Vacuum grippers

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. With the VGS™ 3010 you will enjoy the benefits of a more cost-efficient and reliable vacuum system.

EFFICIENT MATERIAL HANDLING 376

APPLICATION EXAMPLES 377

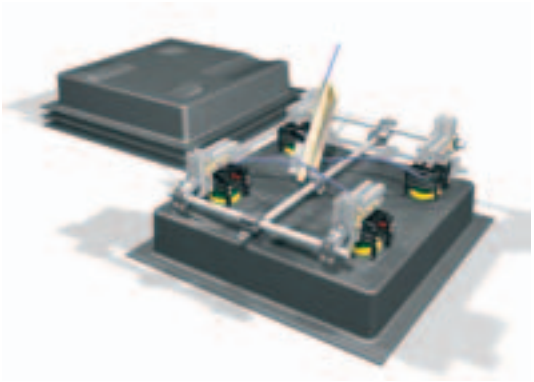
AID TO SELECTION 378

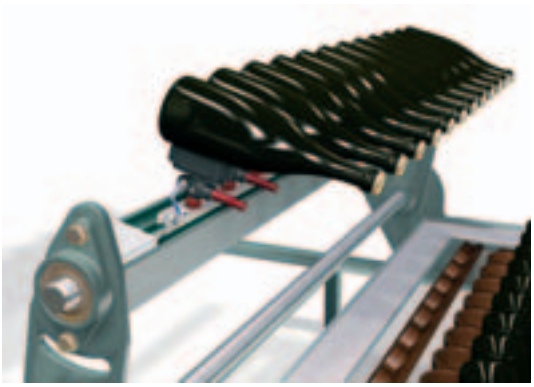
SYSTEM SOLUTION EXAMPLES 380

EXPLANATION OF ORDERING NUMBER 381

VACUUM GRIPPERS

VGS™3010 B75P....382
VGS™3010 BF80P....384
VGS™3010 BX35P....386
VGS™3010 BX52P....388
VGS™3010 BX75P....390
VGS™3010 BX52P with stabilizer....392
VGS™3010 BX75P with stabilizer....394
VGS™3010 FC50P....396
VGS™3010 FC75P....398
VGS™3010 FC100P....400
VGS™3010 F75P....402
VGS™3010 F110P....404
VGS™3010 OBL40X90P....406
VGS™3010 Mounting kits....408





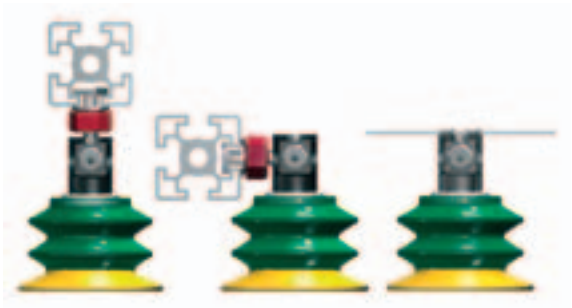
EFFICIENT MATERIAL HANDLING

INCREASE YOUR PRODUCTIVITY AND REDUCE YOUR COSTS WITH VGS™3010

- **Shorter 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.

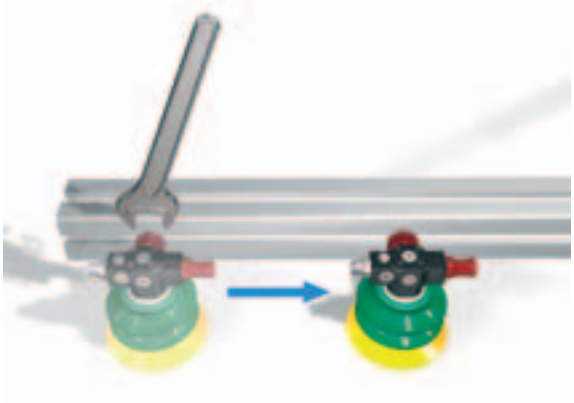
SIMPLE INSTALLATION AND MAINTENANCE

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



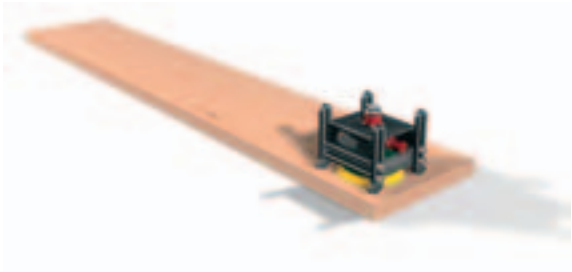
FLEXIBLE POSITIONING

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 and eliminate the need for multiple suction cups.



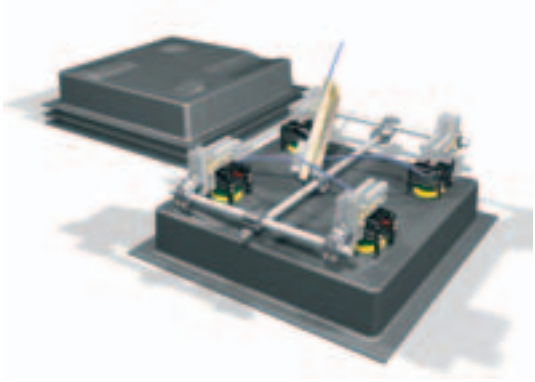
Exceptional handling stability with stabilizer

VGS™3010 APPLICATION EXAMPLES

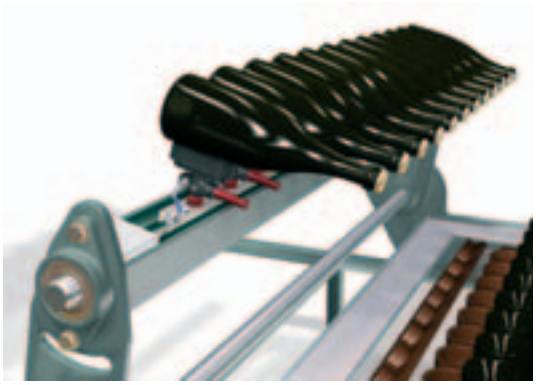
VGS™3010 with DURAFLEX® suction cups can handle these materials more effectively than conventional cup and pump solutions.

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

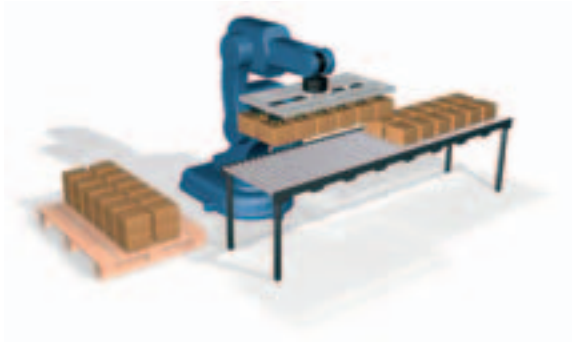
Using a VGS™3010 with Stabilizer increases the ability to handle sheets with sharp convex and concave surfaces and reduces the quantity of cups needed.



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



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



Handling configuration 1.

Handling configuration 2.

AID TO SELECTION

Build a VGS™3010 according to your needs.

A – CHOOSE SUCTION CUP DESIGN

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

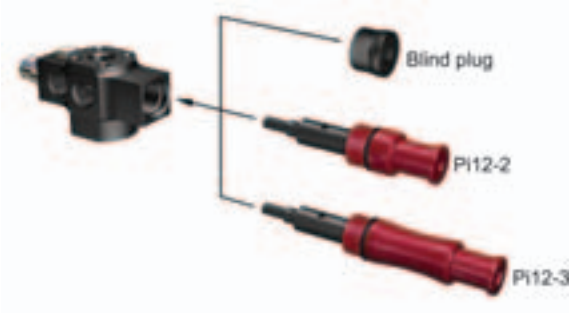
For increased stability and flexibility to handle objects that are hard to grip with vacuum, a stabilizer should be used. The supports are height-adjustable for different types of objects.

- 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 Nl/min of vacuum flow, for minimum mounting dimensions when handling non-porous material such as sheet metal or when using smaller suction cups.
- Choose cartridge Pi12-3, a 3-stage ejector with more then 90 Nl/min of vacuum flow, for faster response when handling porous material such as corrugated cardboard 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.



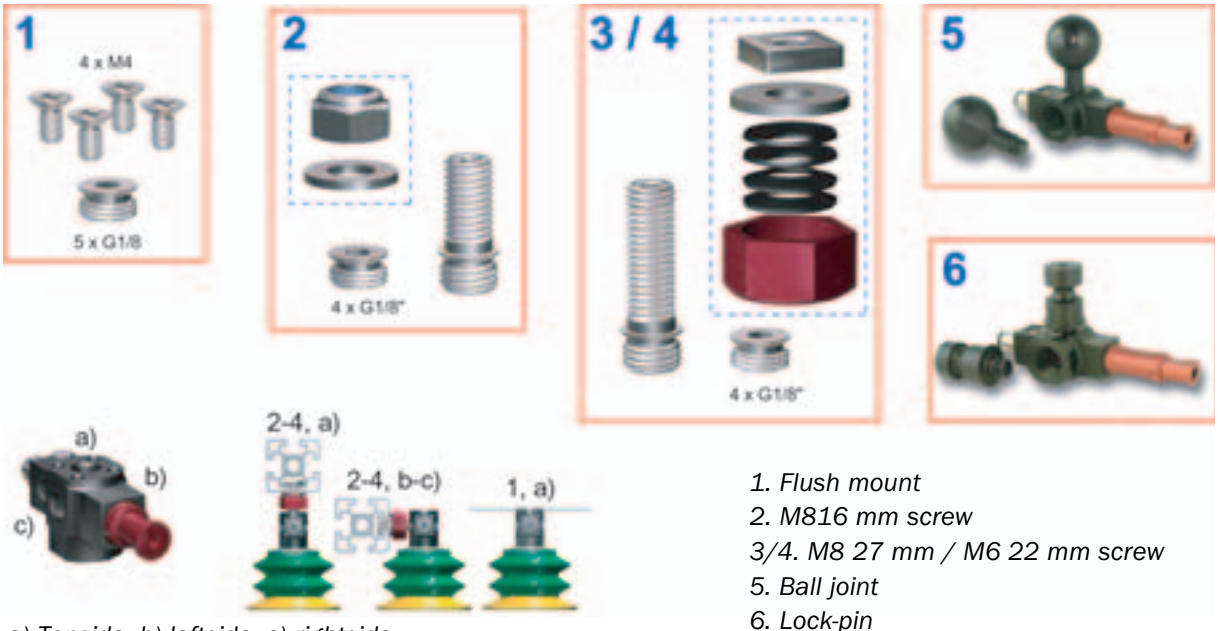
D — CHOOSE MOUNTING INTERFACE AND MOUNTING ORIENTATION

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 cannot be used if you choose a Stabilizer.

Option 2–4 — Choose a factory-installed screw that can be mounted in three different positions: Topside, leftside or rightside; 4x1/8" plugs are included. Left or right side mount will give you low installation height. A profile mounting kit is included for easy attachment to a profile system.
Option 2 — Mount the VGS™3010 with a M8 16 mm screw.
Option 3 — Mount the VGS™3010 with a M8 27 mm screw.
Option 4 — Mount the VGS™ 3010 with a M6 22 mm screw.

Option 5 –Mount the VGS™3010 with a ball joint. Choose a factory-installed ball joint that can be mounted in two different positions, leftside or rightside, 4x1/8" plugs are included. Left or right side mount will give you low installation height.

Option 6 —Mount the VGS™3010 with a lock-pin. Choose a factory-installed lock-pin that can be mounted in two different positions, leftside or rightside; 4x1/8" plugs are included. Left or right side mount will give you low installation height.

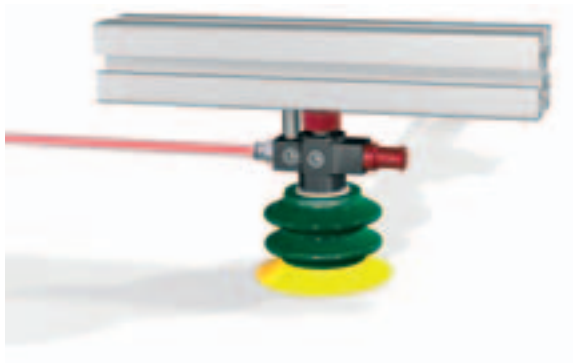


a) Topside, b) leftside, c) rightside

1. Flush mount
2. M816 mm screw
3/4. M8 27 mm / M6 22 mm screw
5. Ball joint
6. Lock-pin

VGS™3010 SYSTEM SOLUTION EXAMPLES

A profile-mounted VGS™3010 can be made non-rotating by inserting a guide pin in the profile slot.
Use the M5 threaded connection on the VGS™3010 housing.
(Guide pin not supplied by PIAB.)

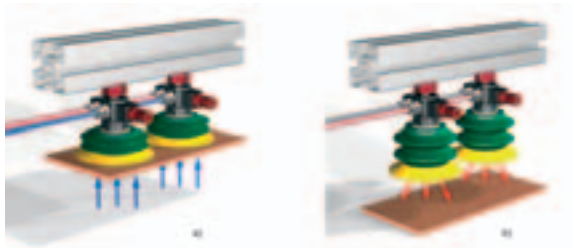


Non-rotating guide pin

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”.

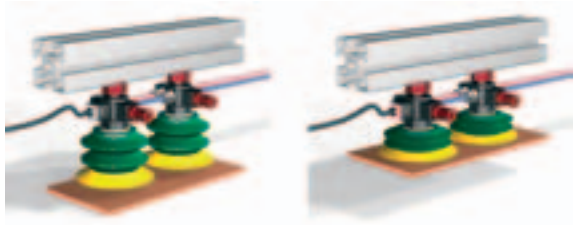
Suction cups No. 1, 3 and 4 are "slave units" (no vacuum cartridge).

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.



Quick release of parts – a) Vacuum, b) Blow-off

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 numbers. and technical data for the switches in PIAB’s main catalogue or P3010 Vacuum Pumps brochure.



Vacuum sensing

EXPLANATION OF VGS™3010 ORDERING NUMBER

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, non-return valve	AD
Vacuum cartridge Pi12-3, non-return valve	AE

2. Mounting/orientation	VGS code
4x M4 screw top, 5x plug G1/8", flush mount	00
M8 16 mm screw top, mounting kit	01
M8 16 mm screw right, mounting kit	02
M8 16 mm screw left, mounting kit	03
M8 27 mm screw top, profile kit	04
M8 27 mm screw right, profile kit	05
M8 27 mm screw left, profile kit	06
M8 27 mm screw top, profile kit	04
M6 22 mm screw top, profile kit	07
M6 22 mm screw right, profile kit	08
M6 22 mm screw left, profile kit	09
Ball joint VGS™3010 right	11
Ball joint VGS™3010 left	12
Lock-pin VGS™3010 right	13
Lock-pin VGS™3010 left	14

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

BW, BX, BY and BZ are not possible to combine with mounting/orientation 00, 02, 03, 05, 06, 08, 09, 11, 12, 13 or 14.

Example	Ordering number			
		From table 1.	From table 2.	From table 3.
VGS™3010, Pi12-3, M8 27 mm screw top, profile kit, B75P 30/60 Shore	VGS3010	AC	04	BB

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.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	145–167
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	128	64	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	56	43	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	92	64	0.195	0.187
0.314	0.47 Nl/s, 155 W	Oily steel	94	23	0.195	0.187

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	113	113	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	64	64	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	128	149	0.195	0.187
0.314	0.47 Nl/s, 155 W	Oily steel	118	37	0.195	0.187

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

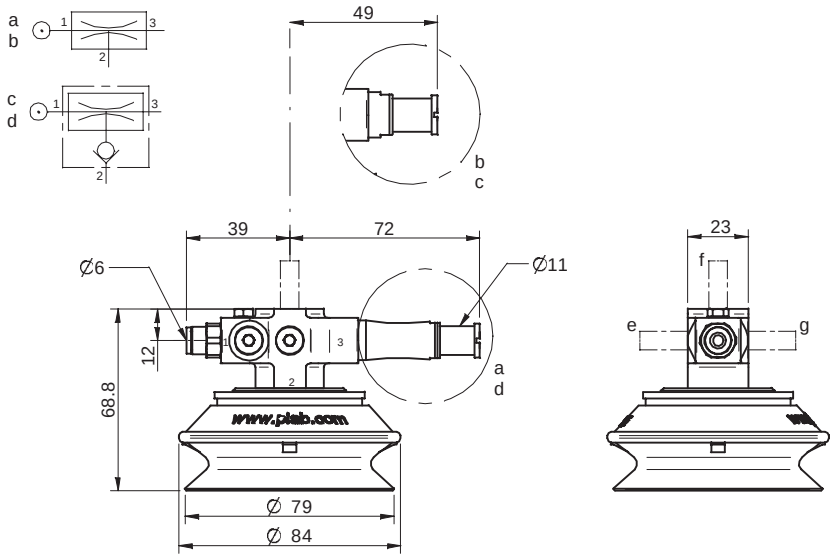
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
B75P 30/60° Shore A	BB
B75P 60° Shore A	BC

Example	Ordering number
VGS™3010 B75P – Pi12-3, M8 27 mm top including profile kit, B75P 30/60° Shore A	VGS3010 AC 04 BB



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 with 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.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	125–147
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/50° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	51	75	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	54	39	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	50	69	0.071	0.068
0.314	0.47 Nl/s, 155 W	Oily steel	44	44	0.071	0.068

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	111	78	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	61	55	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	131	68	0.071	0.068
0.314	0.47 Nl/s, 155 W	Oily steel	116	40	0.071	0.068

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

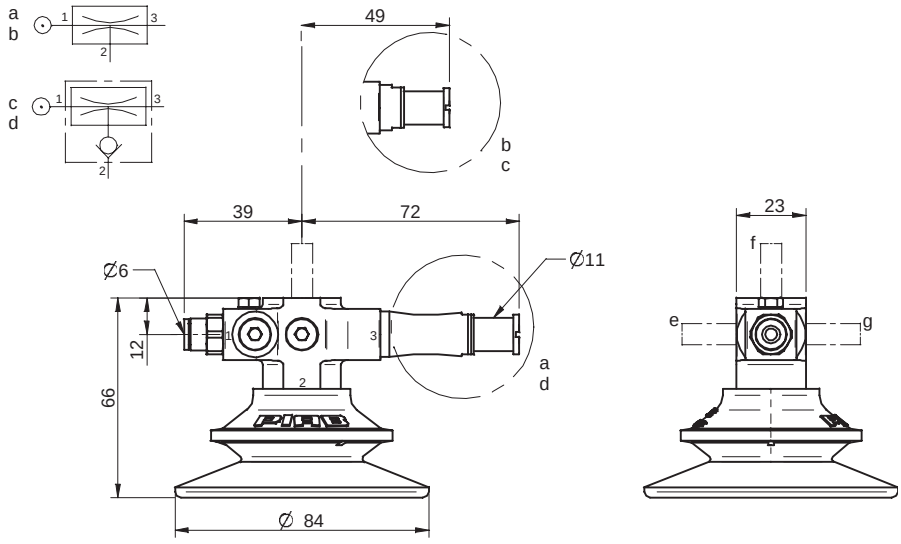
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
BF80P 30/50° Shore A	BD
BF80P 60° Shore A	BE

Example	Ordering number
VGS™3010 BF80P – Pi12-3, M8 27 mm top including profile kit, BF80P 30/50° Shore A	VGS3010 AC 04 BD



VGS™3010 BX35P

SUCTION CUP WITH 2 ½ 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.
- Separate G3/8" male suction cup fitting.
- A filter support ring in the cup keeps dust out of the system. The filter materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	88–111
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	a
0.314	0.47 Nl/s, 155 W	Plywood	16	17	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	16	13	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	16	17	0.016	0.015
0.314	0.47 Nl/s, 155 W	Oily steel	17	5	0.016	0.015

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	16	15	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	15	12	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	15	26	0.016	0.015
0.314	0.47 Nl/s, 155 W	Oily steel	16	6	0.016	0.015

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

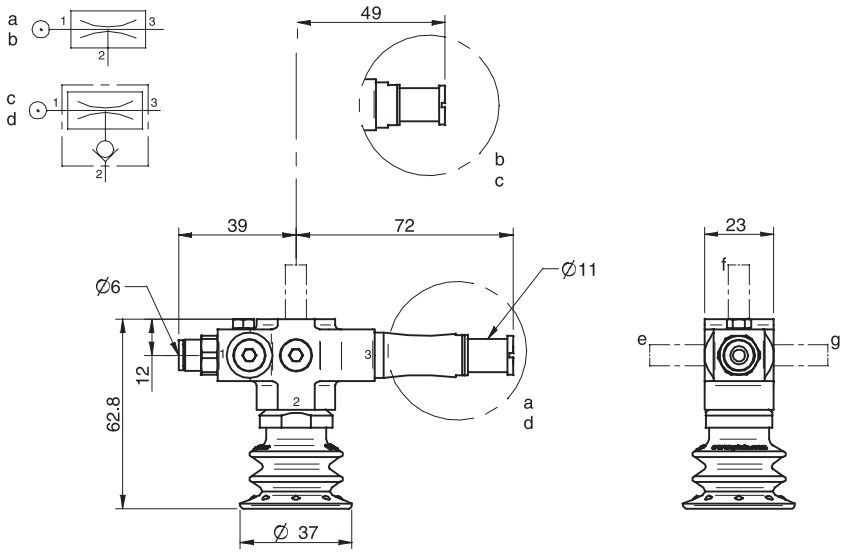
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
BX35P 30/60° Shore	BF
BX35P 60° Shore A	BG

Example	Ordering number
VGS™3010 BX35P – Pi12-3, M8 27 mm top including profile kit, BX35P 30/60° Shore A	VGS3010 AC 04 BF



VGS™3010 BX52P

SUCTION CUP WITH 2 ½ 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.
- Separate G3/8" male suction cup fitting.
- A filter support ring in the cup keeps dust out of the system. The filter materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	108–130
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	36	23	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	30	20	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	37	27	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	34	13	0.053	0.051

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	33	29	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	37	19	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	40	26	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	40	14	0.053	0.051

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

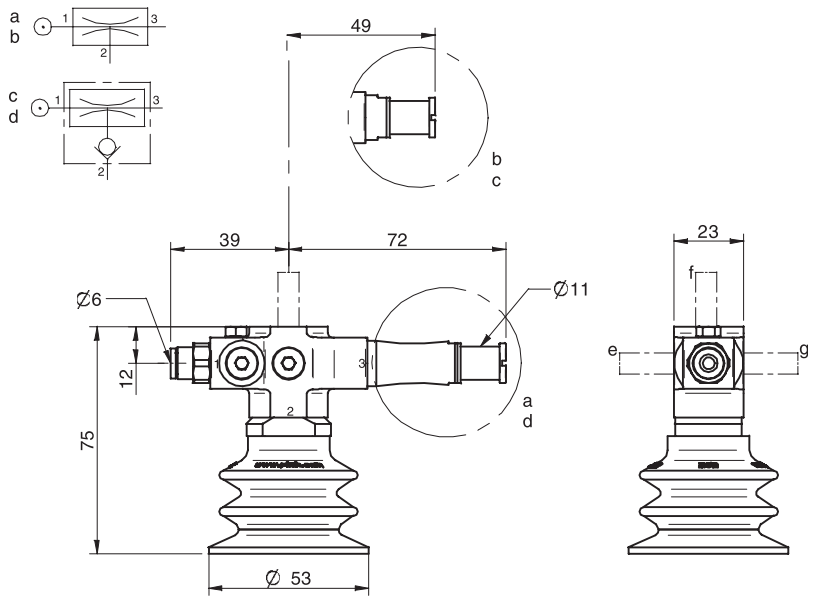
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
BX52P 30/60° Shore A	BH
BX52P 60° Shore A	BI

Example	Ordering number
VGS™3010 BX52P – Pi12-3, M8 27 mm top including profile kit, BX52P 30/60° Shore A	VGS3010 AC 04 BH



VGS™3010 BX75P

SUCTION CUP WITH 2½ 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.
- 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 materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	150–173
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	72	54	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	56	35	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	74	58	0.115	0.111
0.314	0.47 Nl/s, 155 W	Oily steel	74	32	0.115	0.111

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	85	56	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	62	28	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	83	75	0.115	0.111
0.314	0.47 Nl/s, 155 W	Oily steel	85	48	0.115	0.111

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

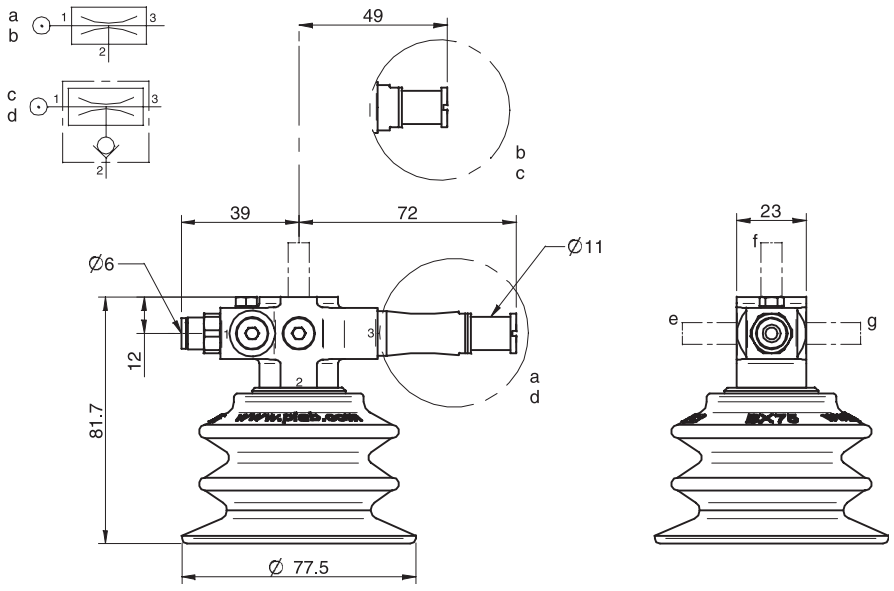
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
BX75P 30/60° Shore A	BJ
BX75P 60° Shore A	BK

Example	Ordering number
VGS™3010 BX75P – Pi12-3, M8 27 mm top including profile kit, BX75P 30/60° Shore A	VGS3010 AC 04 BJ



VGS™3010 BX52P 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. Rubber pads included for the legs in order to prevent scratches.
- A filter support ring in the cup keeps dust out of the system. The filter materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).
- Separate G3/8" male suction cup fitting.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	201–224
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	32	23	Response time varies based on quality and	
0.314	0.47 Nl/s, 155 W	Corrugated	23	20	porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	33	27	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	33	13	0.053	0.051

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	32	29	Response time varies based on quality and	
0.314	0.47 Nl/s, 155 W	Corrugated	21	19	porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	33	26	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	33	14	0.053	0.051

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

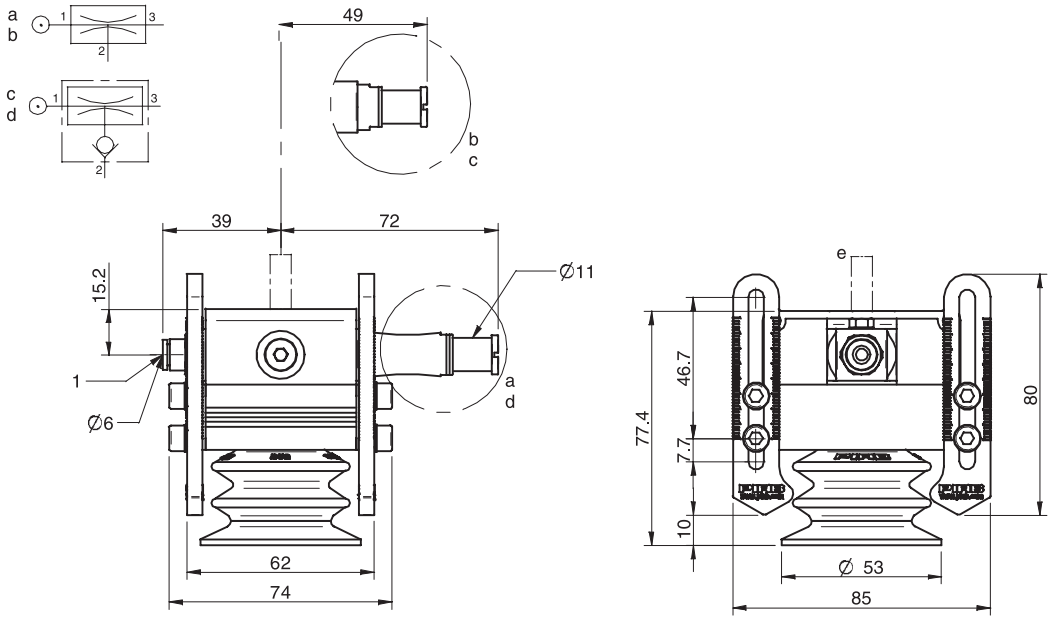
ORDERING INFORMATION

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

2. Mounting/orientation	VGS code
M8 16 mm screw top, mounting kit	01
M8 27 mm screw top, profile kit	04
M6 22 mm screw top, profile kit	07

3. Suction cup with fitting	VGS code
No suction cup	BA
BX52P 30/60° Shore A with Stabilizer 50	BW
BX52P 60° Shore A with Stabilizer 50	BX

Example	Ordering number
VGS™3010 BX52P – Pi12-3, M8 27 mm top including profile kit, BX52P 30/60° Shore A with stabilizer 50	VGS3010 AC 04 BW



VGS™3010 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. Rubber pads included for the legs in order to prevent scratches.
- A filter support ring in the cup keeps dust out of the system. The filter materials are polyester (PES41/14) and thermo-plastic-urethane (TPE).
- Molded suction cup fitting with removable G3/8" male thread insert.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	269–292
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	70	54	Response time varies based on quality and	
0.314	0.47 Nl/s, 155 W	Corrugated	37	35	porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	73	58	0.115	0.111
0.314	0.47 Nl/s, 155 W	Oily steel	75	32	0.115	0.111

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	65	56	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	28	28	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	64	75	0.115	0.111
0.314	0.47 Nl/s, 155 W	Oily steel	66	48	0.115	0.111

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

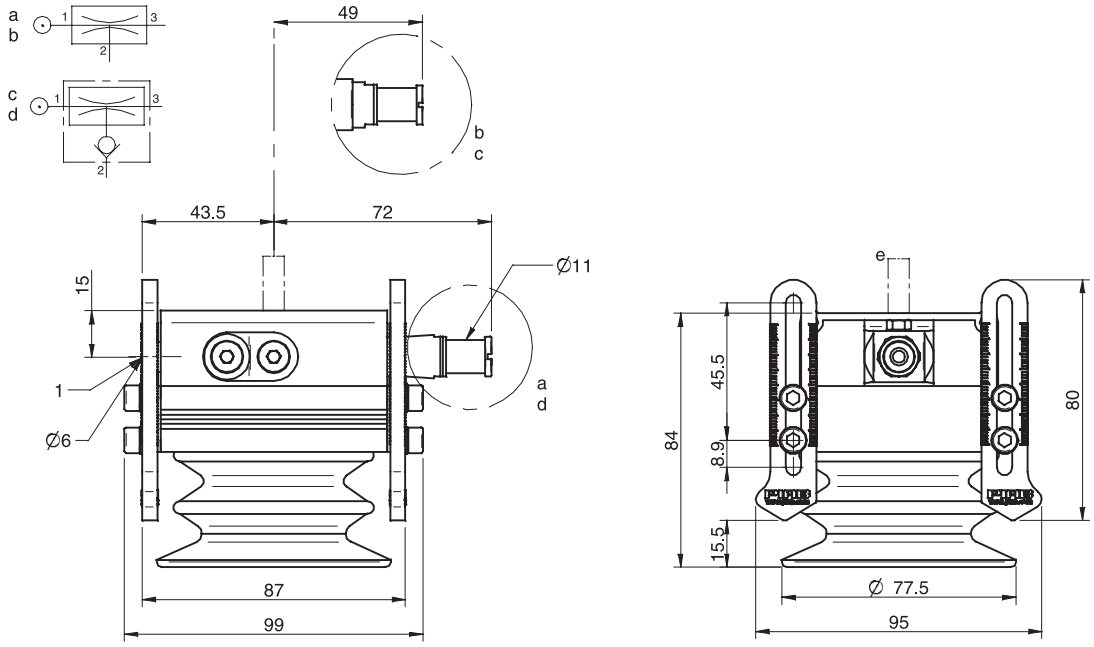
ORDERING INFORMATION

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

2. Mounting/orientation	VGS code
M8 16 mm screw top, mounting kit	01
M8 27 mm screw top, profile kit	04
M6 22 mm screw top, profile kit	07

3. Suction cup with fitting	VGS code
No suction cup	BA
BX75P 30/60° Shore A with Stabilizer 75	BY
BX75P 60° Shore A with Stabilizer 75	BZ

Example	Ordering number
VGS™3010 BX75P – Pi12-3, M8 27 mm top including profile kit, BX75P 30/60° Shore A with stabilizer 75	VGS3010 AC 04 BY



VGS™3010 FC50P

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.
- Molded G3/8" male suction cup fitting.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	96–119
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	50	53	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	36	42	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	55	58	0.018	0.017
0.314	0.47 Nl/s, 155 W	Oily steel	51	44	0.018	0.017

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	50	61	Response time varies based on quality and	
0.314	0.47 Nl/s, 155 W	Corrugated	34	45	porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	57	70	0.018	0.017
0.314	0.47 Nl/s, 155 W	Oily steel	46	16	0.018	0.017

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

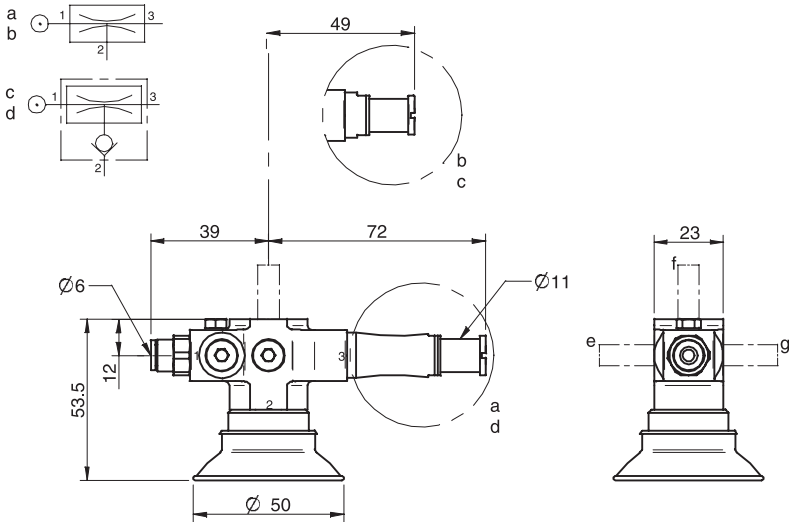
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
FC50P 40° Shore A	BP
FC50P 60° Shore A	BQ

Example	Ordering number
VGS™3010 FC50P – Pi12-3, M8 27 mm top including profile kit, FC50P 40° Shore A	VGS3010 AC 04 BP



VGS™3010 FC75P

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.
- Molded suction cup fitting with removable G3/8" male thread insert.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	111–133
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	102	117	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	57	71	and porosity of handled material	
0.314	0.47 Nl/s, 155 W	Dry steel	100	131	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	100	63	0.053	0.051

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	117	121	Response time varies based on quality.	
0.314	0.47 Nl/s, 155 W	Corrugated	59	58	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	123	90	0.053	0.051
0.314	0.47 Nl/s, 155 W	Oily steel	113	34	0.053	0.051

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

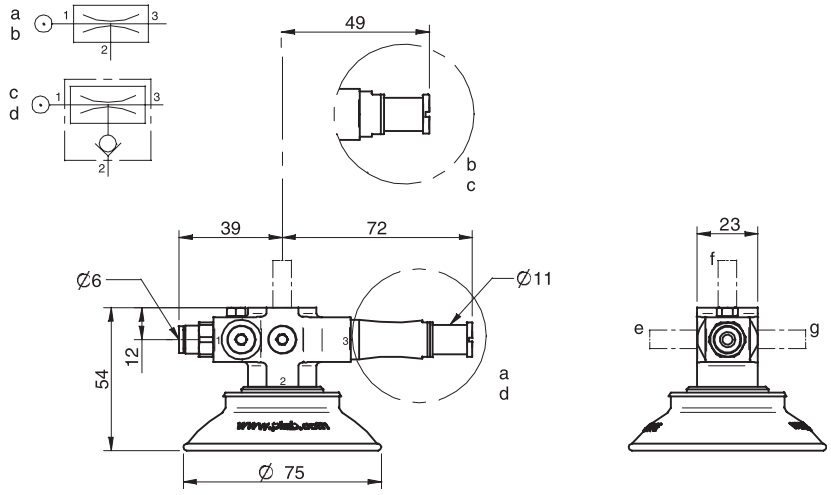
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
FC75P 40° Shore A	BR
FC75P 60° Shore A	BS

Example	Ordering number
VGS™3010 FC75P – Pi12-3, M8 27 mm top including profile kit, FC75P 40° Shore A	VGS3010 AC 04 BR



VGS™3010 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.
- Molded suction cup fitting with removable G3/8" male thread insert.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	162–184
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT-IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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	Recommended parallel (shear) load with safety factor 2	Response time to 50 -kPa with Pi12-2	Response time to 50 -kPa with Pi12-3
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	189	215	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	60	100	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	208	230	0.142	0.136
0.314	0.47 Nl/s, 155 W	Oily steel	174	56	0.142	0.136

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	221	178	Response time varies based on quality and	
0.314	0.47 Nl/s, 155 W	Corrugated	71	87	porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	255	238	0.142	0.136
0.314	0.47 Nl/s, 155 W	Oily steel	217	52	0.142	0.136

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

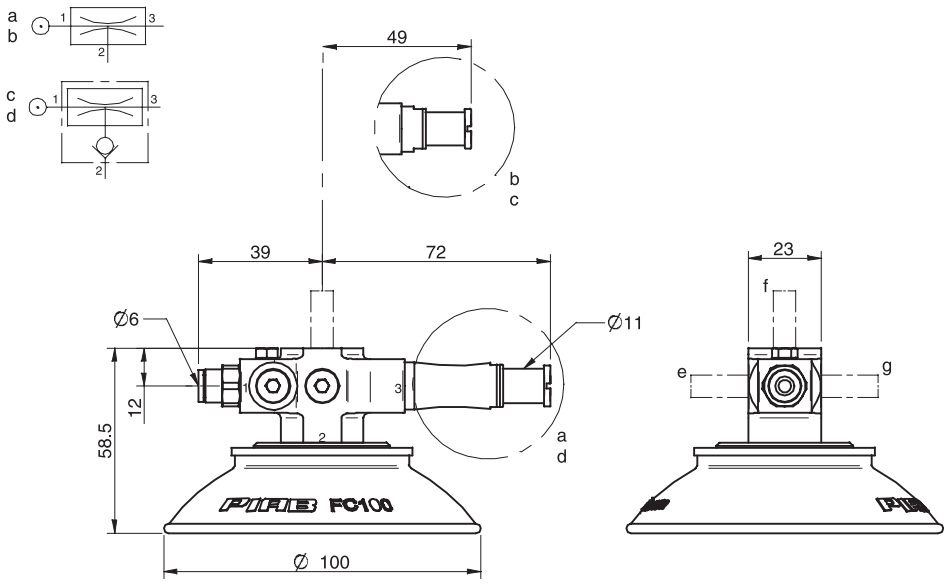
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
FC100P 40° Shore A	BT
FC100P 60° Shore A	BU

Example	Ordering number
VGS™3010 FC100P – Pi12-3, M8 27 mm top including profile kit, FC100P 40° Shore A	VGS3010 AC 04 BT



VGS™3010 F75P

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.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	128–150
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	144	151	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	64	62	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	160	74	0.034	0.032
0.314	0.47 Nl/s, 155 W	Oily steel	142	33	0.034	0.032

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	140	111	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	61	33	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	165	85	0.034	0.032
0.314	0.47 Nl/s, 155 W	Oily steel	163	33	0.034	0.032

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

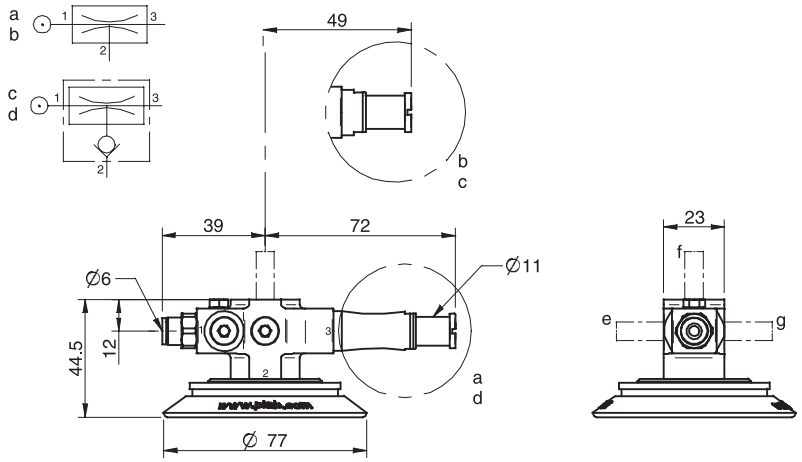
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
F75P 30/60° Shore A	BL
F75P 60° Shore A	BM

Example	Ordering number
VGS™3010 F75P – Pi12-3, M8 27 mm top including profile kit, F75P 30/60° Shore A	VGS3010 AC 04 BL



VGS™3010 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.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	210–232
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 30°/60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	317	274	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	107	105	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	335	308	0.106	0.102
0.314	0.47 Nl/s, 155 W	Oily steel	304	95	0.106	0.102

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 60° SHORE

Feed pressure MPa	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	0.47 Nl/s, 155 W	Plywood	310	300	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	114	110	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	352	332	0.106	0.102
0.314	0.47 Nl/s, 155 W	Oily steel	304	161	0.106	0.102

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

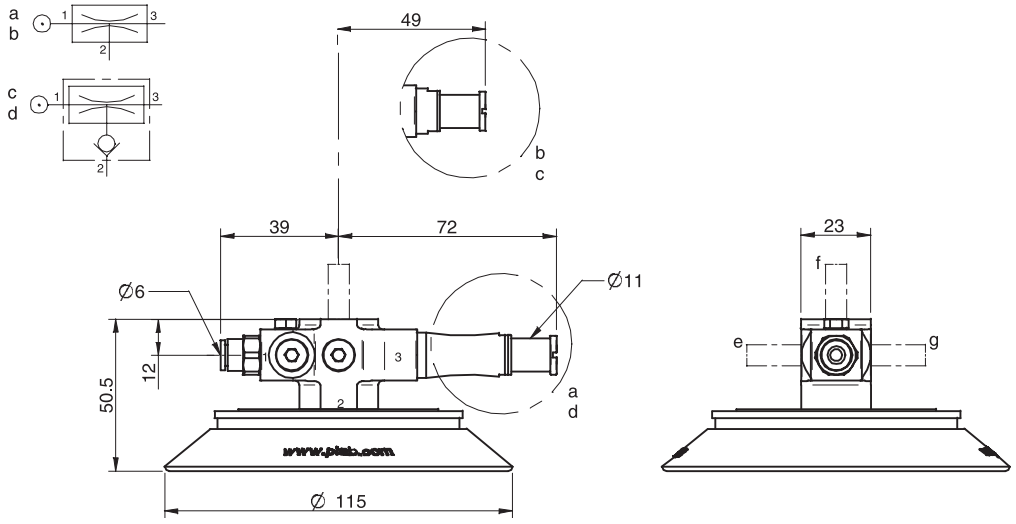
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
F110P 30/60° Shore A	BN
F110P 60° Shore A	BO

Example	Ordering number
VGS™3010 F110P – Pi12-3, M8 27 mm top including profile kit, F110P 30/60° Shore A	VGS3010 AC 04 BN



VGS™3010 OBL40X90P

OVAL SUCTION CUP WITH 4 BELLOWS

- Suitable for handling elongated and sharply 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.

TECHNICAL DATA

Description	Unit	Value
Feed pressure, max.	MPa	0.7
Noise level	dBA	65–74
Temperature range	°C	10–50
Weight	g	181–204
Material		PP, PA, NBR, AL, SS, PU

RECOMMENDED LOAD WITH BUILT IN SAFETY FACTOR OF 2 AND RESPONSE TIME, 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
MPa			N	N	s	s
0.314	0.47 Nl/s, 155 W	Plywood	74	69	Response time varies based on quality	
0.314	0.47 Nl/s, 155 W	Corrugated	51	47	and porosity of handled material.	
0.314	0.47 Nl/s, 155 W	Dry steel	91	70	0.186	0.179
0.314	0.47 Nl/s, 155 W	Oily steel	74	19	0.186	0.179

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

Material definition: Corrugated cardboard = B Flute 3 mm, 80 Gurley seconds.

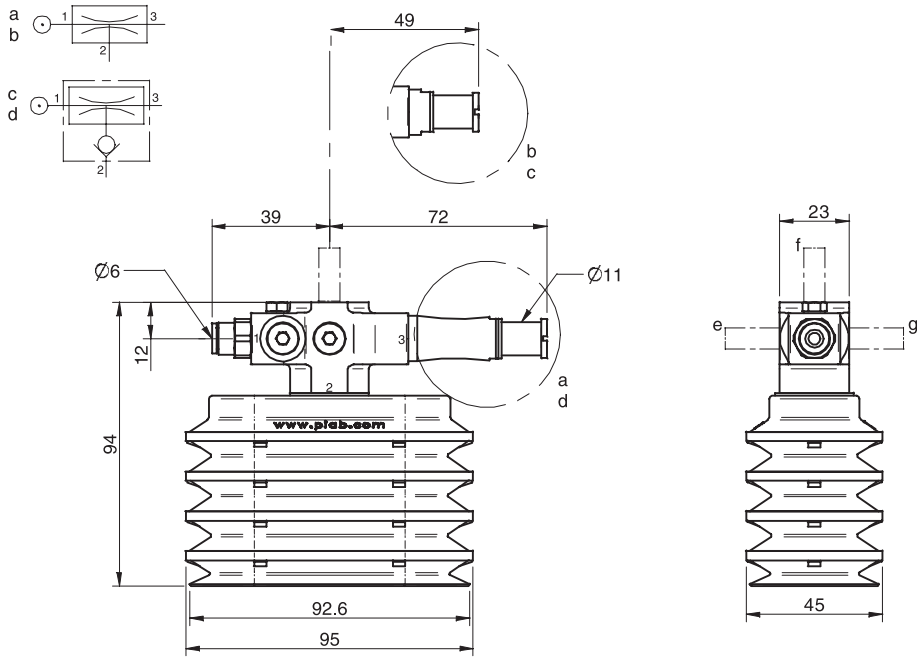
ORDERING INFORMATION

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

	2. Mounting/orientation	VGS code
	4x M4 screw top, 5x plug G1/8", flush mount	00
f	M8 16 mm screw top, mounting kit	01
g	M8 16 mm screw right, mounting kit	02
e	M8 16 mm screw left, mounting kit	03
f	M8 27 mm screw top, profile kit	04
g	M8 27 mm screw right, profile kit	05
e	M8 27 mm screw left, profile kit	06
f	M6 22 mm screw top, profile kit	07
g	M6 22 mm screw right, profile kit	08
e	M6 22 mm screw left, profile kit	09
g	Ball joint VGS™3010 right	11
e	Ball joint VGS™3010 left	12
g	Lock-pin VGS™3010 right	13
e	Lock-pin VGS™3010 left	14

3. Suction cup with fitting	VGS code
No suction cup	BA
OBL40x90P 70° Shore A	BV

Example	Ordering number
VGS™3010 OBL40x90P – Pi12-3, M8 27 mm top including profile kit, OBL40x90P 70° Shore A	VGS3010 AC 04 BV



VGS™3010 MOUNTING KITS

- Fits standard robot end-of-arm tooling interfaces
- Easy attachment to standard extrusion and profile systems
- Flexible positioning
- Quick setup and changeover
- Durable and non-rotating installation

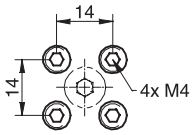
TECHNICAL DATA, SPECIFIC

Description	Unit	Value					
		0106915	0106927	0106949	0108488	0108731	0108734
Material		SS, NBR	SS, PA, NBR	Al, SS, Steel, NBR	Al, SS, Steel, NBR	AL, SS, NBR	AL, SS, NBR
Weight	g	24	24	36	22	46	29

ORDERING INFORMATION

	Description	Art. No.
A	4x M4 screw top, 5x plug G1/8", flush mount	00
B	M8 16 mm screw, mounting kit	0106927
C	M8 27 mm screw, profile kit	0106949
D	M6 22 mm screw, profile kit	0108488
E	Ball joint VGS™3010	0108731
F	Lock-pin VGS™3010	0108734

B–D 4x plug G1/8" included.



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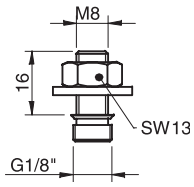

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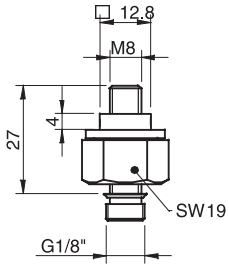

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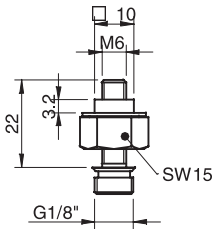

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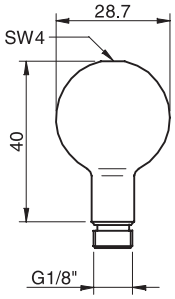

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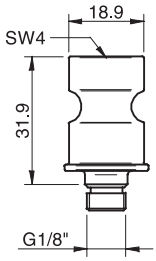

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