.58"] foam.

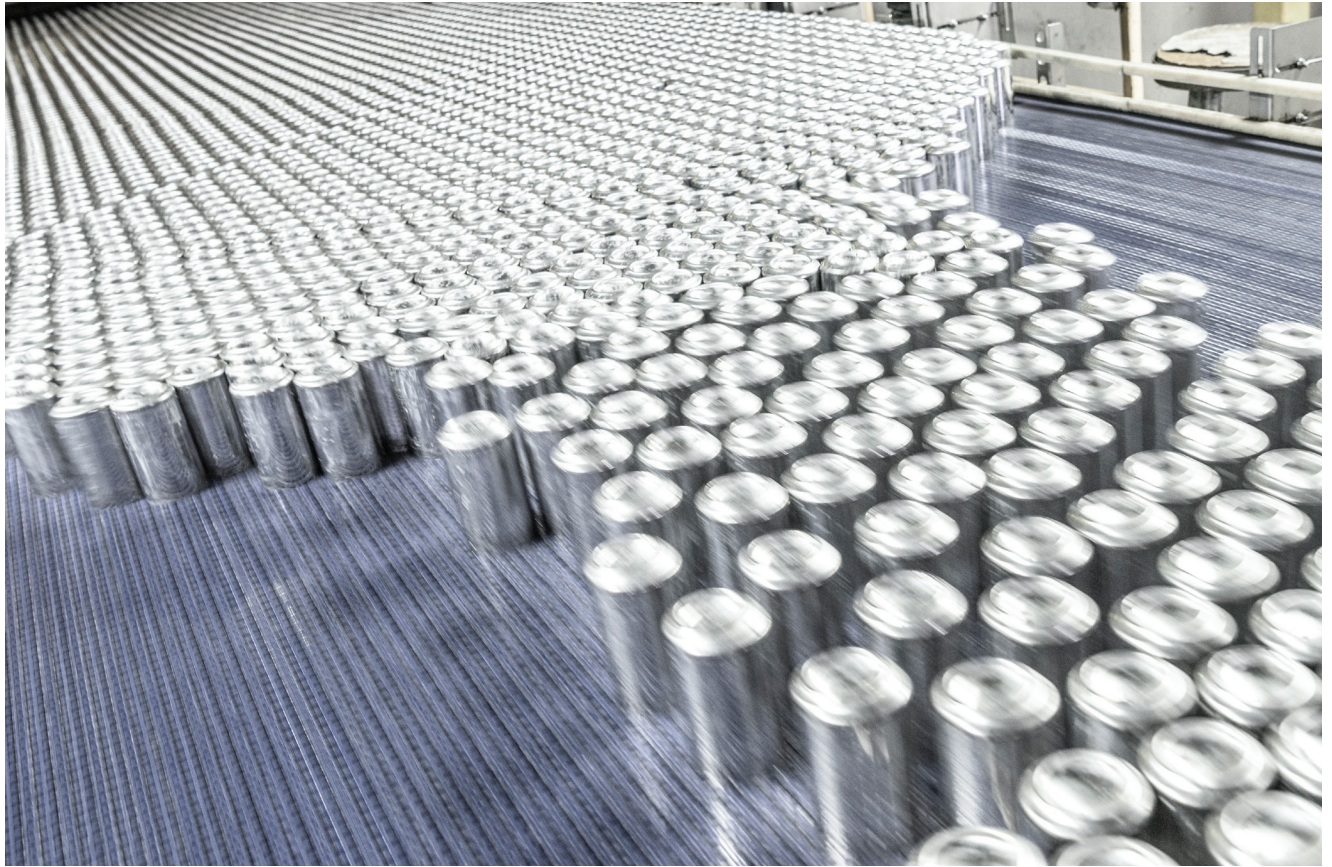
KVGL-CJ series



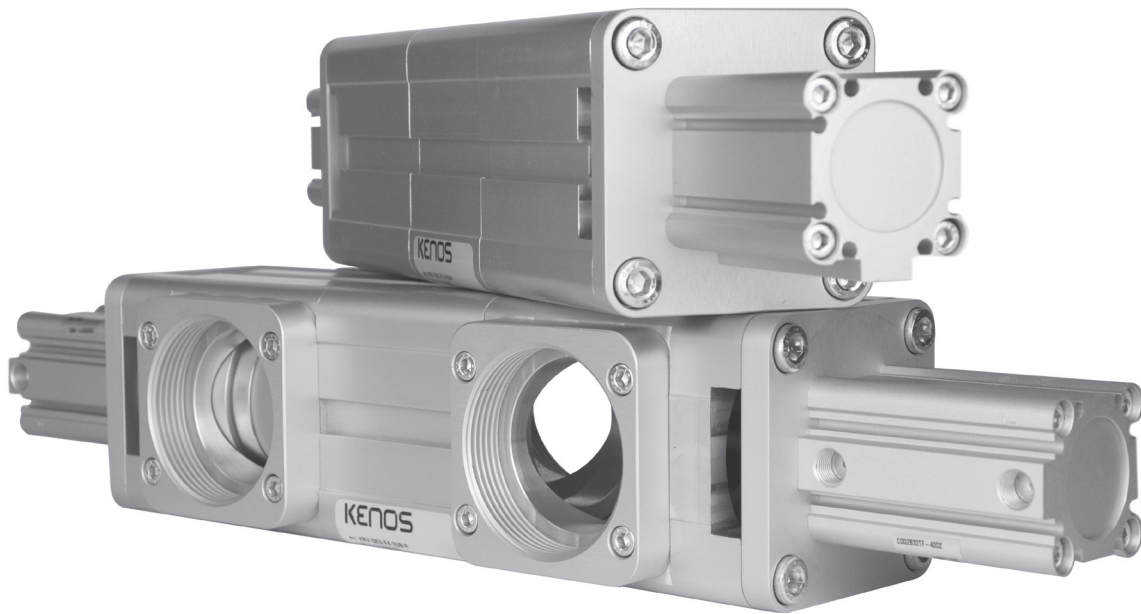
KVGL-CJ series, Kenos® Vacuum Layer - Cans Jars, born for the need to handle the complete layer of cans, jars that can be open or closed on the gripping area. Typical industrial segments involved are palletizing or de-palletizing in packaging, beverage, food.

Advantages:

- Handling of the complete or partial layer
- Handling of pallet
- Handling of cardboard interlayer
- Flow reduction technologies
- External vacuum generation with side channel blower
- Connection flange integrated

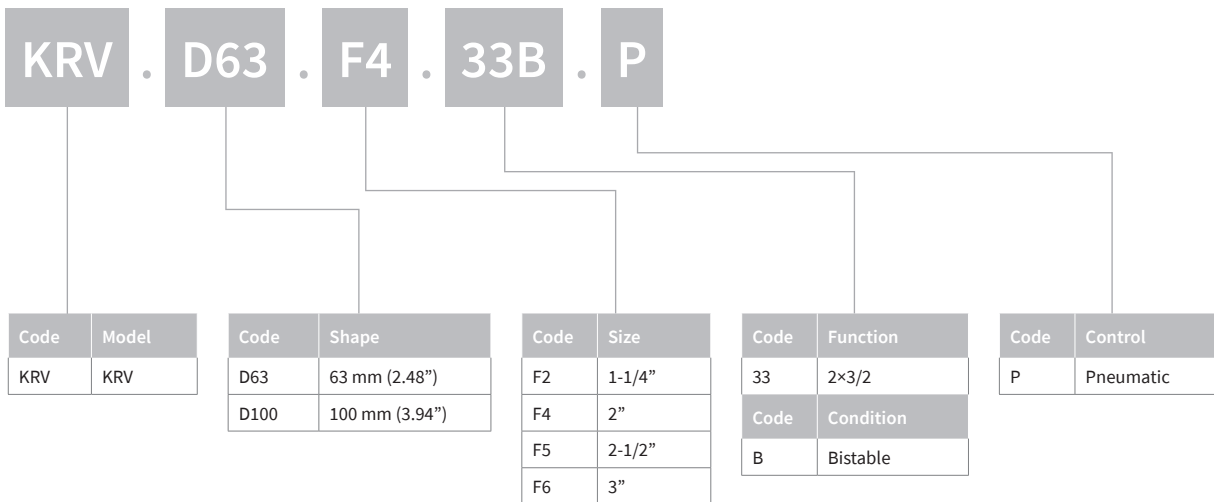


KRV series

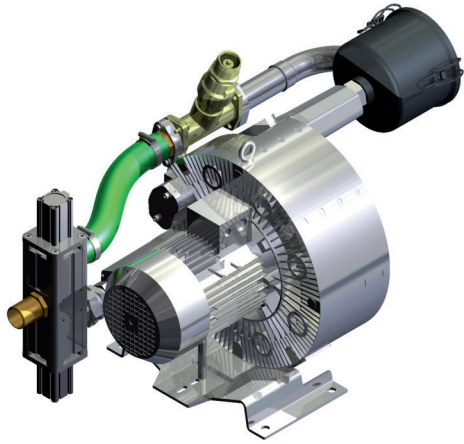


KRV series, Kenos® Reverse Valve, are valves for vacuum with pneumatic control 2x3/2 that are used in vacuum generation machines using side channel blower. They have the function of suction or blow flow depending on the operation. They are made of anodized aluminium with POM C seals.

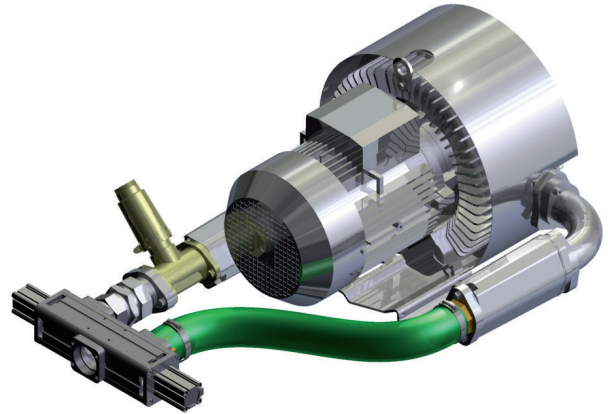
KRV – CUSTOMER CODE



Connection example.

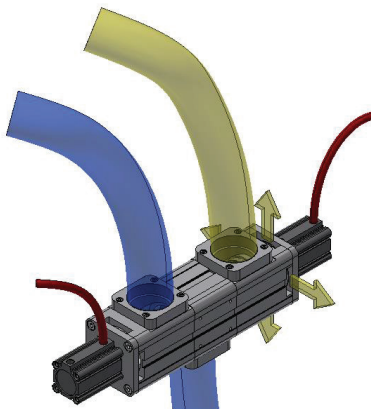


KRV-F2 with blower

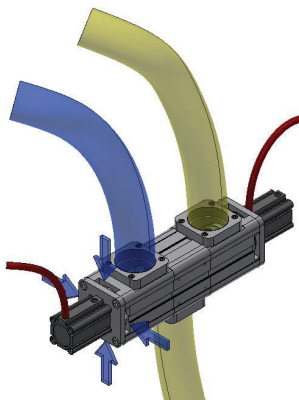


KRV-F4 with blower

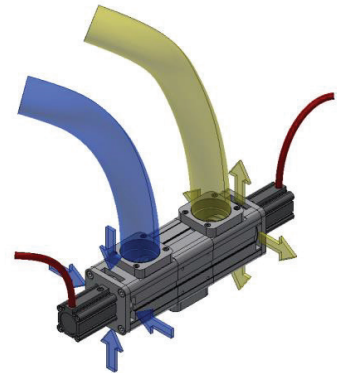
Functional diagram.



Suction position




Blowing position



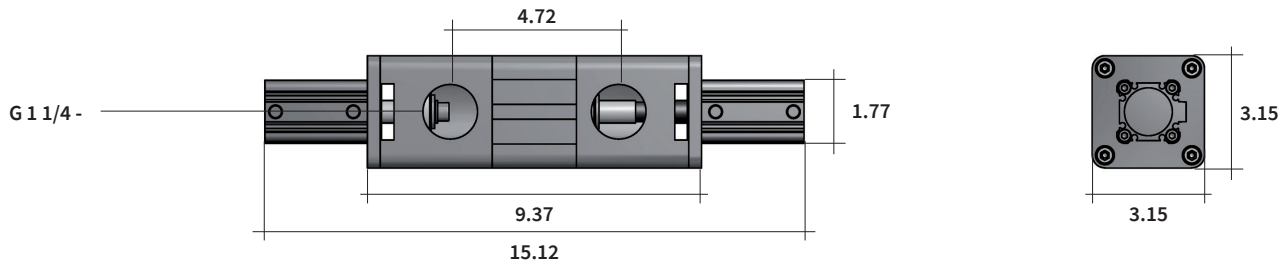
Neutral position

 Suction hose

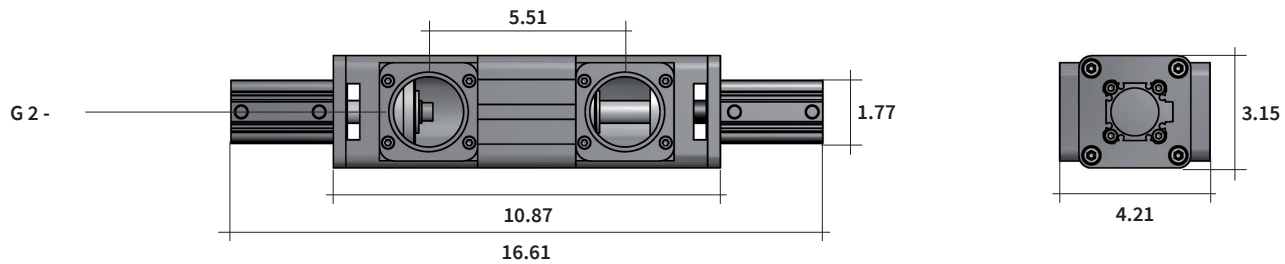
 Blowing hose

 Pressurization cylinder

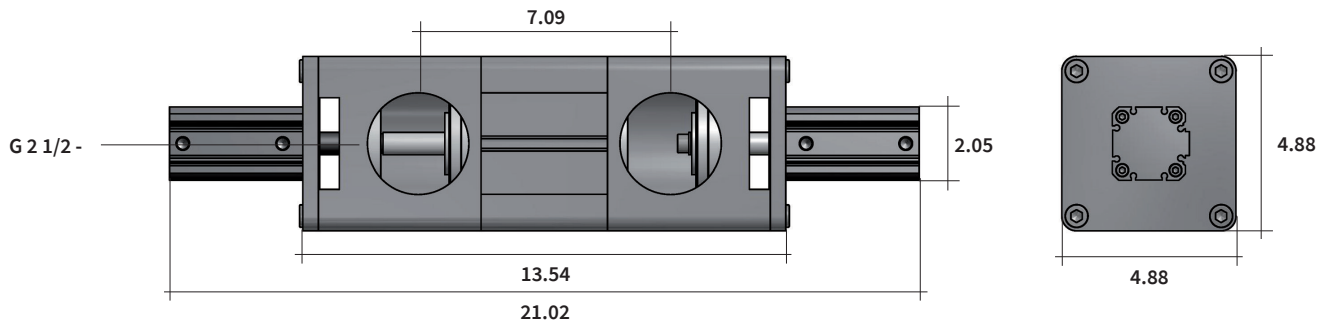
KRV-D63-F2-33B-P



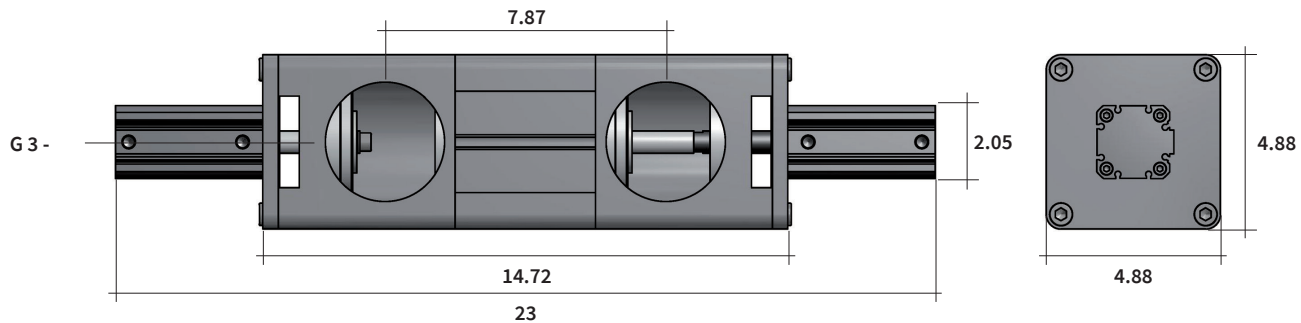
KRV-D63-F4-33B-P



KRV-D100-F5-33B-P



KRV-D100-F6-33B-P



unit of measure: inch

Kenos[®] accessories



KENOS[®] ACCESSORIES

Hoses	418
Hose connector	418
Hose clamps	420
Mounting kit	420
Sealing flange	421
T-slot nut kit	421
EV connection cable	421

Kenos® accessories

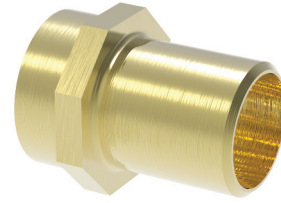


Hoses

- The hose range is made by PUR and specific for robot applications.
- Hoses are available in different sizes.

TECHNICAL DATA

Description	Inner diameter (in)	Outer diameter (in)	Weight (lb)	Vacuum max. (-inHg)	Radius curvature min. (in)	Temperature (°F)
Hose PUR 25 – 10m	0.98	1.3	0.64	27.8	1.85	-40/+194
Hose PUR 32 – 10m	1.26	1.61	0.86	27.8	2.36	-40/+194
Hose PUR 40 – 10m	1.57	1.93	1.08	24.5	2.83	-40/+194
Hose PUR 50 – 10m	1.97	2.4	1.57	23.6	3.43	-40/+194
Hose PUR 60 – 10m	2.36	2.76	1.85	22.1	4.02	-40/+194
Hose PUR 75 – 10m	2.95	3.43	2.34	17.7	4.96	-40/+194
Hose PUR 90 – 10m	3.54	3.98	2.76	15.4	5.87	-40/+194
Hose connector KP-1-25	-	-	0.07	-	-	-
Hose connector KP-1-32	-	-	0.42	-	-	-
Hose connector KP-1-1/4-32	-	-	0.42	-	-	-
Hose connector KP-1-1/2-40	-	-	0.64	-	-	-
Hose connector KP-1-1/4-40	-	-	0.53	-	-	-
Hose connector KP-2-50	-	-	0.82	-	-	-
Hose connector KP-2-60	-	-	1.30	-	-	-
Hose connector KP-2-1/2-75	-	-	1.52	-	-	-
Hose connector KP-3-75	-	-	2.69	-	-	-



Hose connector

- Hose connectors are made by brass and available in different sizes.
- Together with the PUR hoses can connect pump and blowers to grippers.

ORDERING INFORMATION

Description	Part no.
Hose PUR 25 – 10m	02.10.866
Hose PUR 32 – 10m	02.10.867
Hose PUR 40 – 10m	02.10.660
Hose PUR 50 – 10m	02.10.661
Hose PUR 60 – 10m	02.10.868
Hose PUR 75 – 10m	02.10.869
Hose PUR 90 – 10m	02.10.870
Hose connector KP-1-25	02.10.356
Hose connector KP-1-32	02.08.951
Hose connector KP-1-1/4-32	02.08.949
Hose connector KP-1-1/2-40	02.08.948
Hose connector KP-1-1/4-40	02.08.950
Hose connector KP-2-50	02.08.953
Hose connector KP-2-60	02.08.954
Hose connector KP-2-1/2-75	02.08.952
Hose connector KP-3-75	02.08.955



Hose clamps

- Used to fixate hose to hose connector.



Mounting kit

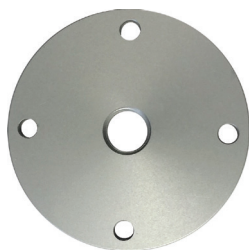
- Allows grippers fix to the machine using the slots present on the body of the gripper.
- Level compensators can be connected through the three threaded holes in the flange.
- Flange made of AL.

TECHNICAL DATA

Description	Clamp range (in)	Width (in)
Hose clamp D= 27-40	1.06-1.57	0.51
Hose clamp D= 45-60	1.77-2.36	0.51
Hose clamp D= 55-70	2.17-2.76	0.51
Hose clamp D= 70-90	2.76-3.54	0.51
Mounting kit KIT-FL-FX-KVG120-60	-	-

ORDERING INFORMATION

Description	Part no.
Hose clamp D= 27-40	02.08.956
Hose clamp D= 45-60	02.08.957
Hose clamp D= 55-70	02.08.958
Hose clamp D= 70-90	02.08.959
Mounting kit KIT-FL-FX-KVG120-60	02.09.503



Sealing flange

- Integrated seal to close BL vacuum connection in case not in use.
- Flange made of AL.



T-slot nut kit

- The T-slots are used to fix grippers to the machine. You can insert the T-slot in the slots present on the body of the gripper.
- Available with different threaded holes.



EV connection cable

- Cable with standard M8 3 poles connector for solenoid valves supply.
- Cable length 6 ½ feet (2m).

TECHNICAL DATA

Description	Weight (lb)	Thread
Sealing flange CH-FL-CON-2-KVG120-60	3.53	-
T-slot nut kit M4 - 10mm - 4pcs	-	M4
T-slot nut kit M5 - 10mm - 4pcs	-	M5
T-slot nut kit M6 - 10mm - 4pcs	-	M6
T-slot nut kit M8 - 10mm - 4pcs	-	M8
Cable M8 3-pin fem. - L=2m	-	-

ORDERING INFORMATION

Description	Part no.
Sealing flange CH-FL-CON-2-KVG120-60	02.08.348
T-slot nut kit M4 - 10mm - 4pcs	02.09.862
T-slot nut kit M5 - 10mm - 4pcs	02.09.585
T-slot nut kit M6 - 10mm - 4pcs	02.09.586
T-slot nut kit M8 - 10mm - 4pcs	02.09.588
Cable M8 3-pin fem. - L=2m	01.08.141

Warranties

- Piab offers a warranty to distributors, integrators and users of Piab products worldwide as per the following definitions:
- A five-year warranty is valid for vacuum pumps excluding accessories and controls.
- A one-year warranty is valid for other products if the failure has occurred within specified lifetime in terms of duty cycles.

GENERAL WARRANTY PRINCIPLES:

- Piab guarantees against defects in the manufacture and materials by normal use in proper environment, when following the instructions for care, maintenance and control described in the appropriate Piab manual.
- Piab replaces or repairs, free of charge, faulty products provided that these are returned to Piab, and found to be covered by the warranty.
- It is at Piab's discretion whether a faulty product should be sent back to Piab for replacement or if the repair shall be made locally at Piab's expense.
- This warranty does not include wear parts such as suction cups, filter elements, sealings, hoses, etc.
- This warranty does not include subsequent damages caused by defective products.

Product index

- Angle Adaptors, pg. 218
- AQR (Atmospheric Quick-Release Valve), pg. 212, 333
- B10-2, pg. 83
- B10XP, pg. 83
- B110, pg. 83
- B110-2, pg. 83
- B110XP, pg. 83
- B150, pg. 83
- B15-2, pg. 83
- B15MF, pg. 83
- B15XP, pg. 83
- B20, pg. 83
- B20MF, pg. 83
- B20XP, pg. 83
- B25XP, pg. 83
- B30, pg. 83
- B30-2, pg. 83
- B30MF, pg. 83
- B35XP, pg. 83
- B40, pg. 83
- B40MF, pg. 83
- B5, pg. 83
- B50, pg. 83
- B50-2, pg. 83
- B50MF, pg. 83
- B52XP, pg. 83
- B75, pg. 83
- B75-2, pg. 83
- B75P, pg. 83
- B75XP, pg. 83
- B8, pg. 83
- Ball joint fitting, pg. 209
- Ball joints, pg. 209
- B-BL30-2, pg. 123
- B-BL40-2, pg. 123
- B-BL60-2, pg. 123
- BF110P, pg. 83
- BF80P, pg. 83
- BFF110P, pg. 83
- BFF110TP, pg. 83
- BFF30P, pg. 83
- BFF40P, pg. 83
- BFF60P, pg. 83
- BFF80P, pg. 83
- BFF80TP, pg. 83
- BFFT50P, pg. 83
- BFFT70P, pg. 83
- BFFT90P, pg. 83
- BL20-2, pg. 123
- BL30-2, pg. 123
- BL30-3P, pg. 123
- BL30-4, pg. 123
- BL30-5, pg. 123
- BL40-2, pg. 123
- BL40-3P, pg. 123
- BL40-4, pg. 123
- BL40-5, pg. 123
- BL50-2, pg. 123
- BL50-3P, pg. 123
- BL50-4, pg. 123
- BL50-5, pg. 123
- Blow-off Check Valve, pg. 212, 337
- Body for COAX® cartridge, pg. 349
- BX10P, pg. 123
- BX110P, pg. 123
- BX15P, pg. 123
- BX20P, pg. 123
- BX25P, pg. 123
- BX35P, pg. 123
- BX52P, pg. 123
- BX75P, pg. 123
- BXF105P, pg. 123
- BXF60P, pg. 123
- BXF75P, pg. 123
- BXF90P, pg. 123
- Centralized vacuum connection, pg. 358
- Classic H120, pg. 318
- Classic H40, pg. 316
- COAX® in piGRIP®, pg. 276
- Cross connector, pg. 361
- D15-2, pg. 152
- D20-2, pg. 152
- D30-2, pg. 152
- D50, pg. 152
- DCF110P, pg. 159
- DCF65P, pg. 159
- DCF90P, pg. 159
- Ejector 300, pg. 306
- EV connection cable, pg. 421
- F110, pg. 48
- F110P, pg. 48
- F15, pg. 48
- F150, pg. 48
- F15MF, pg. 48
- F20, pg. 48
- F20MF, pg. 48
- F25, pg. 48
- F25MF, pg. 48
- F26 FDA, pg. 48
- F30-2, pg. 48
- F30MF, pg. 48
- F33 FDA, pg. 48
- F40-2, pg. 48
- F40MF, pg. 48

F50-2, pg. 48
 F50MF, pg. 48
 F75, pg. 48
 F75P, pg. 48
 F-BX10, pg. 123
 F-BX15, pg. 123
 F-BX20, pg. 123
 F-BX25, pg. 123
 F-BX35, pg. 123
 FC100P, pg. 73
 FC150P, pg. 73
 FC20P, pg. 73
 FC25P, pg. 73
 FC35P, pg. 73
 FC50P, pg. 73
 FC75P, pg. 73
 FCF100P, pg. 73
 FCF125P, pg. 73
 FCF25P, pg. 73
 FCF35P, pg. 73
 FCF50P, pg. 73
 FCF75P, pg. 73
 F-OB 10x30, pg. 175
 F-OB 20x40, pg. 175
 F-OB 30x60, pg. 175
 Height adjuster HA, pg. 198
 Hose clamps, pg. 420
 Hose connector, pg. 418
 Hoses, pg. 418
 Inline filters, pg. 346
 KBC, pg. 400
 Kenos® level compensator – KSPH, pg. 206
 Kenos® level compensator – KSPH, non rotating, pg. 206
 KHVG, pg. 392
 KRV, pg. 12
 KSG, pg. 396
 KVG 120, pg. 374
 KVG 60, pg. 367
 KVGL-CJ, pg. 410
 KVGL-S, pg. 404
 Lab Vac LVH40, pg. 320
 Level compensator – profile mount, pg. 201, 361
 Level compensator LC, pg. 201
 Level compensator LC30, pg. 201
 Level compensator LC30 EOAT, pg. 204
 Level compensators, pg. 201
 M10L, pg. 298
 M20L, pg. 298
 M40L, pg. 298
 M5L, pg. 298
 MICRO Bi03-2, pg. 223
 MICRO Si02-2, pg. 223
 MICRO Ti05-2, pg. 223
 MICRO Xi2.5-2, pg. 223
 MIDI Pi48-2, pg. 229
 MIDI Pi48-3, pg. 229
 MIDI Si32-2, pg. 229
 MIDI Si32-3, pg. 229
 MIDI Xi40-2, pg. 229
 MIDI Xi40-3, pg. 229
 MINI Di16-2, pg. 225
 MINI Pi12-2, pg. 225
 MINI Pi12-3, pg. 225
 MINI Pi12-3 FS, pg. 225
 MINI Si08-2, pg. 225
 MINI Si08-3, pg. 225
 MINI Si08-3 FS, pg. 225
 MINI Xi10-2, pg. 225
 MINI Xi10-3, pg. 225
 MINI Xi10-3 FS, pg. 225
 MLL1200, pg. 304
 MLL200, pg. 304
 MLL400, pg. 304
 MLL800, pg. 304
 Mounting bar – welded, pg. 356
 Mounting bracket MB, pg. 198
 Mounting kit, pg. 420
 OB20x60P, pg. 175
 OB35x90P, pg. 175
 OB50x140P, pg. 175
 OB65x170P, pg. 175
 OBF15x35P H, pg. 175
 OBF15x35P L, pg. 175
 OBF15x65P, pg. 175
 OBF30x60P, pg. 175
 OBF35x90P, pg. 175
 OBF50x140P, pg. 175
 OBF65x170P, pg. 175
 OBL40x90P, pg. 175
 OC35x90P, pg. 188
 OC60x140, pg. 188
 OCF20x80P, pg. 188
 OCF30x90P, pg. 188
 OCF40x110P, pg. 188
 OF10x30P, pg. 184
 OF15x45P, pg. 184
 OF25x70P, pg. 184
 OF40x110P, pg. 184
 OF55x150P, pg. 184
 OF70x175P, pg. 184
 P3010, pg. 256
 P5010, pg. 260
 P6010, pg. 283
 P6040, pg. 288
 PCC (Piab Cruise Control), pg. 343
 P-D27, pg. 152

- P-D36, pg. 152
- piCHIP10X, pg. 232
- piCLASSIC, pg. 278
- piCOMPACT®10X, pg. 244
- piCOMPACT®23, pg. 246
- piGRIP®, pg. 30
- piINLINE® MICRO, pg. 234
- piINLINE® MIDI, pg. 238
- piINLINE® MINI, pg. 236
- piINLINE® Plus, pg. 240
- Pilot regulator, pg. 343
- piPUMP10X, pg. 252
- piSAVE® onoff, pg. 337
- piSAVE® optimize, pg. 342
- piSAVE® release, pg. 212, 333
- piSAVE® restrict, pg. 210, 335
- piSAVE® sense, pg. 10, 335
- piSECURE, pg. 308
- piSMART®, pg. 427
- piSTAMP, pg. 242
- PMAT, pg. 353
- Profile mount ball clamp, pg. 356
- Proximity mounting bracket, pg. 361
- QR, pg. 333
- RB20×40P, pg. 192
- Regulator, pg. 343
- Round pump, pg. 293
- Sealing flange, pg. 421
- Silencer COAX®, pg. 344
- Silencer MINI/MIDI, pg. 344
- Silencers, pg. 344
- Suction cup extension SE, pg. 198
- Swivel arm – clamp on, pg. 357
- Swivel arm – slide on, pg. 357
- T-slot Adapters, pg. 218
- T-slot nut kit, pg. 198, 421
- U10, pg. 162
- U15, pg. 162
- U15-3, pg. 162
- U2, pg. 162
- U20, pg. 162
- U20-2P, pg. 162
- U3, pg. 162
- U30, pg. 162
- U4, pg. 162
- U40-2, pg. 162
- U50-2, pg. 162
- U6, pg. 162
- U8, pg. 162
- Vactivator V18, pg. 204
- Vacuum Check Valve VT-1H, pg. 338, 358
- Vacuum Check Valve VT-1H Vacustat with COAX®, pg. 313, 338, 360
- Vacuum Check Valve VT-1H with COAX®, pg. 310, 338, 360
- Vacuum filters, pg. 346
- Vacuum filters S, pg. 346
- Vacuum gauge and manometers, pg. 349
- Vacuum switch 3-colour digital display M8, pg. 330
- Vacuum switch, DM8, pg. 330
- Vacuum switch, LM8, pg. 332
- Vacuum switch, M5, pg. 332
- Vacuum switch, MM8, pg. 330
- Vacuum switches Mini VS4015/VS4016, pg. 328
- Vacuum switches Mini VS4118/VS4128, pg. 328
- Vacuum switches, electromechanical, pg. 326
- Vacuum switches, inductive universal, pg. 326
- Vacuum switches, pneumatic, pg. 326
- VGS™2010, pg. 264
- VGS™3010, pg. 266
- VGS™3040, pg. 269
- VGS™5010, pg. 273
- X10L, pg. 301
- X20L, pg. 301
- X40L, pg. 301
- X5L, pg. 301
- XLF150, pg. 48
- XLF200, pg. 48
- XLF250, pg. 48
- XLF300, pg. 48



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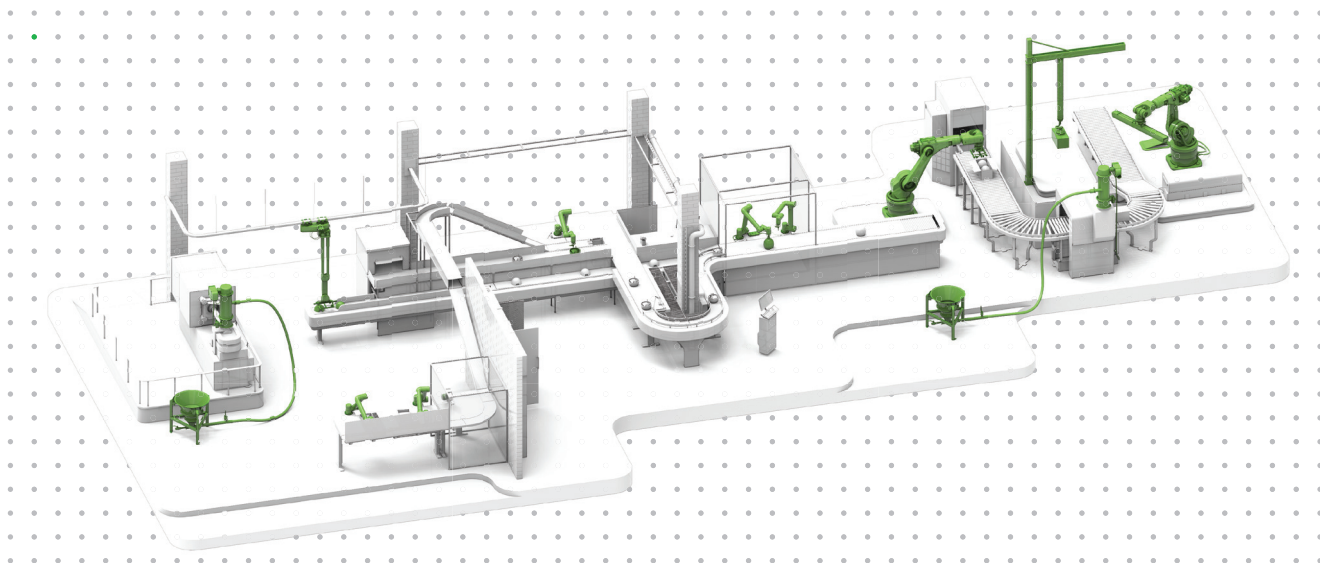
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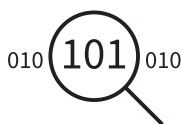
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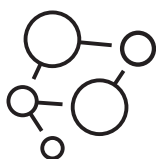
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Estimates suggest that **condition monitoring** can achieve a drop of between 1–20% in unplanned and/or planned stops.



In large systems **energy saving** can help reduce the air consumption by up to 90% in every cycle.



IO-Link guarantees **interoperability** between different devices, regardless of the technology standard used in the overall system.



The ability to use accurate **preset settings** provides opportunity for real-time adjustments of single or multiple settings without a major reset of the entire system.



Auto tuning is an example of **decentralised decisions** that form the basis for Industry 4.0.



With piSMART® it is **easy to simulate** the increase of efficiency of, for instance, vacuum pumps. Estimates show that a pump that is 5–20% percent more efficient would result in a productivity gain of up to 10%.

Tables

TABLES	429
Pressure unit conversions	430
Negative pressure – important values	430
Flow conversions	431
Variation of pressure according to altitude	431
Cartridges and pumps	432

PRESSURE UNIT CONVERSIONS

	Pa (N/m ²)	kPa	bar	at (kp/cm ²)	Torr	psi (lbf/in ²)	inHg
1 Pa	1	0.001	0.00001	10.1972×10 ⁻⁶	7.50062×10 ⁻³	0.145038×10 ⁻³	0.3×10 ⁻³
1 kPa	1000	1	0.01	10.1972×10 ⁻³	7.50062	0.145038	0.3
1 bar	100000	100	1	1.01972	750.062	14.5038	30
1 at	98066.5	98.0665	0.980665	1	735.559	14.2233	29.42
1 torr	133.322	0.133322	1.33322×10 ⁻³	1.35951×10 ⁻³	1	19.3368×10 ⁻³	0.04
1 psi	6894.76	6.89476	68.9476×10 ⁻³	70.3069×10 ⁻³	51.7149	1	2.07

NEGATIVE PRESSURE – IMPORTANT VALUES

Sea level	kpa 101.3	mbar 1013	Torr 760	-kPa* 0	-mmHg 0	-inHg 0	% vacuum 0
	100	1000	700	10	100	5	10
			600	20	200	10	20
			500	30	300	15	30
			400	40	400	20	40
	50	500	300	50	500	25	50
			200	60	600		60
			100	70	700		70
				80			80
	10	100		90			90
Absolute vacuum	0	0	0	101.3	760	30	100

FLOW CONVERSIONS

	m ³ /s	m ³ /h	l/min	l/s	ft ³ /min (scfm)
m ³ /s	1	3600	60000	1000	2118.9
m ³ /h	0.28×10 ⁻³	1	16.6667	0.2778	0.5885
l/min	16.67×10 ⁻⁶	0.06	1	0.0167	0.035
l/s	1×10 ⁻³	3.6	60	1	2.1189
ft ³ /min	0.472×10 ⁻³	1.6992	28.32	0.4720	1

VARIATION OF PRESSURE ACCORDING TO ALTITUDE (ABOVE SEA LEVEL)

Atmospheric pressure is the reference point for most vacuum meters. Air pressure decreases as the altitude rises. The table below shows vacuum grades at different heights. Piab pumps always reach the same absolute vacuum level, regardless of altitude.

Altitude ft	Air pressure*		Vacuum level depending on altitude				
	mmHg	psi	18 -inHg	22.5 -inHg	25.5 -inHg	27 -inHg	29.7 -inHg
6562	760	14.7	18.0	22.5	25.5	27.0	29.7
3281	750	14.5	17.9	22.4	25.4	26.9	29.6
2553	740	14.3	17.6	22.1	25.1	26.6	29.3
2149	730	14.1	17.2	21.7	24.7	26.2	28.9
1788	720	13.9	16.8	21.3	24.3	25.8	28.5
1532	710	13.7	16.4	20.9	23.9	25.4	28.1
902	700	13.5	16.0	20.5	23.5	25.0	27.7
656	690	13.3	15.6	20.1	23.1	24.6	27.3
364	671	12.9	14.8	19.4	22.4	23.9	26.6
Sea level, 0	593	11.4	11.7	16.2	19.2	20.7	23.4

*Air pressure depends on weather conditions. In order to calculate the values according to the different heights, we have taken as the reference point the normal air pressure at the sea level: 14.7 psi.

CARTRIDGES AND PUMPS

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
STX0670	72.5	0.68	0.7	0.59	0.51	0.4
STX0670 ×2	72.5	1.36	1.38	1.19	1	0.81
Ti05-2	87	0.78	0.66	0.57	0.51	0.42
Ti05-2 ×2	87	1.57	1.31	1.14	1.02	0.85
Pi12-2	87	1.59	1.4	1.27	1.06	0.87
Pi12-2 ×2	87	3.18	2.8	2.54	2.12	1.74
Di16-2	87	1.59	1.36	1.21	1.04	0.87
SX12	72.5	1.53	2.59	2.18	1.65	1.1
SX12 ×2	72.5	3.05	5.17	4.36	3.31	2.2
Si32-2	87	3.71	6.99	6.36	5.51	3.6
Xi40-2	65.3	3.88	5.93	4.87	3.39	2.12
SX42	68.2	4.68	7.33	6.4	5.11	3.6
H120	87	16.1	17.8	14	9.96	5.72
H40	87	5.51	5.93	4.45	3.18	1.91
L14	87	2.08	-	3.18	2.12	1.21
L28	87	4.24	5.51	3.6	2.33	1.89
L56	87	8.48	10.8	7.42	4.24	3.6
L7	87	1.04	1.53	1.04	0.61	0.53
M10L	87	2.33	2.75	1.93	1.02	0.61

						Max. vacuum*	Ø inner tubes (recommended)*, inch		
12	15	18	21	24	27		-inHg	feed	vacuum
0.36	0.23	0.13	0.06	-	-	20.7	0.1	0.1	0.31
0.7	0.47	0.25	0.11	-	-	20.7	0.1	0.1	0.31
0.32	0.19	0.08	0.02	-	-	22.1	0.1	0.1	0.31
0.64	0.38	0.17	0.04	-	-	22.1	0.1	0.1	0.31
0.76	0.59	0.36	0.11	0.02	-	24.5	0.16	0.31	0.39
1.53	1.19	0.72	0.21	0.04	-	24.5	0.16	0.31	0.39
0.74	0.61	0.38	0.08	-	-	21.5	0.16	0.31	0.39
0.57	0.44	0.32	0.19	0.06	-	25.1	0.16	0.31	0.39
1.14	0.89	0.64	0.38	0.13	-	25.1	0.16	0.31	0.39
1.91	1.27	1.06	0.74	-	-	22.1	0.16	0.47	0.59
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
2.16	1.29	1	0.59	0.21	-	26.6	0.16	0.47	0.59
3.18	2.54	1.82	1.31	0.91	0.21	29.7	0.35	0.59	0.75
0.85	0.64	0.42	0.3	0.21	0.2	29.4	0.24	0.31	0.39
0.95	0.83	0.68	0.51	-	-	22.1	0.16	0.39	0.47
1.57	1.17	0.76	0.36	-	-	22.1	0.16	0.47	0.47
2.97	2.33	1.72	0.91	-	-	22.1	0.24	0.59	0.59
0.42	0.34	0.21	0.14	-	-	22.1	0.08	0.31	0.39
0.55	0.44	0.28	0.19	0.06	-	24.8	0.08	0.31	0.39

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
M20L	87	4.66	5.09	3.6	2.01	1.21
M5L	87	1.17	1.55	1.06	0.55	0.3
MLL1200	87	178	540	303	206	108
MLL200	87	29.7	102	57.2	38.4	20.1
MLL400	87	59.3	195	110	74.2	39
MLL800	87	119	373	210	142	74.2
P3010 Pi12-3	46.4	0.93	2.97	1.27	0.93	0.57
P3010 Si08-3	87	0.93	2.84	1.55	1.17	0.74
P3010 Xi10-3	72.5	0.97	3.03	1.48	1.06	0.7
P5010 Pi48-2 ×1	45	4.24	5.93	5.3	3.81	2.33
P5010 Pi48-2 ×2	45	8.48	11.9	10.6	7.63	4.66
P5010 Pi48-3 ×1	45	4.34	11.9	5.3	3.81	2.33
P5010 Pi48-3 ×2	45	8.69	23.7	10.6	7.63	4.66
P5010 Si32-2 ×1	87	3.71	6.99	6.36	5.51	3.6
P5010 Si32-2 ×2	87	7.42	14	12.7	11	7.2
P5010 Si32-3 ×1	87	3.71	12.7	7.42	5.51	3.6
P5010 Si32-3 ×2	87	7.42	25.4	14.8	11	7.2
P5010 Xi40-2 ×1	65.3	3.88	5.93	4.87	3.39	2.12
P5010 Xi40-2 ×2	65.3	7.76	11.9	9.75	6.78	4.24
P5010 Xi40-3 ×1	65.3	3.88	12.5	6.36	4.24	2.75

12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
1.02	0.81	0.61	0.4	0.13	–	24.8	0.16	0.39	0.47
0.25	0.21	0.17	0.11	0.04	–	24.8	0.08	0.2	0.31
55.1	37.9	27.1	12.9	5.51	0.11	26.8	0.79	2.95	3.94
10.2	6.99	5.09	2.33	1.02	0.02	26.8	0.39	1.26	1.57
19.5	13.6	9.75	4.66	1.95	0.04	26.8	0.47	1.57	2.36
37.3	26.1	18.6	8.9	3.81	0.08	26.8	0.59	1.97	2.95
0.4	0.3	0.21	0.13	0.06	–	26.6	0.16	0.31	0.39
0.49	0.36	0.28	0.17	–	–	22.1	0.16	0.31	0.39
0.4	0.32	0.23	0.15	0.1	0.02	27.7	0.16	0.31	0.39
1.38	1.06	0.74	0.53	0.21	–	26.6	0.24	0.47	0.59
2.75	2.12	1.48	1.06	0.42	–	26.6	0.31	0.59	0.75
1.38	1.06	0.74	0.53	0.21	–	26.6	0.24	0.47	0.59
2.75	2.12	1.48	1.06	0.42	–	26.6	0.31	0.59	0.75
1.91	1.27	1.06	0.74	–	–	22.1	0.16	0.47	0.59
3.81	2.54	2.12	1.48	–	–	22.1	0.24	0.59	0.75
1.91	1.27	1.06	0.74	–	–	22.1	0.16	0.47	0.59
3.81	2.54	2.12	1.48	–	–	22.1	0.24	0.59	0.75
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
3.09	2.46	1.82	1.36	0.76	0.13	28	0.24	0.59	0.75
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
P5010 Xi40-3 ×2	65.3	7.76	25	12.7	8.48	5.51
P6010 Pi48-3 ×1	45	4.24	11.9	5.3	3.81	2.33
P6010 Pi48-3 ×2	45	8.48	23.7	10.6	7.63	4.66
P6010 Pi48-3 ×3	45	12.7	35.6	15.9	11.4	6.99
P6010 Pi48-3 ×4	45	17	47.5	21.2	15.3	9.32
P6010 Si32-3 ×1	87	3.71	12.7	7.42	5.51	3.6
P6010 Si32-3 ×2	87	7.42	25.4	14.8	11	7.2
P6010 Si32-3 ×3	87	11.1	38.1	22.2	16.5	10.8
P6010 Si32-3 ×4	87	14.8	50.9	29.7	22	14.4
P6010 Xi40-3 ×1	65.3	3.88	12.5	6.36	4.24	2.75
P6010 Xi40-3 ×2	65.3	7.76	25	12.7	8.48	5.51
P6010 Xi40-3 ×3	65.3	11.6	37.5	19.1	12.7	8.26
P6010 Xi40-3 ×4	65.3	15.5	50	25.4	17	11
P6040 Pi48-3 ×10	45	42.4	119	53	38.1	23.3
P6040 Pi48-3 ×11	45	46.6	131	58.3	42	25.6
P6040 Pi48-3 ×12	45	50.9	142	63.6	45.8	28
P6040 Pi48-3 ×13	45	46.6	131	58.3	42	25.6
P6040 Pi48-3 ×14	45	59.3	166	74.2	53.4	32.6
P6040 Pi48-3 ×15	45	63.6	178	79.5	57.2	35
P6040 Pi48-3 ×16	45	67.8	190	84.8	61	37.3

12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
3.09	2.46	1.82	1.36	0.76	0.13	28	0.24	0.59	0.75
1.38	1.06	0.74	0.53	0.21	-	26.6	0.24	0.47	0.59
2.75	2.12	1.48	1.06	0.42	-	26.6	0.31	0.59	0.75
4.13	3.18	2.22	1.59	0.64	-	26.6	0.39	0.75	0.87
5.51	4.24	2.97	2.12	0.85	-	26.6	0.39	0.87	0.98
1.91	1.27	1.06	0.74	-	-	22.1	0.16	0.47	0.59
3.81	2.54	2.12	1.48	-	-	22.1	0.24	0.59	0.75
5.72	3.81	3.18	2.22	-	-	22.1	0.31	0.75	0.87
7.63	5.09	4.24	2.97	-	-	22.1	0.31	0.87	0.98
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
3.09	2.46	1.82	1.36	0.76	0.13	28	0.24	0.59	0.75
4.64	3.69	2.73	2.03	1.14	0.19	28	0.31	0.75	0.87
6.19	4.92	3.64	2.71	1.53	0.25	28	0.31	0.87	0.98
13.8	10.6	7.42	5.3	2.12	-	26.6	0.43	1.57	1.77
15.2	11.7	8.16	5.83	2.33	-	26.6	0.47	1.57	1.97
16.5	12.7	8.9	6.36	2.54	-	26.6	0.47	1.57	1.97
15.2	11.7	8.16	5.83	2.33	-	26.6	0.51	1.57	2.17
19.3	14.8	10.4	7.42	2.97	-	26.6	0.51	1.57	2.17
20.7	15.9	11.1	7.95	3.18	-	26.6	0.55	1.77	2.36
22	17	11.9	8.48	3.39	-	26.6	0.55	1.77	2.36

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
P6040 Pi48-3 ×7	45	29.7	83.1	37.1	26.7	16.3
P6040 Pi48-3 ×8	45	33.9	94.9	42.4	30.5	18.6
P6040 Pi48-3 ×9	45	38.1	107	47.7	34.3	21
P6040 Si32-3 ×10	87	37.1	127	74.2	55.1	36
P6040 Si32-3 ×11	87	40.8	140	81.6	60.6	39.6
P6040 Si32-3 ×12	87	44.5	153	89	66.1	43.2
P6040 Si32-3 ×13	87	48.2	165	96.4	71.6	46.8
P6040 Si32-3 ×14	87	51.9	178	104	77.1	50.4
P6040 Si32-3 ×15	87	55.6	191	111	82.6	54
P6040 Si32-3 ×16	87	59.3	203	119	88.1	57.6
P6040 Si32-3 ×7	87	26	89	51.9	38.6	25.2
P6040 Si32-3 ×8	87	29.7	102	59.3	44.1	28.8
P6040 Si32-3 ×9	87	33.4	114	66.7	49.6	32.4
piCLASSIC Pi48-3 ×1	45	4.34	11.9	5.3	3.81	2.33
piCLASSIC Pi48-3 ×2	45	8.69	23.7	10.6	7.63	4.66
piCLASSIC Pi48-3 ×3	45	8.69	23.7	10.6	7.63	4.66
piCLASSIC Pi48-3 ×4	45	13	35.6	15.9	11.4	6.99
piCLASSIC Pi48-3 ×5	45	21.7	59.3	26.5	19.1	11.7
piCLASSIC Pi48-3 ×6	45	26.1	71.2	31.8	22.9	14
piCLASSIC Si32-3 ×1	87	3.71	12.7	7.42	5.51	3.6

12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
9.64	7.42	5.19	3.71	1.48	–	26.6	0.43	1.38	1.57
11	8.48	5.93	4.24	1.7	–	26.6	0.43	1.38	1.57
12.4	9.54	6.67	4.77	1.91	–	26.6	0.43	1.57	1.77
19.1	12.7	10.6	7.42	–	–	22.1	0.35	1.57	1.57
21	14	11.7	8.16	–	–	22.1	0.39	1.57	1.97
22.9	15.3	12.7	8.9	–	–	22.1	0.39	1.57	1.97
24.8	16.5	13.8	9.64	–	–	22.1	0.39	1.77	1.97
26.7	17.8	14.8	10.4	–	–	22.1	0.39	1.77	1.97
28.6	19.1	15.9	11.1	–	–	22.1	0.43	1.77	1.97
30.5	20.3	17	11.9	–	–	22.1	0.43	1.77	1.97
13.3	8.9	7.42	5.19	–	–	22.1	0.31	1.38	1.57
15.3	10.2	8.48	5.93	–	–	22.1	0.31	1.38	1.57
17.2	11.4	9.54	6.67	–	–	22.1	0.35	1.57	1.57
1.38	1.06	0.74	0.53	0.21	–	26.6	0.24	0.47	0.59
2.75	2.12	1.48	1.06	0.42	–	26.6	0.31	0.59	0.75
2.75	2.12	1.48	1.06	0.42	–	26.6	0.39	0.75	0.87
4.13	3.18	2.22	1.59	0.64	–	26.6	0.39	0.87	0.98
6.89	5.3	3.71	2.65	1.06	–	26.6	0.39	0.98	1.26
8.26	6.36	4.45	3.18	1.27	–	26.6	0.47	1.26	1.57
1.91	1.27	1.06	0.74	–	–	22.1	0.16	0.47	0.59

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
piCLASSIC Si32-3 ×2	87	7.42	25.4	14.8	11	7.2
piCLASSIC Si32-3 ×3	87	11.1	38.1	22.2	16.5	10.8
piCLASSIC Si32-3 ×4	87	14.8	50.9	29.7	22	14.4
piCLASSIC Si32-3 ×5	87	18.5	63.6	37.1	27.5	18
piCLASSIC Si32-3 ×6	87	22.2	76.3	44.5	33.1	21.6
piCLASSIC Xi40-3 ×1	65.3	3.88	12.5	6.36	4.24	2.75
piCLASSIC Xi40-3 ×2	65.3	7.76	25	12.7	8.48	5.51
piCLASSIC Xi40-3 ×3	65.3	11.6	37.5	19.1	12.7	8.26
piCLASSIC Xi40-3 ×4	65.3	15.5	50	25.4	17	11
piCLASSIC Xi40-3 ×5	65.3	19.4	62.5	31.8	21.2	13.8
piCLASSIC Xi40-3 ×6	65.3	23.3	75	38.1	25.4	16.5
piCOMPACT® 10X Bi03-2	31.9	0.3	0.44	0.3	0.13	0.04
piCOMPACT® 10X Si02-2	87.6	0.23	0.55	0.38	0.2	0.11
piCOMPACT® 10X Ti05-2	62.4	0.49	0.66	0.59	0.47	0.34
piCOMPACT® 10X Xi2,5-2	74	0.28	0.49	0.32	0.17	0.09
piCOMPACT®23 SX12	73.1	1.53	2.59	2.18	1.65	1.1
piCOMPACT®23 SX42	68.2	4.68	7.33	6.4	5.11	3.6
piINLINE® MIDI	87	3.71	6.57	5.3	4.03	2.54
piINLINE® MICRO	58	0.57	0.68	0.59	0.49	0.36
piINLINE® MINI	87	0.93	1.46	1.17	0.89	0.59

12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
3.81	2.54	2.12	1.48	–	–	22.1	0.24	0.59	0.75
5.72	3.81	3.18	2.22	–	–	22.1	0.31	0.75	0.87
7.63	5.09	4.24	2.97	–	–	22.1	0.31	0.87	0.98
9.54	6.36	5.3	3.71	–	–	22.1	0.39	0.98	1.26
11.4	7.63	6.36	4.45	–	–	22.1	0.39	1.26	1.57
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
3.09	2.46	1.82	1.36	0.76	0.13	28	0.24	0.59	0.75
4.64	3.69	2.73	2.03	1.14	0.19	28	0.31	0.75	0.87
6.19	4.92	3.64	2.71	1.53	0.25	28	0.31	0.87	0.98
7.73	6.14	4.56	3.39	1.91	0.32	28	0.39	0.98	1.26
9.28	7.37	5.47	4.07	2.29	0.38	28	0.39	1.26	1.57
0.03	0.03	0.01	0.01	174	–	24.2	0.08	0.08	–
0.1	0.08	0.06	0.04	159	–	22.1	0.08	0.08	–
0.19	0.13	0.1	0.05	178	–	24.8	0.08	0.16	–
0.08	0.06	0.05	0.03	193	–	26.8	0.08	0.08	–
0.57	0.44	0.32	0.19	0.06	–	25.1	–	–	–
2.16	1.29	1	0.59	0.21	–	26.6	–	–	–
1.48	1.27	1.06	0.74	–	–	22.1	0.31	0.47	–
0.21	0.15	0.08	0.04	0.01	–	24.8	0.16	0.16	–
0.49	0.34	0.25	0.17	–	–	22.1	0.24	0.24	–

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
piPUMP10X Bi03-2	29	0.3	0.44	0.3	0.13	0.04
piPUMP10X Si02-2	87	0.23	0.55	0.38	0.2	0.11
piPUMP10X Ti05-2	58	0.49	0.66	0.59	0.47	0.34
piPUMP10X Xi2,5-2	72.5	0.28	0.49	0.32	0.17	0.09
Round Si32-3 ×6	87	22.2	76.3	44.5	33.1	21.6
VGS™2010 Bi03-2	26.1	0.3	0.49	0.32	0.13	0.08
VGS™2010 Si02-2	87	0.25	0.59	0.44	0.25	0.17
VGS™2010 Ti05-2	58	0.57	0.68	0.59	0.49	0.36
VGS™2010 Xi2,5-2	72.5	0.28	0.51	0.36	0.21	0.13
VGS™3010 Di16-2	87	1.59	1.36	1.21	1.04	0.87
VGS™3010 Pi12-2	46.4	0.93	1.44	1.27	0.93	0.57
VGS™3010 Pi12-3	46.4	0.93	2.97	1.27	0.93	0.57
VGS™3010 Si08-2	87	0.93	1.63	1.42	1.08	0.7
VGS™3010 Si08-3	87	0.93	2.84	1.55	1.17	0.74
VGS™3010 Xi10-2	72.5	0.97	1.59	1.33	1.04	0.7
VGS™3010 Xi10-3	72.5	0.97	3.03	1.48	1.06	0.7
VGS™3040 Pi12-2	46.4	0.93	1.44	1.27	0.93	0.57
VGS™3040 Pi12-3	46.4	0.93	2.97	1.27	0.93	0.57
VGS™3040 Si08-2	87	0.93	1.63	1.42	1.08	0.7
VGS™3040 Si08-3	87	0.93	2.84	1.55	1.17	0.74

12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
0.03	0.03	0.01	0.01	-	-	24.2	-	-	-
0.1	0.08	0.06	0.04	-	-	22.1	-	-	-
0.19	0.13	0.1	0.05	-	-	24.8	-	-	-
0.08	0.06	0.05	0.03	-	-	26.8	-	-	-
11.4	7.63	6.36	4.45	-	-	22.1	0.39	1.97	1.97
0.07	0.05	0.03	0.01	-	-	24.5	0.12	0.12	0.31
0.15	0.13	0.08	0.04	-	-	22.1	0.12	0.12	0.31
0.21	0.15	0.08	0.04	0.01	-	24.8	0.12	0.12	0.31
0.08	0.06	0.04	0.02	0.02	-	27.1	0.12	0.12	0.31
0.74	0.61	0.38	0.08	-	-	21.5	0.16	0.31	0.31
0.4	0.3	0.21	0.13	0.06	-	26.6	0.16	0.31	0.31
0.4	0.3	0.21	0.13	0.06	-	26.6	0.16	0.31	0.31
0.49	0.34	0.25	0.17	-	-	22.1	0.16	0.31	0.31
0.49	0.36	0.28	0.17	-	-	22.1	0.16	0.31	0.31
0.4	0.32	0.23	0.15	0.08	0.02	27.7	0.16	0.31	0.31
0.4	0.32	0.23	0.15	0.08	0.02	27.7	0.16	0.31	0.31
0.4	0.3	0.21	0.13	0.06	-	26.6	0.16	0.31	0.39
0.4	0.3	0.21	0.13	0.06	-	26.6	0.16	0.31	0.39
0.49	0.34	0.25	0.17	-	-	22.1	0.16	0.31	0.39
0.49	0.36	0.28	0.17	-	-	22.1	0.16	0.31	0.39

Description	Feed pressure psi	Air consumption scfm	Vacuum flow (scfm) at different vacuum levels (-inHg)			
			0	3	6	9
VGS™3040 Xi10-2	72.5	0.97	1.59	1.33	1.04	0.7
VGS™3040 Xi10-3	72.5	0.97	3.03	1.48	1.06	0.7
VGS™5010 Pi48-2	45	4.24	5.93	5.3	3.81	2.33
VGS™5010 Pi48-3	45	4.34	11.9	5.3	3.81	2.33
VGS™5010 Si32-2	87	3.71	6.99	6.36	5.51	3.6
VGS™5010 Si32-3	87	3.71	12.7	7.42	5.51	3.6
VGS™5010 Xi40-2	65.3	3.88	5.93	4.87	3.39	2.12
VGS™5010 Xi40-3	65.3	3.88	12.5	6.36	4.24	2.75
X10L	58	1.67	1.61	0.74	0.51	0.44
X20L	58	3.39	4.03	2.12	1.06	0.93
X40L	58	6.57	6.78	3.18	2.12	1.91
X5L	58	0.83	1.02	0.51	0.25	0.23

*max. 2 m length

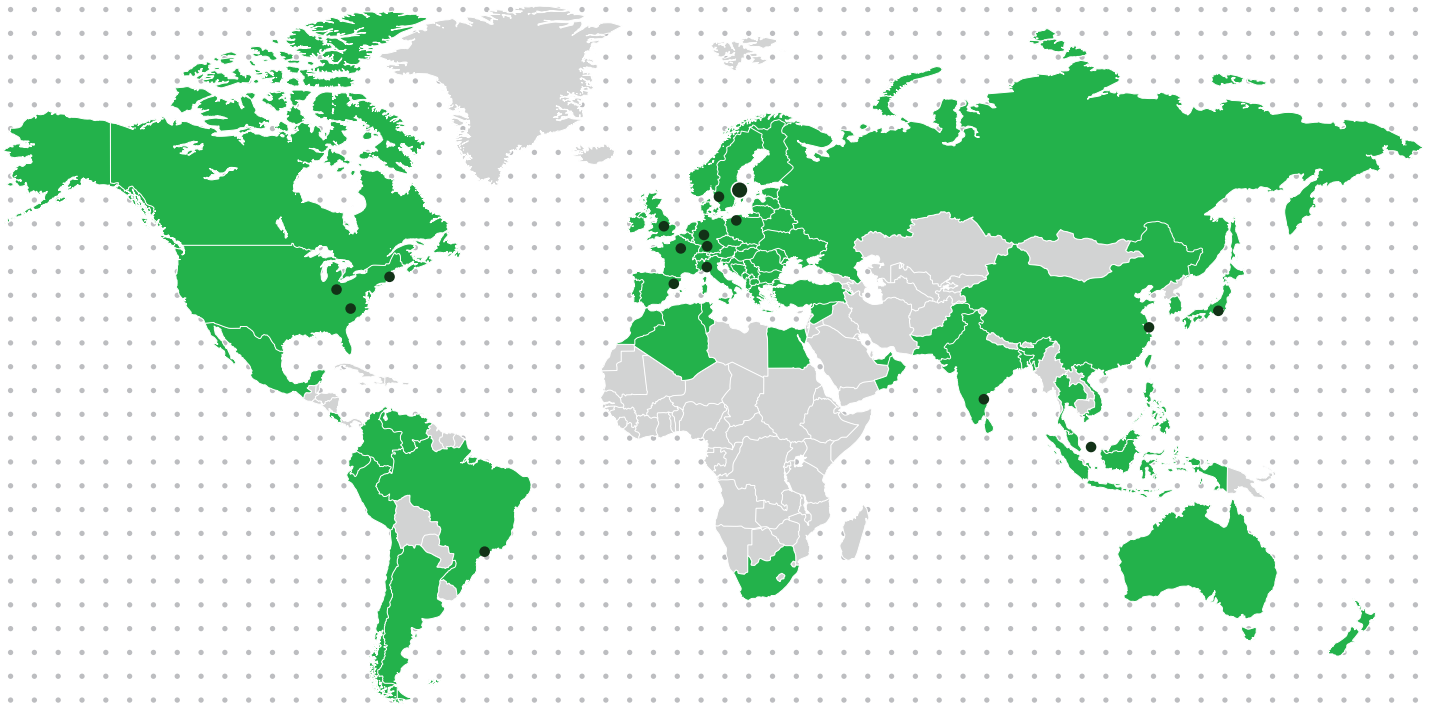
12	15	18	21	24	27	Max. vacuum* -inHg	Ø inner tubes (recommended)*, inch		
							feed	vacuum	exhaust
0.4	0.32	0.23	0.15	0.1	0.02	27.7	0.16	0.31	0.39
0.4	0.32	0.23	0.15	0.1	0.02	27.7	0.16	0.31	0.39
1.38	1.06	0.74	0.53	0.21	–	26.6	0.24	0.47	0.59
1.38	1.06	0.74	0.53	0.21	–	26.6	0.24	0.47	0.59
1.91	1.27	1.06	0.74	–	–	22.1	0.16	0.47	0.59
1.91	1.27	1.06	0.74	–	–	22.1	0.16	0.47	0.59
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
1.55	1.23	0.91	0.68	0.38	0.06	28	0.16	0.47	0.59
0.34	0.28	0.21	0.15	0.08	0.02	27.4	0.16	0.2	0.31
0.81	0.64	0.53	0.36	0.21	0.04	27.4	0.16	0.39	0.47
1.48	1.27	1.06	0.85	0.36	0.08	27.4	0.24	0.31	0.39
0.21	0.18	0.15	0.12	0.06	0.01	27.4	0.08	0.2	0.31

Notes









www.piab.com

BRAZIL – Sao Paulo
 Phone: +55 11 4492 9050
 Email: info-brasil@piab.com

CANADA – Hingham MA (US)
 Phone: +1 781 337 7309
 Email: info-usa@piab.com

CHINA – Shanghai
 Phone: +86 21 5237 6545
 Email: info-china@piab.com

FRANCE – Lagny sur Marne
 Phone: +33 1 6430 8267
 Email: info-france@piab.com

GERMANY – Butzbach
 Phone: +49 6033 7960-0
 Email: info-germany@piab.com

GERMANY – Schmallenberg
 Robotic gripping
 Phone: +49 (0) 29 72/962 17-11
 Email: info-germany@piab.com

MEXICO – Hingham MA (US)
 Phone: +1 781 337 7309
 Email: info-mxca@piab.com

INDIA – Chennai
 Phone: +91 9444 25 36 48
 Email: info-india@piab.com

ITALY – Torino
 Phone: +39 011 226 36 66
 Email: info-italy@piab.com

JAPAN – Tokyo
 Phone: +81 3 6662 8118
 Email: info-japan@piab.com

POLAND – Gdansk
 Phone: +48 58 785 08 50
 Email: info-poland@piab.com

SPAIN – Barcelona
 Phone: +34 93 6333876
 Email: info-spain@piab.com

SINGAPORE
 Phone: +65 6455 7006
 Email: info-singapore@piab.com

SWEDEN – Stockholm (HQ)
 Phone: +46 8 630 25 00
 Email: info-sweden@piab.com

SWEDEN – Mölndal
 Ergonomic handling
 Phone: +46 31 67 01 00
 Email: info-sweden@piab.com

UNITED KINGDOM – Loughborough
 Phone: +44 1509 857 010
 Email: info-uk@piab.com

USA – Hingham (MA)
 Phone: +1 781 337 7309
 Email: info-usa@piab.com

USA – Xenia (OH)
 Robotic gripping
 Phone: +1 888 727 3628
 Email: info-usa@piab.com

USA – Charlotte (NC)
 Ergonomic handling
 Phone: +1 704 527 5052
 Email: info-usa@piab.com