

PIAB VGS™ 3010

AN INTEGRATED VACUUM GRIPPER SYSTEM WITH COAX™ TECHNOLOGY



Low energy

Fast response

Complete mounting flexibility

High performance at 0.314 MPa

PIAB
Innovators in
Vacuum Technology

www.piab.com

WELCOME!

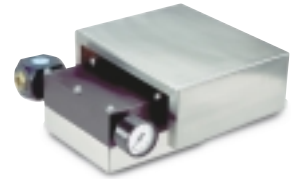


PIAB is an internationally recognized leader in industrial vacuum technology. Founded in 1951, PIAB started a revolution in vacuum with the development and introduction of the world's first multi-staged air driven vacuum pump. Today, PIAB provides innovative vacuum products and solutions for all types of manufacturing operations. Our products are found in many industries including packaging, automotive, electronics and woodworking as well as graphic arts and laboratories. We offer application oriented consulting and expertise worldwide and strive to improve productivity wherever vacuum is used.



The first PIAB product was a pair of compasses that simplified the work of designers and draftsmen. This pair of compasses has given the company its name, Pi (=3.14) AB.

In 1972, PIAB introduced the patented multi-stage ejector that is still the guiding-star for many companies in the industry.



The first USDA accepted pneumatic vacuum conveyor was launched in the year 2000. The conveyor meets the requirements of the food industry.

VGS™3010 with COAX™ technology, PIAB's latest patent, a further development of the multi-stage ejector principle that offers new possibilities of customization and integration.



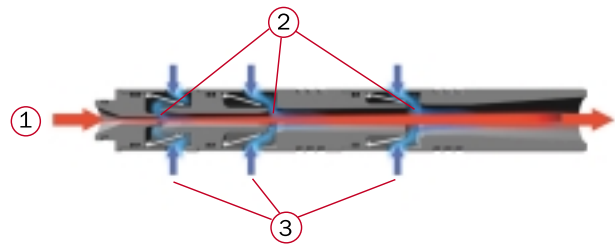
WHAT IS COAX™ TECHNOLOGY?

PATENT / PATENT PENDING

COAX™, a patented technology, is a new and improved design based on PIAB's innovative multi-stage concept for creating vacuum with compressed air. COAX™ integrates the internal components of a multi-stage vacuum pump into a vacuum cartridge. The result is a smaller, more efficient, more reliable and highly flexible technology that allows you to design a modular system.

When compressed air (1) flows through the pump nozzles (2), air from outside of the pump will be entrained by the jet of air at the nozzle outlet. Suction will be generated at the openings to the various stages (3). Exhaust then exits the pump

PIAB COAX™ TECHNOLOGY



Why is COAX™ Technology efficient and reliable?

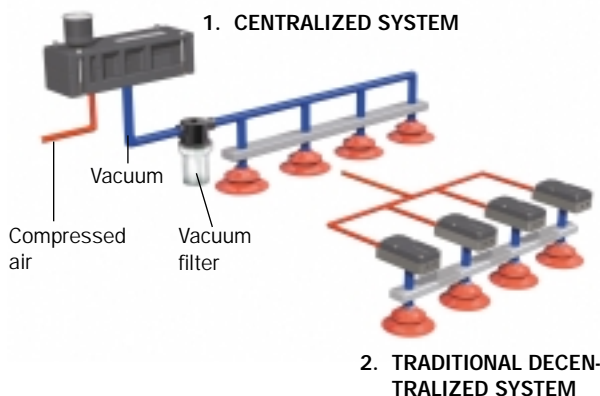
Energy is put to maximum use with the COAX™ ejector technology. The vacuum pump/cartridge consumes less air than conventional ejectors. COAX™ vacuum cartridges are up to twice as fast and provide 3 times more flow than a typical conventional

ejector with the same air consumption. COAX™ is also designed for low and fluctuating feed pressures (0.17–0.6 MPa) with sustained vacuum performance for maximum reliability.

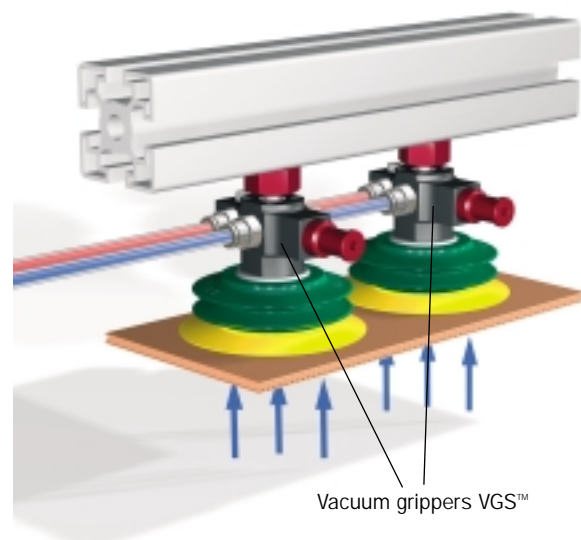
Why a decentralized vacuum system?

The impact of losses in a centralized vacuum system due to tubing, bends, fittings, valves, filters etc., is substantial and has to be compensated by increasing the size of the vacuum pump. A decentralized system with the vacuum pump/cartridge placed right at the suction cup eliminates the risk for losses in

the vacuum piping and the need for expensive oversized components. Furthermore, the response time will be reduced substantially without unnecessary volume to be evacuated, and each cup is independent. A pressure loss in one cup will not affect the others.



3. THE ULTIMATE DECENTRALIZED SYSTEM



In many applications several small pumps (2, 3) replacing a centrally placed pump (1) will reduce the energy consumption to half by eliminating vacuum losses.

EFFICIENT MATERIAL HANDLING

PIAB VGS™3010 – A new product design where high quality DURAFLEX™ suction cups are integrated with a patented vacuum cartridge based on the latest COAX™ ejector technology. The result is a vacuum “gripper” that makes selection, sizing and installation of a vacuum system easier, plus you will enjoy the benefits of a more cost-efficient and reliable vacuum system.

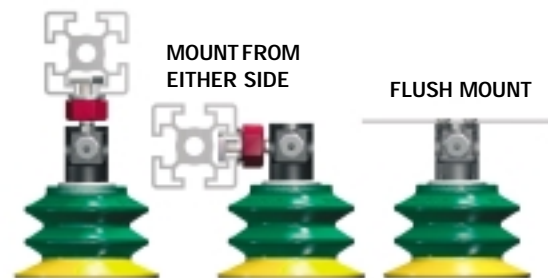
Increase your productivity and reduce your costs with VGS™3010:

- ▶ Faster response time
- ▶ Lower energy cost
- ▶ Higher operation reliability
- ▶ Easy selection and sizing — Knowledge about your specific vacuum flow, level or volume requirements are not required. Only feed pressure and the material being handled determine the optimal VGS™3010 for your application.
- ▶ Improved grip, lifting capacity and wear resistance with DURAFLEX™ cups — Provides up to 50% higher frictional grip as compared to conventional cups.

SIMPLE INSTALLATION AND MAINTENANCE

The VGS™3010 mounts easily to most extrusion and profile systems. All parts of the VGS™3010 are accessible and interchangeable.

MOUNT FROM THE TOP



FLEXIBLE POSITIONING

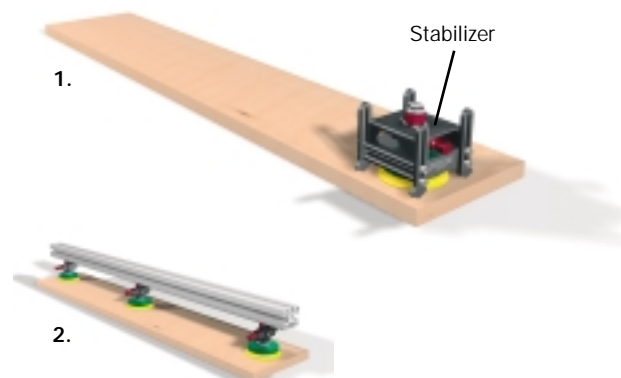
Once installed, the position of the VGS™3010 can be adjusted to accommodate changing handling conditions.



EXCEPTIONAL HANDLING STABILITY WITH STABILIZER

The Stabilizer reduces the need for using many suction cups for safe and stable lifting. It is used with suction cup models BX52P and BX75P. Adjustable supports create exceptional stability when handling items such as corrugated boxes, boards and sheets. The Stabilizer is also an excellent aid for handling objects that are hard to grip.

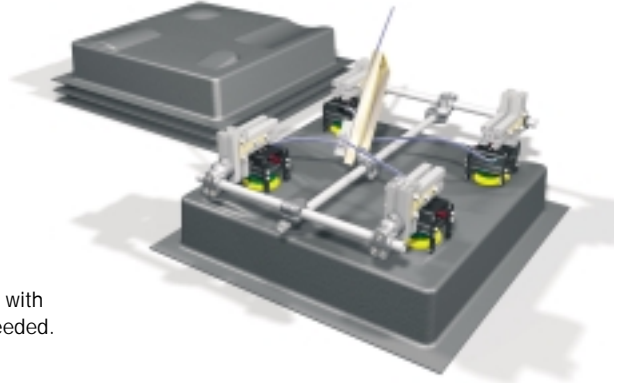
Use one VGS™ with Stabilizer (1) and eliminate the need for multiple suction cups (2).



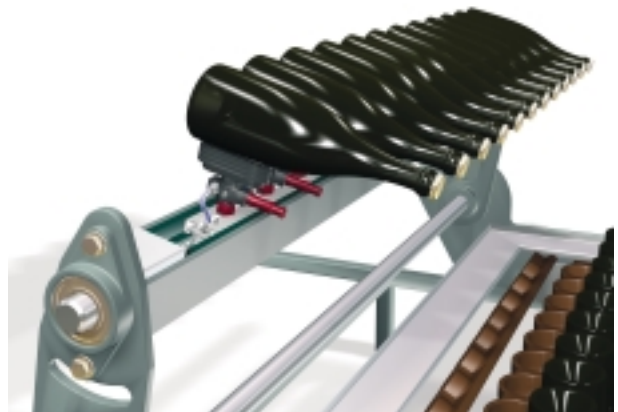
VGS™3010 APPLICATION EXAMPLES

VGS™3010 with DURAFLEX™ suction cups can handle these materials more effectively than conventional cup and pump solutions.

- ▶ Corrugated boxes/containers
- ▶ Sheet metal
- ▶ Glass
- ▶ Wood
- ▶ Plastic
- ▶ Small parts assembly and more...

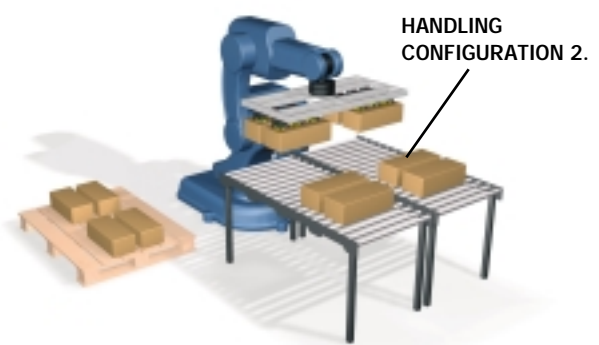
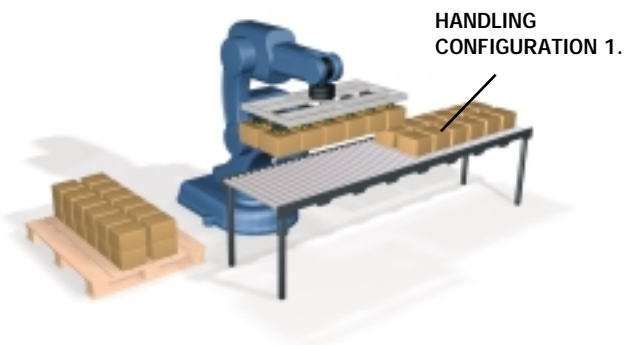


Using a VGS™3010 with Stabilizer increases the ability to handle sheets with sharp convex and concave surfaces and reduces the quantity of cups needed.



Handling bottles with one individual VGS™3010 OBL40x90 per bottle will increase the operational reliability.

VGS™3010 used for palletizing or depalletizing means a flexible, quick and easy changeover. The VGS™3010 eliminates the need to use multiple end effectors to handle material that changes size or position.



AID TO SELECTION

Build a VGS™3010 according to your needs:

A — Choose suction cup design

Information for each model is available on pages 10–23. Choose from DURAFLEX™ suction cups in sizes 35–110 mm. They are available as flat, bellows, multi-bellows and oval cups.

VGS™3010 consists of DURAFLEX™ suction cups manufactured in a specially developed polyurethane. DURAFLEX™ combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane whilst also being non-marking.



B — Choose the hardness of the suction cup

Many of the cups are available in a version where the body and the sealing surface are of different hardness (dual durometer). This gives the cup both strength and stability as well as flexibility to adapt itself to uneven surfaces. Lower or dual durometer cups should be used for maximum friction/grip and sealing capability (reduced micro-leakage). Higher durometer cups should be used for maximum wear resistance and for longer cup life.

Molded fitting with removable thread insert. Reduce cost by recycling the insert when changing the suction cup. The suction cup can be locked into place from under the cup with a socket-head wrench.

SUCTION CUP MATERIAL KEY

Yellow		30° Shore A
Red		40° Shore A
Blue		50° Shore A
Green		60° Shore A
Black		70° Shore A



SUCTION CUP OPTION - CHOOSE A CUP WITH STABILIZER (AVAILABLE FOR BX52P AND BX75P)

For increased stability and for the flexibility to handle objects that are hard to grip with vacuum, a Stabilizer should be used. The supports are height-adjustable for different types of objects

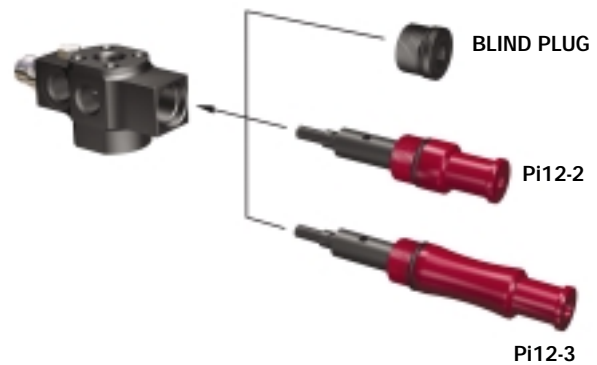


Stabilizer 50 fits suction cup BX52P
Stabilizer 75 fits suction cup BX75P

C — Choose vacuum cartridge

- ▶ Choose cartridge Pi12-2, a 2-stage ejector with 40 NI/min of vacuum flow, for minimum mounting dimensions, handling non-porous material such as sheet metal or when using smaller suction cups.
- ▶ Choose cartridge Pi12-3, a 3-stage ejector with more than 90 NI/min of vacuum flow, for faster response, handling porous material such as corrugated or when using large suction cups.
- ▶ Choose a blind plug (without vacuum cartridge), if the unit is to work as a “slave”, i.e. vacuum is generated by another VGS™3010 unit in the system.

A non-return valve in the vacuum cartridge should be used to maintain vacuum in a sealed system for a short period of time to increase safety during interruptions of air supply.



D – Choose mounting and mounting orientation

Option 1 – Flush mount directly to a plate – Choose a top mount VGS™3010 with 4xM4 screws. It gives a strong and non-rotating installation, 5x1/8” plugs are included. This mounting option can’t be used if you choose a Stabilizer.

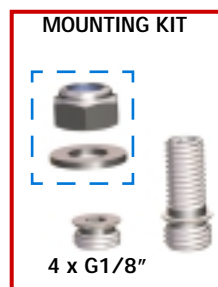
Option 2 – Mount the VGS™3010 with a M8 16 mm screw, used for flexible mounting orientation – Choose a factory installed 16 mm M8 screw that can be mounted in three different positions, top-side, left-side or right-side, 4x1/8” plugs are included. Left or right side mount will give you low installation height. A mounting kit is included.

Option 3 – Mount the VGS™3010 with a M8 27 mm screw, used for flexible mounting orientation – Choose a factory installed 27 mm M8 screw that can be mounted in three different positions, top-side, left-side or right-side, 4x1/8” plugs are included. Left or right side mount will give you low installation height. A profile mounting kit with a jam nut and spring tension washers is included for easy attachment to a profile system.

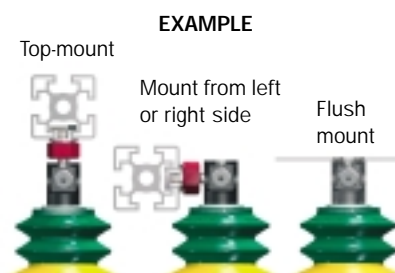
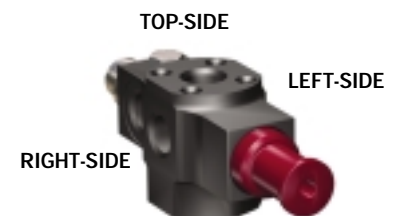
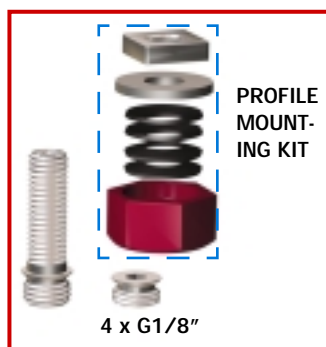
**OPTION 1
FLUSH MOUNT**



**OPTION 2
M8 16 MM SCREW**



**OPTION 3
M8 27 MM SCREW**



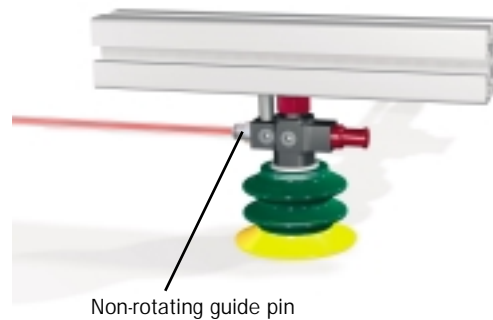
VGS™3010 SYSTEM SOLUTION EXAMPLES

- COMPRESSED AIR
- VACUUM

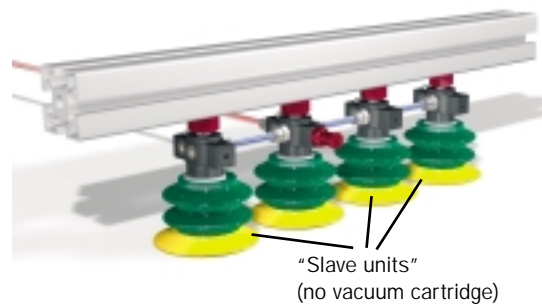
A profile-mounted VGS™3010 can be made non-rotating by running a guide pin in the profile slot.

Use the M5 threaded connection on the VGS™3010 housing.

(Guide pin not supplied by PIAB.)

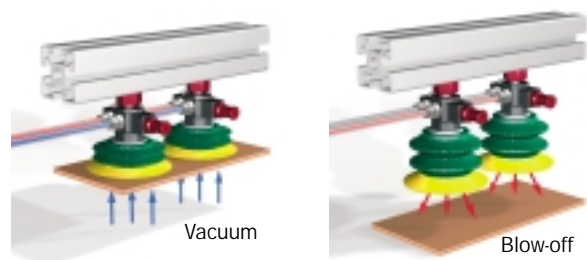


When the need for vacuum flow is small, for example in air-tight systems with small cups, a VGS™3010 with a vacuum cartridge could provide one or a few other "slave units".



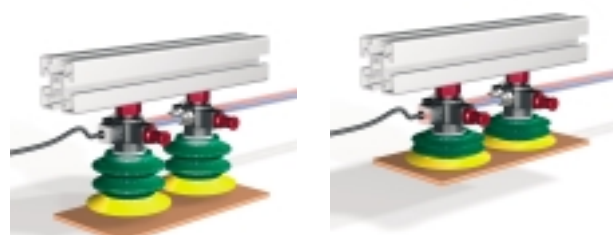
QUICK RELEASE OF PARTS

In order to have efficient cleaning of suction cup filters and blow-off for quickly releasing parts, compressed air should be connected to one of the extra vacuum ports on the VGS™3010.



For increased safety and control of the vacuum system, a PIAB mini vacuum switch can easily be connected to a VGS™3010. The switches are available as pre-set or with adjustable signal level. Pre-set is recommended to avoid unwanted signal level changes (adjustment-proof). You can find part no. and technical data for the switches in PIAB's main catalogue or P3010 Vacuum Pumps brochure.

VACUUM SENSING



ORDERING INFORMATION

Explanation of VGS™3010 ordering number

VGS3010 AC 04 BC



1. Vacuum Cartridge	VGS code
No vacuum cartridge (slave unit with blind plug M14x1)	AA
Vacuum cartridge Pi12-2	AB
Vacuum cartridge Pi12-3	AC
Vacuum cartridge Pi12-2 with non-return valve	AD
Vacuum cartridge Pi12-3 with non-return valve	AE



2 Mounting/Orientation	VGS code
4x screw M4 top, 5x plug G1/8", (flush mount)	00
M8 16 mm screw top, 4x plug G1/8" incl. mounting kit	01
M8 16 mm screw right, 4x plug G1/8" incl. mounting kit	02
M8 16 mm screw left, 4x plug G1/8" incl. mounting kit	03
M8 27 mm screw top, 4x plug G1/8" incl. profile kit with jam nut	04
M8 27 mm screw right, 4x plug G1/8" incl. profile kit with jam nut	05
M8 27 mm screw left, 4x plug G1/8" incl. profile kit with jam nut	06



3. Suction cup with fitting/Suction cup with Stabilizer and fitting	VGS code
No suction cup	BA
B75P 30/60° Shore A (yellow-green)	BB
B75P 60° Shore A (green)	BC
BF80P 30/50° Shore A (yellow-blue)	BD
BF80P 60° Shore A (green)	BE
BX35P 30/60° Shore A (yellow-green)	BF
BX35P 60° Shore A (green)	BG
BX52P 30/60° Shore A (yellow-green)	BH
BX52P 60° Shore A (green)	BI
BX75P 30/60° Shore A (yellow-green)	BJ
BX75P 60° Shore A (green)	BK
F75P 30/60° Shore A (yellow-green)	BL
F75P 60° Shore A (green)	BM
F110P 30/60° Shore A (yellow-green)	BN
F110P 60° Shore A (green)	BO
FC50P 40° Shore A (red)	BP
FC50P 60° Shore A (green)	BQ
FC75P 40° Shore A (red)	BR
FC75P 60° Shore A (green)	BS
FC100P 40° Shore A (red)	BT
FC100P 60° Shore A (green)	BU
OBL40x90P 70° Shore A (black)	BV
BX52P 30/60° Shore A (yellow-green) with Stabilizer 50	BW *)
BX52P 60° Shore A (green) with Stabilizer 50	BX *)
BX75P 30/60° Shore A (yellow-green) with Stabilizer 75	BY *)
BX75P 60° Shore A (green) with Stabilizer 75	BZ *)

*) Not possible to combine with mounting/orientation 00, 02, 03, 05 and 06.

VGS™3010 B75P



Suction cup with short bellows

- ▶ Suitable for level adjustment and for uneven or porous surfaces such as corrugated boxes/containers.
- ▶ The bellows and sealing surface are available in different durometers. This gives the cup both strength and stability as well as the flexibility to conform to uneven surfaces.
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ The suction cups have a molded fitting with removable G3/8" male thread insert.
- ▶ Working temperature is 0–50°C
- ▶ Weight for a complete VGS™3010 B75P is 145–167 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 B75P YELLOW-GREEN 30° 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N	Recommended parallel (shear) load with safety factor 2 N	Response time to 50 -kPa with Pi12-2 (s)	Response time to 50 -kPa with Pi12-3 (s)
0.314 MPa	0.47 NI/s 155 W	Plywood	128	64	Response time varies based on quality and porosity of handled material.	
		Corrugated	56	43		
		Dry steel	92	64	0.195	0.187
		Oily steel	94	23	0.195	0.187


RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 B75P GREEN 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N	Recommended parallel (shear) load with safety factor 2 N	Response time to 50 -kPa with Pi12-2 (s)	Response time to 50 -kPa with Pi12-3 (s)
0.314 MPa	0.47 NI/s 155 W	Plywood	113	103	Response time varies based on quality and porosity of handled material.	
		Corrugated	64	64		
		Dry steel	128	149	0.195	0.187
		Oily steel	118	37	0.195	0.187

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

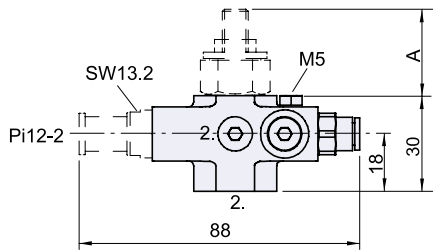
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

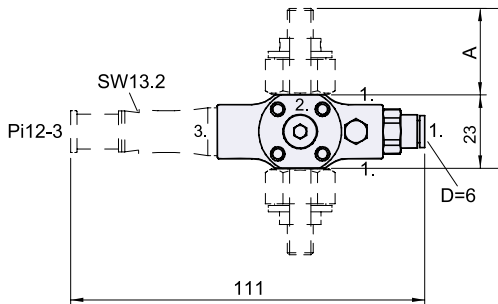
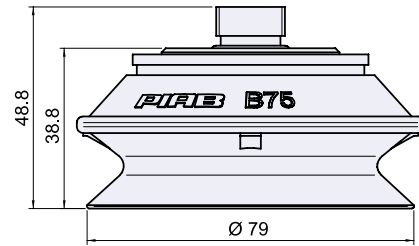
Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

Use a greater safety factor at higher altitudes.

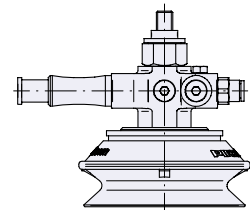
VGS™3010 B75P



Mounting	A
M8 16	16
M8 27	27



1. Compressed air: 3 x G1/8"
2. Vacuum: 1 x G3/8" and 3 x G1/8"
3. Exhaust



Unit of measurement: mm

M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 B75P	
Description	Ordering number
VGS™3010 B75P 30/60 Shore (yellow-green), Pi12-3, flush mount	VGS3010 AC 00 BB
VGS™3010 B75P 60 Shore (green), Pi12-3, flush mount	VGS3010 AC 00 BC
VGS™3010 B75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BB
VGS™3010 B75P 60 Shore (green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BC
VGS™3010 B75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BB
VGS™3010 B75P 60 Shore (green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BC
VGS™3010 B75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BB
VGS™3010 B75P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BC

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 BF80P



Suction cup with short bellows

- ▶ The dual durometer BF80P is suitable for level adjustment and for uneven and porous surfaces, such as corrugated boxes/containers. The bellows and the sealing surface have two different durometers. This gives the cup both strength and stability as well as the flexibility to conform to uneven surfaces.
- ▶ The green BF80P is suitable for picking up heavier items, such as sheet metal that has a oily surface.
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ The suction cup has a molded G3/8" male fitting.
- ▶ Working temperature is 0–50°C
- ▶ Weight for a complete VGS™3010 BF80P is 125–147 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BF80P YELLOW-BLUE 30° 50° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N	Recommended parallel (shear) load with safety factor 2 N	Response time to 50 -kPa with Pi12-2 (s)	Response time to 50 -kPa with Pi12-3 (s)
0.314 MPa	0.47 NI/s 155 W	Plywood	51	75	Response time varies based on quality and porosity of handled material.	
		Corrugated	54	39		
		Dry steel	50	69	0.071	0.068
		Oily steel	44	44	0.071	0.068


RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BF80P GREEN 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N	Recommended parallel (shear) load with safety factor 2 N	Response time to 50 -kPa with Pi12-2 (s)	Response time to 50 -kPa with Pi12-3 (s)
0.314 MPa	0.47 NI/s 155 W	Plywood	111	78	Response time varies based on quality and porosity of handled material.	
		Corrugated	61	55		
		Dry steel	131	68	0.071	0.068
		Oily steel	116	40	0.071	0.068

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

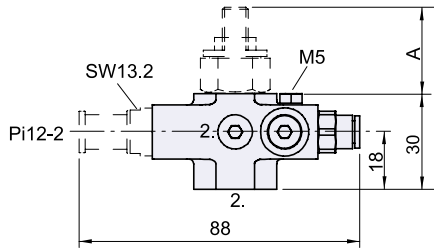
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

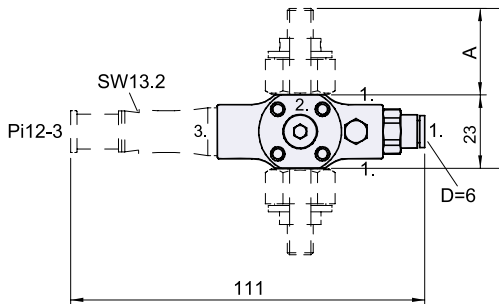
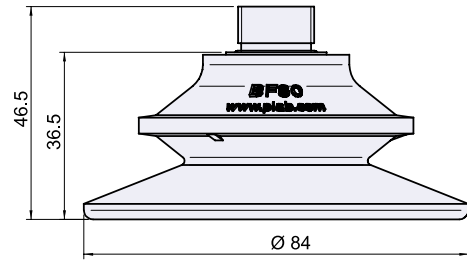
Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

Use a greater safety factor at higher altitudes.

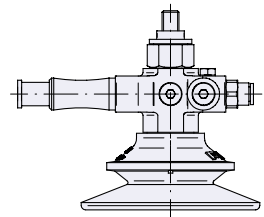
VGS™3010 BF80P



Mounting	A
M8 16	16
M8 27	27



1. Compressed air: 3 x G1/8"
2. Vacuum: 1 x G3/8" and 3 x G1/8"
3. Exhaust



Unit of measurement: mm

M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 BF80P	
Description	Ordering number
VGS™3010 BF80P 30/50 Shore (yellow-blue), Pi12-2, flush mount	VGS3010 AB 00 BD
VGS™3010 BF80P 60 Shore (green), Pi12-2, flush mount	VGS3010 AB 00 BE
VGS™3010 BF80P 30/50 Shore (yellow-blue), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BD
VGS™3010 BF80P 60 Shore (green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BE
VGS™3010 BF80P 30/50 Shore (yellow-blue), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BD
VGS™3010 BF80P 60 Shore (green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BE
VGS™3010 BF80P 30/50 Shore (yellow-blue), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BD
VGS™3010 BF80P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BE

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 BX35P, BX52P & BX75P



Suction cup with 2 1/2 bellows

- ▶ Suitable for level adjustment and for uneven and porous surfaces, such as corrugated boxes/containers.
- ▶ The bellows and sealing surface are available in different durometers. This gives the cup both strength and stability as well as the flexibility to conform to uneven surfaces
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ BX35P and BX52P - Separate G3/8" male suction cup fitting.
- ▶ BX75P – Molded suction cup fitting with removable thread insert, male G3/8".
- ▶ A filter support ring in the cup keeps dust out of the system. The filter's materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).
- ▶ Working temperature is 0–50°C
- ▶ Weight for complete VGS™3010 BX35P is 88–111 g.
Weight for complete VGS™3010 BX52P is 108–130 g.
Weight for complete VGS™3010 BX75P is 150–173 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BX35P, BX52P & BX75P YELLOW-GREEN 30° 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2			Recommended parallel (shear) load with safety factor 2			Response time to 50 -kPa with Pi12-2			Response time to 50 -kPa with Pi12-3		
			N	N	N	N	N	N	(s)	(s)	(s)	(s)	(s)	(s)
			BX35P	BX52P	BX75P	BX35P	BX52P	BX75P	BX35P	BX52P	BX75P	BX35P	BX52P	BX75P
0.314 MPa	0.47 NI/s 155 W	Plywood	16	36	72	17	23	54	Response time varies based on quality and porosity of handled material.					
		Corrugated	16	30	56	13	20	35						
		Dry steel	16	37	74	17	27	58	0.016	0.053	0.115	0.015	0.051	0.111
		Oily steel	17	34	74	5	13	32	0.016	0.053	0.115	0.015	0.051	0.111

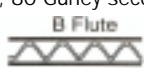
RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BX35P, BX52P & BX75P GREEN 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2			Recommended parallel (shear) load with safety factor 2			Response time to 50 -kPa with Pi12-2			Response time to 50 -kPa with Pi12-3		
			N	N	N	N	N	N	(s)	(s)	(s)	(s)	(s)	(s)
			BX35P	BX52P	BX75P	BX35P	BX52P	BX75P	BX35P	BX52P	BX75P	BX35P	BX52P	BX75P
0.314 MPa	0.47 NI/s 155 W	Plywood	16	33	85	15	29	56	Response time varies based on quality and porosity of handled material.					
		Corrugated	15	37	62	12	19	28						
		Dry steel	15	40	83	26	26	75	0.016	0.053	0.115	0.015	0.051	0.111
		Oily steel	16	40	85	6	14	48	0.016	0.053	0.115	0.015	0.051	0.111

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

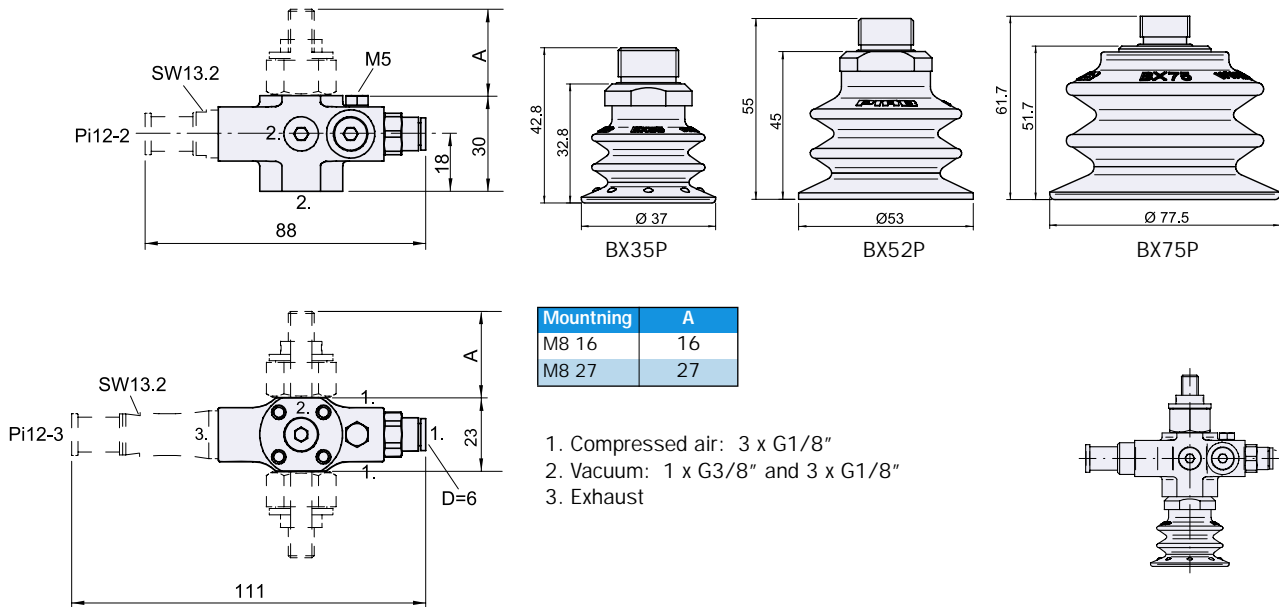
MATERIAL DEFINITION

Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application. Use a greater safety factor at higher altitudes.

VGS™3010 BX35P, BX52P & BX75P



Unit of measurement: mm

M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 BX35P	
Description	Ordering number
VGS™3010 BX35P 30/60 Shore (yellow-green), Pi12-2, flush mount	VGS3010 AB 00 BF
VGS™3010 BX35P 60 Shore (green), Pi12-2, flush mount	VGS3010 AB 00 BG
VGS™3010 BX35P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BF
VGS™3010 BX35P 60 Shore (green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BG
VGS™3010 BX35P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BF
VGS™3010 BX35P 60 Shore (green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BG
VGS™3010 BX35P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BF
VGS™3010 BX35P 60 Shore (green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BG

VGS™3010 BX52P	
Description	Ordering number
VGS™3010 BX52P 30/60 Shore (yellow-green), Pi12-3, flush mount	VGS3010 AC 00 BH
VGS™3010 BX52P 60 Shore (green), Pi12-3, flush mount	VGS3010 AC 00 BI
VGS™3010 BX52P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BH
VGS™3010 BX52P 60 Shore (green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BI
VGS™3010 BX52P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BH
VGS™3010 BX52P 60 Shore (green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BI
VGS™3010 BX52P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BH
VGS™3010 BX52P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BI

VGS™3010 BX75P	
Description	Ordering number
VGS™3010 BX75P 30/60 Shore (yellow-green), Pi12-3, flush mount	VGS3010 AC 00 BJ
VGS™3010 BX75P 60 Shore (green), Pi12-3, flush mount	VGS3010 AC 00 BK
VGS™3010 BX75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BJ
VGS™3010 BX75P 60 Shore (green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BK
VGS™3010 BX75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BJ
VGS™3010 BX75P 60 Shore (green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BK
VGS™3010 BX75P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BJ
VGS™3010 BX75P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BK

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 BX52P & BX75P WITH STABILIZER



Suction cups with 2 1/2 bellows including Stabilizer

- ▶ Suitable for extra stability when handling plates, sheets or boxes. Reduces the need for extra suction cups to create stability.
- ▶ The supports are adjustable in order to help handle difficult-to-grasp objects with vacuum.
- ▶ A filter support ring in the cup keeps dust out of the system. The filter's materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).
- ▶ BX52P - Separate G3/8" male suction cup fitting.
- ▶ BX75P - Molded suction cup fitting with removable G3/8" male thread insert.
- ▶ Working temperature is 0–50°C
- ▶ Weight for complete VGS™3010 BX52P Stabilizer is 201–224 g.
- ▶ Weight for complete VGS™3010 BX75P Stabilizer is 269–292 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BX52P & BX75P YELLOW-GREEN 30° 60° SHORE WITH STABILIZER

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N		Recommended parallel (shear) load with safety factor 2 N		Response time to 50 -kPa with Pi12-2 (s)		Response time to 50 -kPa with Pi12-3 (s)	
			BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer
0.314 MPa	0.47 NI/s 155 W	Plywood	32	70	23	54	Response time varies based on quality and porosity of handled material.			
		Corrugated	23	37	20	35				
		Dry steel	33	73	27	58	0.053	0.115	0.051	0.111
		Oily steel	33	75	13	32	0.053	0.115	0.051	0.111

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 BX52P & BX75P GREEN 60° SHORE WITH STABILIZER

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N		Recommended parallel (shear) load with safety factor 2 N		Response time to 50 -kPa with Pi12-2 (s)		Response time to 50 -kPa with Pi12-3 (s)	
			BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer	BX52P Stabilizer	BX75P Stabilizer
0.314 MPa	0.47 NI/s 155 W	Plywood	32	65	29	56	Response time varies based on quality and porosity of handled material.			
		Corrugated	21	28	19	28				
		Dry steel	33	64	26	75	0.053	0.115	0.051	0.111
		Oily steel	33	66	14	48	0.053	0.115	0.051	0.111

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

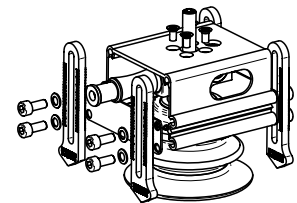
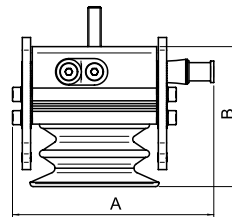
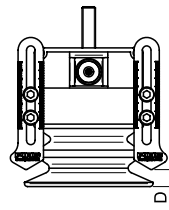
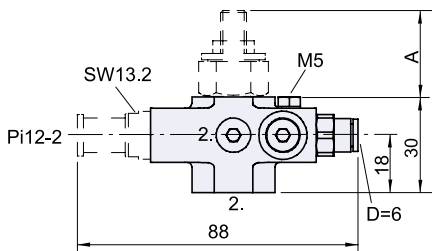
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

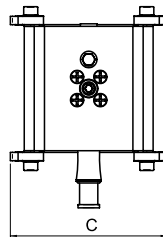
Use a greater safety factor at higher altitudes.

VGS™3010 BX52P & BX75P WITH STABILIZER



Mounting	A
M8 16	16
M8 27	27

1. Compressed air: 3 x G1/8"
2. Vacuum: 1 x G3/8" and 3 x G1/8"
3. Exhaust



Model	A mm	B mm	C mm	D mm
VGS™ BX52P with Stabilizer	108.9	78.2	85.8	10
VGS™ BX75P with Stabilizer	121.4	84.4	94.6	15

Unit of measurement: mm

M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 BX52P WITH STABILIZER 50	
Description	Ordering number
VGS™3010 BX52P 30/60 Shore (yellow-green) with Stab. 50, Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BW
VGS™3010 BX52P 60 Shore (green) with Stab.50, Pi12-2, M8 27mm screw, top-mount	VGS3010 AB 04 BX
VGS™3010 BX52P 30/60 Shore (yellow-green) with Stab. 50, Pi12-3, M8 27mm screw, top-mount	VGS3010 AC 04 BW
VGS™3010 BX52P 60 Shore (green) with Stab. 50, Pi12-3, M8 27mm screw, top-mount	VGS3010 AC 04 BX

VGS™3010 BX75P WITH STABILIZER 75	
Description	Ordering number
VGS™3010 BX75P 30/60 Shore (yellow-green) with Stab. 75, Pi12-3, M8 27mm screw, top-mount	VGS3010 AC 04 BY
VGS™3010 BX75P 60 Shore (green) with Stab. 75, Pi12-3, M8 27mm screw, top-mount	VGS3010 AC 04 BZ

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 FC50P, FC75P & FC100P



Flat, concave suction cups with cleats

- ▶ Suitable for slightly domed and flat oily surfaces, i.e. handling steel or aluminium sheets in press process.
- ▶ Due to high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ FC50P - Molded G3/8" male suction cup fitting.
- ▶ FC75P and FC100P - Molded suction cup fitting with removable G3/8" male thread insert.
- ▶ Working temperature is 0–50°C
- ▶ Weight for complete VGS™3010 FC50P is 96–119 g.
- ▶ Weight for complete VGS™3010 FC75P is 111–133 g.
- ▶ Weight for complete VGS™3010 FC100P is 162–184 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 FC50P, FC75P & FC100P RED 40° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N			Recommended parallel (shear) load with safety factor 2 N			Response time to 50 -kPa with Pi12-2 (s)			Response time to 50 -kPa with Pi12-3 (s)		
			FC50P	FC75P	FC100P	FC50P	FC75P	FC100P	FC50P	FC75P	FC100P	FC50P	FC75P	FC100P
0.314 MPa	0.47 NI/s 155 W	Plywood	50	102	189	53	117	215	Response time varies based on quality and porosity of handled material.					
		Corrugated	36	57	60	42	71	100						
		Dry steel	55	100	208	58	131	230	0.018	0.053	0.142	0.017	0.051	0.136
		Oily steel	51	100	174	44	63	56	0.018	0.053	0.142	0.017	0.051	0.136


RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 FC50P, FC75P & FC100P GREEN 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N			Recommended parallel (shear) load with safety factor 2 N			Response time to 50 -kPa with Pi12-2 (s)			Response time to 50 -kPa with Pi12-3 (s)		
			FC50P	FC75P	FC100P	FC50P	FC75P	FC100P	FC50P	FC75P	FC100P	FC50P	FC75P	FC100P
0.314 MPa	0.47 NI/s 155 W	Plywood	50	117	221	61	121	178	Response time varies based on quality and porosity of handled material.					
		Corrugated	34	59	71	45	58	87						
		Dry steel	57	123	255	70	90	238	0.018	0.053	0.142	0.017	0.051	0.136
		Oily steel	46	113	217	16	34	52	0.018	0.053	0.142	0.017	0.051	0.136

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

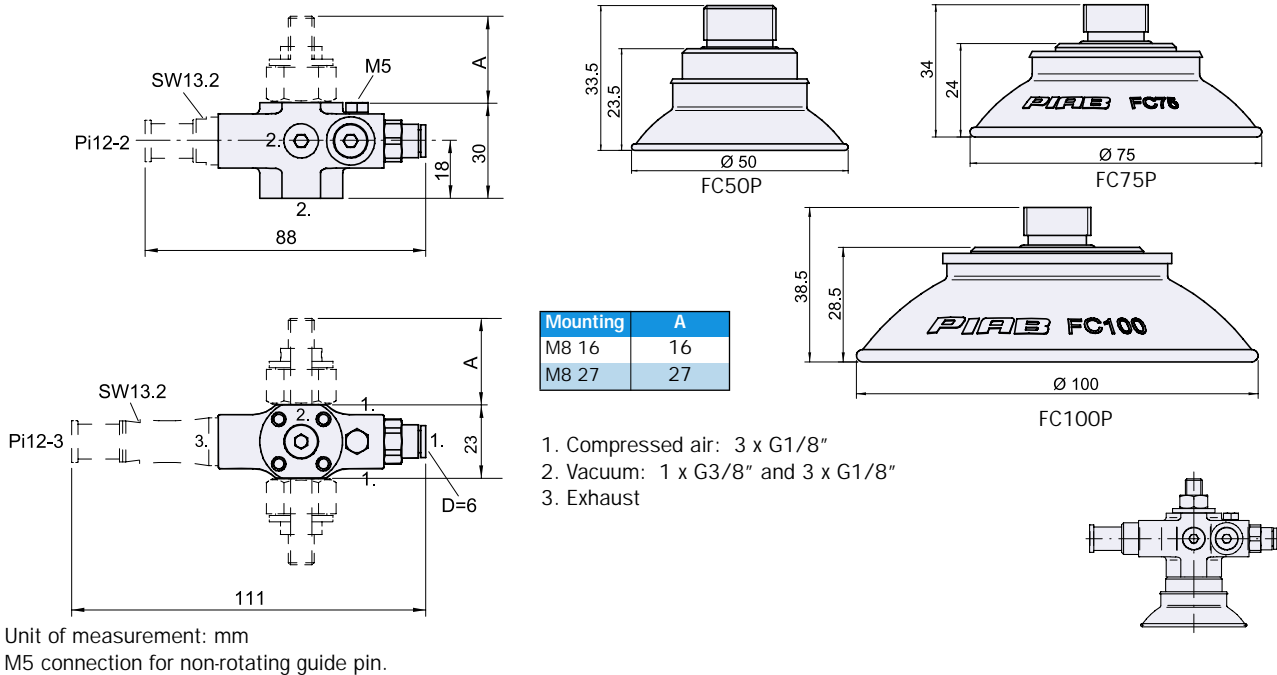
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

Use a greater safety factor at higher altitudes.

VGS™3010 FC50P, FC75P & FC100P



ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 FC50P	
Description	Ordering number
VGS™3010 FC50P 40 Shore (red), Pi12-2, flush mount	VGS3010 AB 00 BP
VGS™3010 FC50P 60 Shore (green), Pi12-2, flush mount	VGS3010 AB 00 BQ
VGS™3010 FC50P 40 Shore (red), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BP
VGS™3010 FC50P 60 Shore (green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BQ
VGS™3010 FC50P 40 Shore (red), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BP
VGS™3010 FC50P 60 Shore (green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BQ
VGS™3010 FC50P 40 Shore (red), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BP
VGS™3010 FC50P 60 Shore (green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BQ

VGS™3010 FC75P	
Description	Ordering number
VGS™3010 FC75P 40 Shore (red), Pi12-2, flush mount	VGS3010 AB 00 BR
VGS™3010 FC75P 60 Shore (green), Pi12-2, flush mount	VGS3010 AB 00 BS
VGS™3010 FC75P 40 Shore (red), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BR
VGS™3010 FC75P 60 Shore (green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BS
VGS™3010 FC75P 40 Shore (red), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BR
VGS™3010 FC75P 60 Shore (green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BS
VGS™3010 FC75P 40 Shore (red), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BR
VGS™3010 FC75P 60 Shore (green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BS

VGS™3010 FC100P	
Description	Ordering number
VGS™3010 FC100P 40 Shore (red), Pi12-3, flush mount	VGS3010 AC 00 BT
VGS™3010 FC100P 60 Shore (green), Pi12-3, flush mount	VGS3010 AC 00 BU
VGS™3010 FC100P 40 Shore (red), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BT
VGS™3010 FC100P 60 Shore (green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BU
VGS™3010 FC100P 40 Shore (red), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BT
VGS™3010 FC100P 60 Shore (green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BU
VGS™3010 FC100P 40 Shore (red), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BT
VGS™3010 FC100P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BU

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 F75P & F110P



Flat suction cups with cleats

- ▶ Suitable for all flat and rough surfaces
- ▶ Good stability and little inherent movement due to the high friction of the rubber material, the suction cups can withstand high forces at rapid accelerations in horizontal directions, even on oily surfaces.
- ▶ Recommended when the lifting force is parallel to the surface of the object.
- ▶ The suction cups are available in different durometers. This gives the cup both strength and stability as well as the flexibility to conform to rough surfaces.
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ The suction cups have a molded fitting with removable G3/8" male thread insert.
- ▶ Working temperature is 0–50°C
- ▶ Weight for a complete VGS™3010 F75P is 128–150 g.
- ▶ Weight for a complete VGS™3010 F110P is 210–232 g.

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 F75P & F110P YELLOW-GREEN 30° 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N		Recommended parallel (shear) load with safety factor 2 N		Response time to 50 -kPa with Pi12-2 (s)		Response time to 50 -kPa with Pi12-3 (s)	
			F75P	F110P	F75P	F110P	F75P	F110P	F75P	F110P
0.314 MPa	0.47 NI/s 155 W	Plywood	144	317	151	274	Response time varies based on quality and porosity of handled material.			
		Corrugated	64	107	62	105				
		Dry steel	160	335	74	308	0.034	0.106	0.032	0.102
		Oily steel	142	304	33	95	0.034	0.106	0.032	0.102

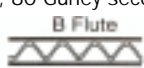
RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 F75P & F110P GREEN 60° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2 N		Recommended parallel (shear) load with safety factor 2 N		Response time to 50 -kPa with Pi12-2 (s)		Response time to 50 -kPa with Pi12-3 (s)	
			F75P	F110P	F75P	F110P	F75P	F110P	F75P	F110P
0.314 MPa	0.47 NI/s 155 W	Plywood	140	310	111	300	Response time varies based on quality and porosity of handled material.			
		Corrugated	61	114	33	110				
		Dry steel	165	352	85	332	0.034	0.106	0.032	0.102
		Oily steel	163	304	33	161	0.034	0.106	0.032	0.102

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

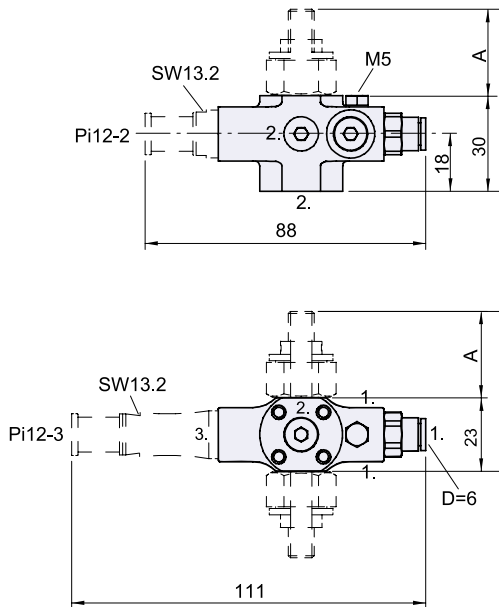
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds FW 3 mm 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

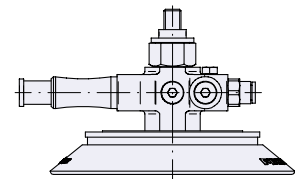
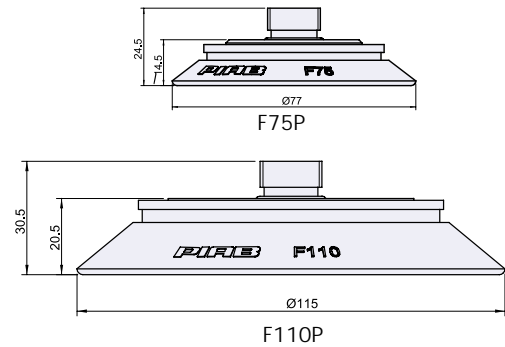
Use a greater safety factor at higher altitudes.

VGS™3010 F75P & F110P



Mounting	A
M8 16	16
M8 27	27

1. Compressed air: 3 x G1/8"
2. Vacuum: 1 x G3/8" and 3 x G1/8"
3. Exhaust



Unit of measurement: mm

M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 F75P	
Description	Ordering number
VGS™3010 F75P 30/60 Shore (yellow-green), Pi12-2, flush mount	VGS3010 AB 00 BL
VGS™3010 F75P 60 Shore (green), Pi12-2, flush mount	VGS3010 AB 00 BM
VGS™3010 F75P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BL
VGS™3010 F75P 60 Shore (green), Pi12-2, M8 27mm screw, top-mount, w. profile kit	VGS3010 AB 04 BM
VGS™3010 F75P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BL
VGS™3010 F75P 60 Shore (green), Pi12-2, M8 27mm screw, right-mount, w. profile kit	VGS3010 AB 05 BM
VGS™3010 F75P 30/60 Shore (yellow-green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BL
VGS™3010 F75P 60 Shore (green), Pi12-2, M8 27mm screw, left-mount, w. profile kit	VGS3010 AB 06 BM

VGS™3010 F110P	
Description	Ordering number
VGS™3010 F110P 30/60 Shore (yellow-green), Pi12-3, flush mount	VGS3010 AC 00 BN
VGS™3010 F110P 60 Shore (green), Pi12-3, flush mount	VGS3010 AC 00 BO
VGS™3010 F110P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BN
VGS™3010 F110P 60 Shore (green), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BO
VGS™3010 F110P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BN
VGS™3010 F110P 60 Shore (green), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BO
VGS™3010 F110P 30/60 Shore (yellow-green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BN
VGS™3010 F110P 60 Shore (green), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BO

See page 9 for complete explanation of VGS™3010 ordering number.

VGS™3010 OBL40X90P



Oval suction cup with 4 bellows

- ▶ Suitable for handling elongated and sharp curved surfaces, such as bottles and other cylindrical parts.
- ▶ Strengthening rings make the suction cup stable.
- ▶ DURAFLEX™ cups are made of a revolutionary polyurethane material that combines the soft elasticity of rubber with the exceptional wear resistance of polyurethane.
- ▶ The DURAFLEX™ material is non-marking.
- ▶ The suction cups have a molded fitting with removable G3/8" male thread insert.
- ▶ Working temperature is 0–50°C
- ▶ Weight for a complete VGS™3010 OBL40x90P is 181–204 g.


RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME FOR VGS™3010 OBL40X90P BLACK 70° SHORE

Feed pressure	Air consumption and compressor power, continuous operation	Material to be handled (see table below)	Recommended perpendicular load with safety factor 2	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
			N	N	(s)	(s)
0.314 MPa	0.47 NI/s 155 W	Plywood	74	69	Response time varies based on quality and porosity of handled material.	
		Corrugated	51	47		
		Dry steel	91	70	0.186	0.179
		Oily steel	74	19	0.186	0.179

Remark. The compressor power is calculated according to: 5.5 W consumed electric power per produced NI/min compressed air, valid for a normal sized 7 bar compressor.

See page 26–27 for lifting force information at other feed pressures.

MATERIAL DEFINITION

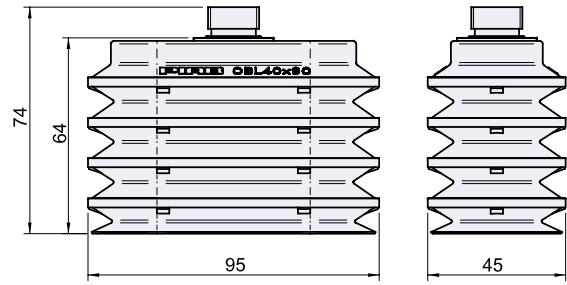
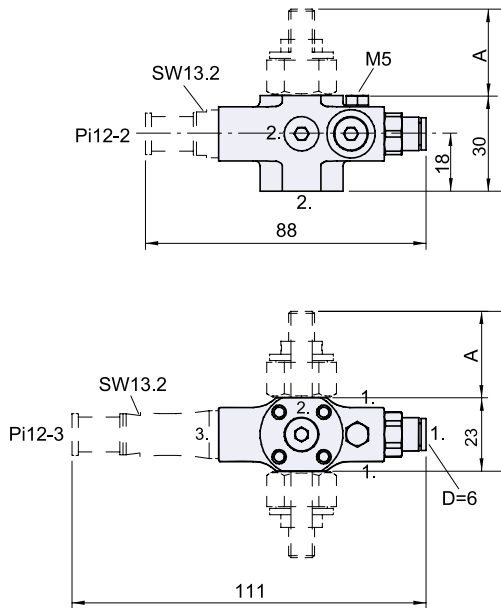
Corrugated cardboard	B Flute 3 mm, 80 Gurley seconds 
Plywood	Red deal plywood, 5 layers, 7 mm
Dry steel	Cleaned rolled sheet metal
Oily steel	Oil film on rolled sheet metal

Note:

Previously, PIAB has published lifting force information for individual suction cups that did not include a safety factor. The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application.

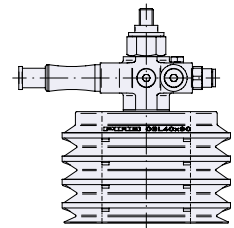
Use a greater safety factor at higher altitudes.

VGS™3010 OBL40X90P



Mounting	A
M8 16	16
M8 27	27

1. Compressed air: 3 x G1/8"
2. Vacuum: 1 x G3/8" and 3 x G1/8"
3. Exhaust



Unit of measurement: mm
M5 connection for non-rotating guide pin.

ORDERING INFORMATION FOR STANDARD UNITS

VGS™3010 OBL40x90P	
Description	Ordering number
VGS™3010 OBL40X90P 70 Shore (black), Pi12-3, flush mount	VGS3010 AC 00 BV
VGS™3010 OBL40X90P 70 Shore (black), Pi12-3, M8 27mm screw, top-mount, w. profile kit	VGS3010 AC 04 BV
VGS™3010 OBL40X90P 70 Shore (black), Pi12-3, M8 27mm screw, right-mount, w. profile kit	VGS3010 AC 05 BV
VGS™3010 OBL40X90P 70 Shore (black), Pi12-3, M8 27mm screw, left-mount, w. profile kit	VGS3010 AC 06 BV

See page 9 for complete explanation of VGS™3010 ordering number.

TECHNICAL DATA VACUUM CARTRIDGES

Flow for vacuum cartridges Pi12-2 and Pi12-3

Model	Feed pressure MPa	Maximum vacuum -kPa	Noise level dBA	Vacuum flow, NI/s, at different vacuum levels, -kPa									
				0	10	20	30	40	50	60	70	80	90
Pi12-2	0.17	49	60-68	0.57	0.4	0.22	0.15	0.07	—	—	—	—	—
	0.22	64	63-70	0.64	0.48	0.29	0.2	0.14	0.08	0.02	—	—	—
	0.314	90	65-74	0.68	0.6	0.44	0.27	0.19	0.14	0.1	0.06	0.03	—
	0.6	83	77-82	0.66	0.6	0.5	0.42	0.36	0.28	0.17	0.05	0.01	—
Pi12-3	0.17	49	63-68	0.9	0.4	0.22	0.15	0.07	—	—	—	—	—
	0.22	64	66-71	1.1	0.48	0.29	0.2	0.14	0.08	0.02	—	—	—
	0.314	90	67-72	1.4	0.6	0.44	0.27	0.19	0.14	0.1	0.06	0.03	—
	0.6	83	79-83	1.6	1.0	0.5	0.41	0.36	0.28	0.17	0.05	0.01	—

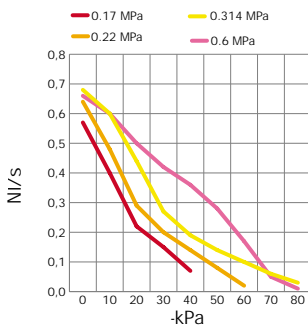
Maximum vacuum levels at a specific feed pressure are within a range of ±3% of the feed pressure.

Response time for vacuum cartridges Pi12-2 and Pi12-3

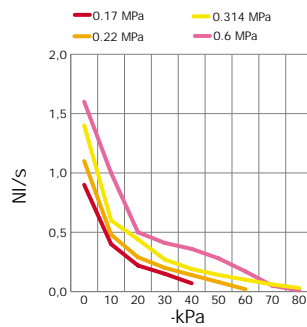
Model	Feed pressure MPa	Maximum vacuum -kPa	Air consumption NI/s	Evacuation time, s/l, to reach different vacuum levels, -kPa									
				10	20	30	40	50	60	70	80	90	
Pi12-2	0.17	49	0.3	0.28	0.56	1.13	2.13	—	—	—	—	—	—
	0.22	64	0.36	0.2	0.42	0.85	1.5	2.3	3	—	—	—	—
	0.314	90	0.47	0.17	0.32	0.58	1.1	1.8	2.7	4	6.4	—	—
	0.6	83	0.79	0.1	0.2	0.4	0.7	1.1	1.5	2.5	9.1	—	—
Pi12-3	0.17	49	0.3	0.15	0.46	1	2	—	—	—	—	—	—
	0.22	64	0.36	0.1	0.32	0.75	1.4	2.2	2.9	—	—	—	—
	0.314	90	0.47	0.08	0.23	0.49	1	1.7	2.6	3.9	6.3	—	—
	0.6	83	0.79	0.06	0.17	0.37	0.65	1.0	1.4	2.4	9.0	—	—

Maximum vacuum levels at a specific feed pressure are within a range of ±3% of the feed pressure.

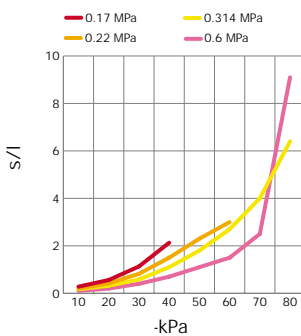
Vacuum flow Pi12-2



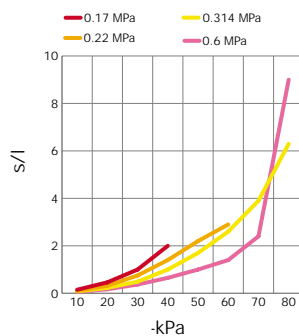
Vacuum flow Pi12-3



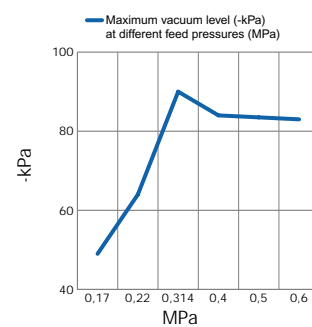
Response time Pi12-2



Response time Pi12-3



Maximum vacuum Pi12-2/Pi12-3



ORDERING INFORMATION FOR SEPARATE VGS™ MODULES

Description	VGS code	Art. No.	Material	Working temperature °C	Weight g
Housing VGS™3010 G3/8" cpl.	VGS™3010	01 06 965	AL, SS, Nitrile	-10 – +50	45
Blind plug M14 with O-ring	AA	01 07 481	AL Nitrile	-10 – +50	4
Vacuum cartridge Pi12-2 with mounting holder	AB	01 06 924	PA Al, Nitrile	-10 – +50	9
Vacuum cartridge Pi12-3 with mounting holder	AC	01 06 923	PA, Al, Nitrile	-10 – +50	12
Vacuum cartridge Pi12-2 with non-return valve	AD	01 06 964	PA Al, Nitril	-10 – +50	9
Vacuum cartridge Pi12-3 with non-return valve	AE	01 06 957	PA, Al, Nitrile	-10 – +50	12
4xM4 screws and 5x plug G1/8"	00	01 06 915	SS, Nitrile	-10 – +50	24
M8 16 mm, 4x plug G1/8" incl. profile kit	01-03	01 06 927	SS, PA, Nitrile	-10 – +50	24
M8 27 mm, 4x plug G1/8" incl. profile kit with jam nut	04-06	01 06 949	Al, SS, Steel, Nitrile	-10 – +50	36

ORDERING INFORMATION FOR VGS™ SPARE PARTS

Description	Art. No.	Material
G1/8" D=6 compressed air connector	01 04 190	SS, Nitrile
Mounting holder Pi12-2 with O-ring	01 06 921	Al, Nitrile
Mounting holder Pi12-3 with O-ring	01 06 896	Al, Nitrile
M8 16 mm screw	01 06 767	SS
M8 27 mm screw	01 06 769	SS
Plug G1/8" cpl. VGS™3010 with O-ring	01 06 990	SS, Nitrile
Stabilizer 50 cpl.	01 07 058	Al, SS, PA66, PA61
Stabilizer 75 cpl	01 07 010	Al, SS, PA66, PA61
Support legs for Stabilizer (4x)	01 07 621	PA66, PA61
Thread insert 3/8" cpl with O-ring for BX75P	01 06 797	Al, Nitrile
Thread insert 3/8" cpl O-ring + mesh filter	01 07 148	Al, Nitrile, TPE, PES
Filter support ring BX35P	01 06 373	TPE, PES
Filter support ring BX52P	01 04 726	TPE, PES
Filter support ring BX75P	01 06 374	TPE, PES
O-ring kit VGS™3010	01 07 620	Nitrile

Description	Art. No.	Material
M5 plug with washer	31 07 033	SS, PA
Support plate kit for OBL40x90P	01 07 684	PUR
40 fitting G3/8" for cup BX35P	32 50 086	Al, Nitrile
50 fitting G3/8" for cup BX52P	32 50 087	Al, Nitrile

TECHNICAL DATA FOR DURAFLEX™ SUCTION CUPS

Suction cup model, size and durometer	Art. No.		Perpendicular lifting power, at vacuum level N		Parallel (shear) lifting power at vacuum level N		Volume cm ³	Minimum curve radius mm	Maximum vertical movement mm	Weight with fitting g
	Replacement cup/ cup with collar.	Suction cup with cpl. fitting	20 -kPa	60 -kPa	20 -kPa	60 -kPa				
B75P 30/60° Shore	01 06 832	01 06 833	61	149	44	96	110	45	20	74
B75P 60° Shore	01 07 318	01 07 319	83	196	121	229	110	45	20	74
BF80P 30/50° Shore	—	01 07 326	73	157	54	88	40	132	16	54
BF80P 60° Shore	—	01 07 327	98	225	68	127	40	132	16	54
BX35P 30/60° Shore	01 06 619	01 07 377	12	20	14	27	10	10	14	18
BX35P 60° Shore	01 07 376	01 07 379	15	25	22	30	10	10	14	18
BX52P 30/60° Shore	01 04 529	01 06 740	39	73	34	49	30	45	19	37
BX52P 60° Shore	01 07 381	01 07 387	37	59	27	50	30	45	19	37
BX75P 30/60° Shore	01 07 145	01 07 151	62	110	39	83	80	23	26	79
BX75P 60° Shore	01 07 150	01 07 149	80	120	78	114	80	23	26	79
FC50P 40° Shore	—	01 03 289	28	77	49	82	10	53	5	27
FC50P 60° Shore	—	01 03 293	28	77	52	93	10	53	2	27
FC75P 40° Shore	01 06 948	01 06 959	73	157	107	200	30	78	6,5	41
FC75P 60° Shore	01 07 302	01 07 303	73	166	93	225	30	78	6,5	41
FC100P 40° Shore	01 06 835	01 06 836	137	284	176	318	80	110	10,2	91
FC100P 60° Shore	01 07 304	01 07 305	152	328	112	264	80	110	10,2	91
F75P 30/60° Shore	01 06 829	01 06 830	70	193	44	176	19	150	2	58
F75P 60° Shore	01 07 320	01 07 321	82	231	47	113	19	150	2	58
F110P 30/60° Shore	01 06 796	01 06 798	167	432	149	441	60	250	4	139
F110P 60° Shore	01 07 322	01 07 323	191	498	297	523	60	250	4	139
OBL40x90P 70° Shore	01 07 068	01 07 325	49	117	45	97	90	29	23	110

Note:

Maximum measured values are given. Always use a safety factor of >2 when the suction cup is not used with a Vacuum Gripper System (VGS™).

MATERIAL PROPERTIES FOR DURAFLEX™

Working temperature °C	Wear resistance	Oil	Weather and ozone	Hydrolysis	Petrol	Concentrated acids	Alcohol	Oxidation
0 – +60	Excellent	Excellent	Excellent	Fair	Good	Fair	Poor	Poor

RECOMMENDED LOAD WITH SAFETY FACTOR 2 FOR ALL VGS™3010 MODELS AT DIFFERENT FEED PRESSURES

BEST CHOICE

Feed pressure		0.17 MPa		0.22 MPa		0.314 MPa		0.6 MPa	
Air consumption		0.3 NI/s		0.36 NI/s		0.47 NI/s		0.79 NI/s	
Air consumption saving or spending based on 0.314 MPa		-36%		-23%		0		+68%	
Compressor power, continuous operation		99 W		119 W		155 W		260 W	
VGS™3010 model, size and durometer	Material to be handled	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N
B75P 30/60° Shore	Plywood	64	60	90	70	128	64	109	63
	Corrugated	43	36	50	42	56	43	74	50
	Dry steel	68	30	92	61	92	64	124	65
	Oily steel	54	15	68	20	94	23	87	22
B75P 60° Shore	Plywood	76	72	95	91	113	103	107	101
	Corrugated	48	50	57	59	64	64	85	78
	Dry steel	91	107	98	121	128	149	129	146
	Oily steel	79	26	95	28	118	37	118	28
BF80P 30/50° Shore	Plywood	59	46	52	57	51	75	50	71
	Corrugated	44	28	52	36	54	39	60	48
	Dry steel	56	44	50	58	50	69	49	74
	Oily steel	27	36	34	45	44	44	49	39
BF80P 60° Shore	Plywood	72	56	72	78	111	78	126	95
	Corrugated	46	43	46	55	61	55	80	58
	Dry steel	87	49	87	68	131	68	128	74
	Oily steel	85	25	85	40	116	40	122	38
BX35P 30/60° Shore	Plywood	14	12	12	14	16	17	16	15
	Corrugated	13	9	12	11	16	13	15	12
	Dry steel	15	13	14	16	16	17	15	16
	Oily steel	12	4	13	4	17	5	16	4
BX35P 60° Shore	Plywood	16	11	12	13	16	15	15	14
	Corrugated	15	9	11	10	15	12	13	11
	Dry steel	17	14	14	16	15	18	15	16
	Oily steel	16	6	13	6	16	6	16	6
BX52P 30/60° Shore	Plywood	28	19	28	21	36	23	33	21
	Corrugated	24	14	25	17	30	20	31	19
	Dry steel	31	19	29	22	37	27	36	26
	Oily steel	25	10	29	10	34	13	33	10
BX52P 60° Shore	Plywood	36	19	33	21	33	29	43	26
	Corrugated	33	15	39	18	37	19	40	19
	Dry steel	40	20	36	22	40	26	38	25
	Oily steel	36	8	32	9	40	14	37	14
BX75P 30/60° Shore	Plywood	60	32	49	41	72	54	68	51
	Corrugated	43	24	52	28	56	35	64	36
	Dry steel	67	34	50	43	74	58	69	55
	Oily steel	53	22	50	24	74	32	71	29
BX75P 60° Shore	Plywood	76	36	62	43	85	56	78	53
	Corrugated	47	23	59	26	62	28	88	33
	Dry steel	86	55	64	60	83	75	79	72
	Oily steel	84	36	64	41	85	48	80	46
F75P 30/60° Shore	Plywood	87	107	108	127	144	151	137	144
	Corrugated	49	48	59	55	64	62	89	86
	Dry steel	93	59	113	60	160	74	148	70
	Oily steel	92	29	109	28	142	33	137	31
F75P 60° Shore	Plywood	76	62	102	83	140	111	131	101
	Corrugated	47	36	53	33	61	33	86	70
	Dry steel	87	60	121	68	165	85	155	73
	Oily steel	87	19	117	24	163	33	155	29
F110P 30/60° Shore	Plywood	183	189	241	214	317	274	298	279
	Corrugated	73	75	86	89	107	105	124	127
	Dry steel	193	202	249	232	335	308	326	292
	Oily steel	180	73	228	85	304	95	295	93

BEST CHOICE

Feed pressure		0.17 MPa		0.22 MPa		0.314 MPa		0.6 MPa	
Air consumption		0.3 NI/s		0.36 NI/s		0.47 NI/s		0.79 NI/s	
Air consumption saving or spending based on 0.314 MPa		-36%		-23%		0		+68%	
Compressor power, continuous operation		99 W		119 W		155 W		260 W	
VGS™3010 model, size and durometer	Material to be handled	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N	Recommend- ed perpendicular load with safety factor 2 N	Recommend- ed parallel (shear) load with safety factor 2 N
F110P 60° Shore	Plywood	179	183	230	227	310	300	290	272
	Corrugated	76	72	92	89	114	110	127	131
	Dry steel	201	238	257	269	352	332	343	300
	Oily steel	184	125	229	141	304	161	292	151
FC50P 40° Shore	Plywood	31	37	39	44	50	53	48	50
	Corrugated	26	12	32	38	36	42	40	44
	Dry steel	34	41	43	48	55	58	54	56
FC50P 60° Shore	Oily steel	31	33	39	40	51	44	49	44
	Plywood	30	40	38	49	50	61	50	60
	Corrugated	24	32	30	40	34	45	44	52
	Dry steel	34	48	44	57	57	70	55	64
FC75P 40° Shore	Oily steel	28	12	36	15	46	16	44	17
	Plywood	65	77	81	99	102	117	97	108
	Corrugated	46	58	55	68	57	71	73	81
	Dry steel	63	56	77	105	100	131	109	129
FC75P 60° Shore	Oily steel	64	53	78	52	100	63	96	61
	Plywood	72	76	92	97	117	121	109	120
	Corrugated	45	52	54	53	59	58	79	75
	Dry steel	74	63	93	68	123	90	117	83
FC100P 40° Shore	Oily steel	69	21	87	26	113	34	109	32
	Plywood	124	150	151	175	189	215	182	206
	Corrugated	43	81	46	89	60	100	61	124
	Dry steel	135	153	164	189	208	230	202	208
FC100P 60° Shore	Oily steel	110	43	134	46	174	56	167	51
	Plywood	136	112	172	141	221	178	210	172
	Corrugated	46	33	55	73	71	87	82	105
	Dry steel	155	165	194	194	255	238	248	231
OBL 40x90P 70° Shore	Oily steel	131	42	166	44	217	52	206	49
	Plywood	46	46	59	56	74	69	71	60
	Corrugated	38	32	46	40	51	47	64	56
	Dry steel	54	47	70	54	91	70	86	58
BX52P 30/60° Shore with Stabilizer 50	Oily steel	44	11	56	15	74	19	71	16
	Plywood	15	19	21	21	32	23	30	21
	Corrugated	12	14	16	17	23	20	24	19
	Dry steel	15	19	21	22	33	27	31	26
BX52P 60° Shore with Stabilizer 50	Oily steel	15	10	21	10	33	13	31	10
	Plywood	15	19	22	21	32	29	30	26
	Corrugated	10	15	16	18	21	19	22	19
	Dry steel	15	20	21	22	33	26	31	25
BX75P 30/60° Shore with Stabilizer 75	Oily steel	15	8	21	9	33	14	31	14
	Plywood	32	32	47	41	70	54	66	51
	Corrugated	20	24	29	28	37	35	44	36
	Dry steel	33	34	47	43	73	58	68	55
BX75P 60° Shore with Stabilizer 75	Oily steel	34	22	48	24	75	32	70	29
	Plywood	27	36	41	43	65	56	60	53
	Corrugated	13	23	21	26	28	28	38	33
	Dry steel	27	55	41	60	64	75	60	72
BX75P 60° Shore with Stabilizer 75	Oily steel	28	36	43	41	66	48	62	46

The VGS™3010 figures have a built in safety factor that allow you to properly size a vacuum gripper system based on the actual weight of the product to be handled. Please note that this is only a recommendation and you should field test a vacuum gripper system to make sure it is right for your application. Use a greater safety factor at higher altitudes.