DATASHEET

VGP30

v1.5

1. Datasheet

1.1. VGP30

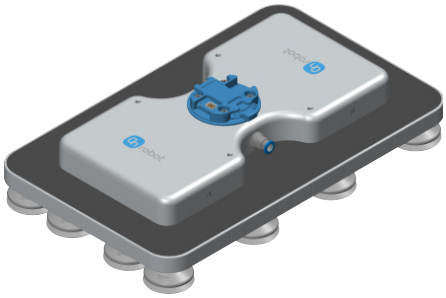
General Properties	Minimum	Typical	Maximum	Unit
Vacuum	5 % -0.05 1.5	- - -	60 % -0.607 17.95	[Vacuum] [Bar] [inHg]
Air flow in total	0	-	440	[L/min]
Air flow on each channel	0	-	220	[L/min]
Payload on cardboard boxes	- -	- -	30 66.13	[kg] [lb]
Vacuum cups	1	20	20	[pcs.]
Gripping time (measured with vacuum target 30%)	-	150	-	[ms]
Releasing time	-	80	-	[ms]
Noise level	-	59	62	[dB(A)]
Vacuum pump	Compressed air input			
Dust filters	Integrated 50µm, field replaceable			
IP Classification	IP54			
Dimensions	390 x 240 x 62.10 15.35 x 9.45 x 2.44			[mm] [inch]
Weight	3.1 6.83			[kg] [lb]

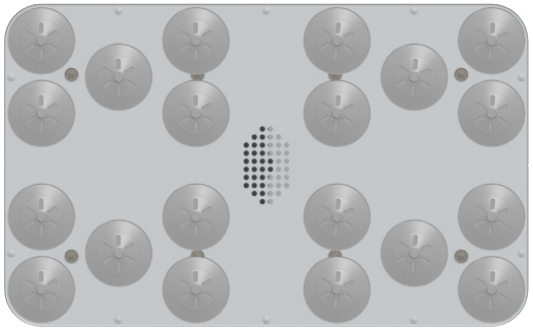
Operating Conditions	Minimum	Typical	Maximum	Unit
Power supply	20	24	25	[V]
Current consumption	50	750	2000	[mA]
Operating temperature	0 32	- -	50 122	[°C] [°F]
Relative humidity (non-condensing)	0	-	95	[%]
Compressed air flow	-	-	440	[L/min]
Compressed air pressure	-	-	7	[bar]

Warranty: 3 years or 3.000.000 cycles, whichever comes first, as per the official warranty terms set out in the Partner Agreement. One operating cycle is defined as one complete grip and release sequence, equivalent to 6,000,000 open or close movements.

2 Channels

The VGP30 has 2 channels, A and B, that can be operated together or independently. It is equipped with a total of 20 holes, each fitted with a vacuum cup. If needed, you can replace vacuum cups with the 12 provided blinding screws.





Compressed air guidance

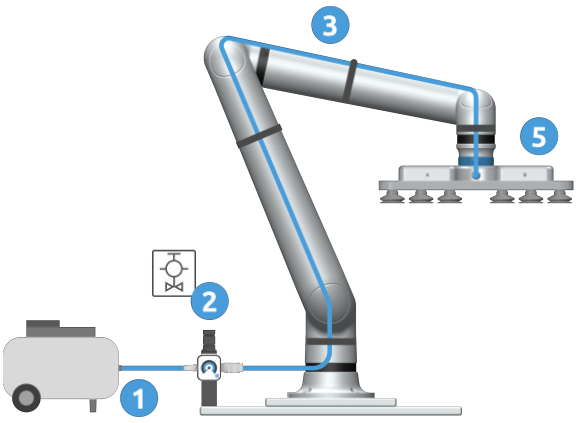
The gripper operates with compressed air between 3 and 7 bar.

- For 60% vacuum (maximum): An input pressure of around 6.3 bar and an airtight workpiece (without leakage) is needed.
- For 30% vacuum (common to handle cardboard boxes): An input pressure of around 5 bar is needed.
- When using Vacuum cups with check valves: An input pressure of minimum 5 bar is needed.

Be aware that the dynamic compressed air pressure (when air is actively flowing) reaching the gripper is a bit lower than the static pressure measured at the compressor. This is due to potential pressure loss in the tubes, fittings and other components connecting the compressor to the gripper.

How to connect the external air compressor

To connect the compressed air:



1. Attach the hose to the air compressor.
2. Connect the compressor to a filter regulator that complies with ISO 8573-1:2010 class 4. We offer a filter regulator kit PN 114743 that can be ordered separately.
3. Guide the hose along the robot without connecting it to the gripper.
4. Flush the hose to eliminate residual particles.
5. Attach a Ø10 hose in the plug-in union for compressed air hoses on the VGP30.

NOTE:

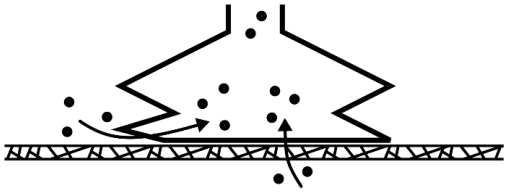
Ensure that the compressed air is filtered according to ISO 8573-1:2010 class 4, maintains a constant gripper input pressure up to 7 bar depending on required vacuum level, and the maximum recommended length of the hose is 10 meters.

Airflow

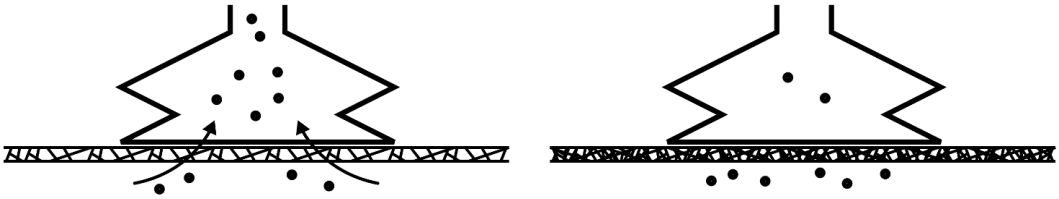
Airflow is the amount of air that must be pumped to maintain the target vacuum. A completely tight system will not have any airflow, whereas real life applications have some smaller air leakages from two different sources:

- Leaking vacuum cup lips
- Leaking workpieces

The smallest leak under a vacuum cup can be hard to find (see picture below).



Leaking workpieces can be even harder to identify. Things that look completely tight might not be tight at all. A typical example is coarse cardboard boxes. The thin outer layer is often requiring a lot of airflow to create a pressure difference over it (see figure below).



Be aware of the following:

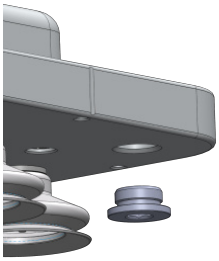
- Pay extra attention to leakages, e.g. vacuum cup shape and surface roughness.
- When gripping an object with high leakage, be sure to use both channels if possible.

Fittings and blind screws

It is possible to change the suction cups simply by pulling them off the fittings. Stretch the silicon to one of the sides and then pull the suction cup out.

Unused holes can be blinded using a blind screw, and each fitting can be changed to a different type to match the desired suction cup. The fittings and the blinding screws are mounted or dismounted by screwing (2 Nm tightening torque) or unscrewing them with the provided 6 mm hex key.

Fittings



Blind

The thread size is the commonly used G3/8”; allowing for standard fittings, blinders, and extenders to be fitted directly to the gripper.

VGP30 Inlet Filter

The filter is designed to stop or prevent larger particles from accidentally entering the gripper during operation. Regular maintenance ensures optimal performance and longevity of the gripper. The filter can be replaced (Filter Kit PN 114733) or cleaned; however, under normal use and following the specified use of clean filtered air outlined above, the filter does not require replacement or cleaning.

To remove the **(A) Inlet Filter**, use a 7 mm hex key to unscrew and remove the **(B) fitting**, then carefully remove the **(C) o-ring** with a small screwdriver. Place the gripper on its side with the filter hole facing downward, allowing the filter to slide out naturally by gravity.

VGP30 Vacuum Cups With Check Valves

The vacuum cups with check valves help preventing vacuum loss when cups land on seams, gaps, or uneven surfaces, and when handling different box types or sizes without manually reconfiguring the vacuum cup layout.

When one or more vacuum cups cannot seal properly against the box, air will leak through them. The integrated check valve closes the leaking cup to prevent vacuum loss, allowing the other sealed cups to maintain enough vacuum to grip and lift the box.

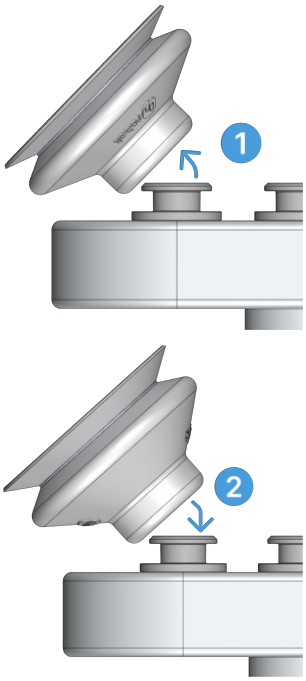
If a closed cup later forms a proper seal, the check valve will reopen, allowing that cup to generate vacuum and help lifting the box.

Channels A and B still operate independently, so each channel must use some cups to allow the remaining check valves to close. If the box covers only one channel, disable the other channel for that operation.

NOTE:

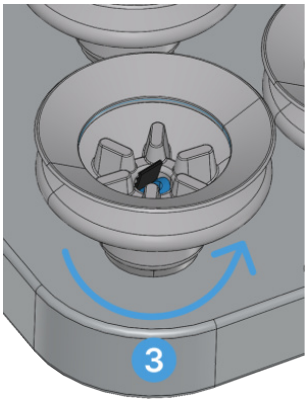
It is highly recommended to use at least 4 cups per channel and use at least 5 bar of dynamic input pressure for a proper gripper operation. Please note that the lower the input pressure and the fewer the cups used, the longer it takes to build up the vacuum and detect the grip.

To install the vacuum cups, follow these steps:



1. **Remove** the installed vacuum cups from the VGP30 by pulling them sideways.

2. **Attach** the vacuum cups with check valves by pushing them in from the side.



3. **Rotate** each vacuum cup to ensure it is fully secured.

NOTE:

After mounting the cup, examine the check valve for tilt. Eventually push it gently with your finger until it returns to the correct position. A slightly tilted check valve will still function properly. It may only fail to perform correctly if it is significantly out of position.

NOTE:

The vacuum cup with check valves are 3 mm higher than the standard cups.

It is required to update the VGP30 firmware to version 1.0.13 or higher to operate with the check valves. The gripper can be updated using the Compute Box or the OR:BASE.

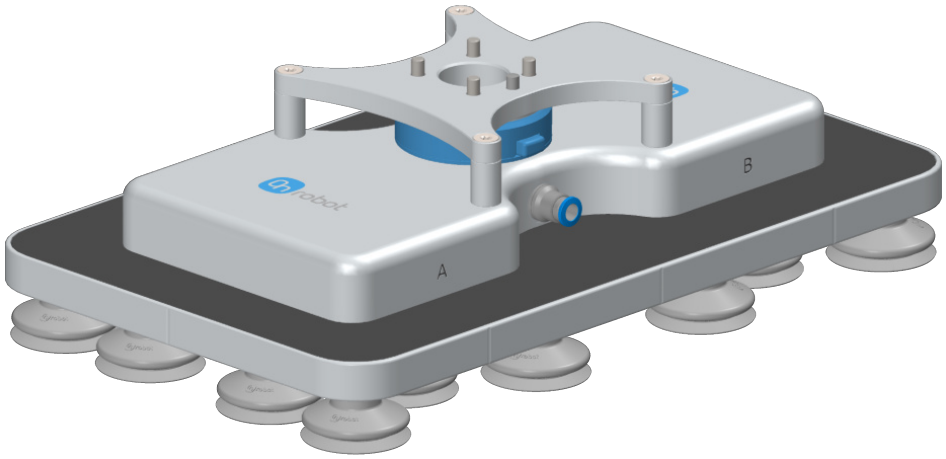
The suction cups with check valves can be purchased as an accessory with item number 115181.

Torque Reinforcement Bracket

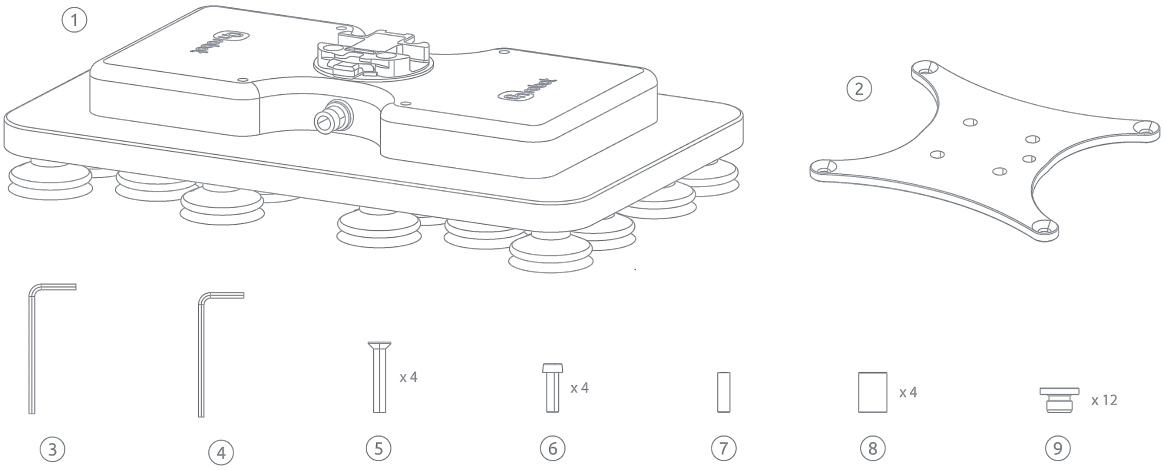
NOTE:

The torque reinforcement bracket must be used with robots rated for payloads of 20 kg and above.

The Torque Reinforcement Bracket enhances the gripper's robustness. It also increases the torque capacity by an additional 120 Nm, complementing the total allowable torque with the QC torque. The bracket weight is 0.3 kg (0.66 lb).

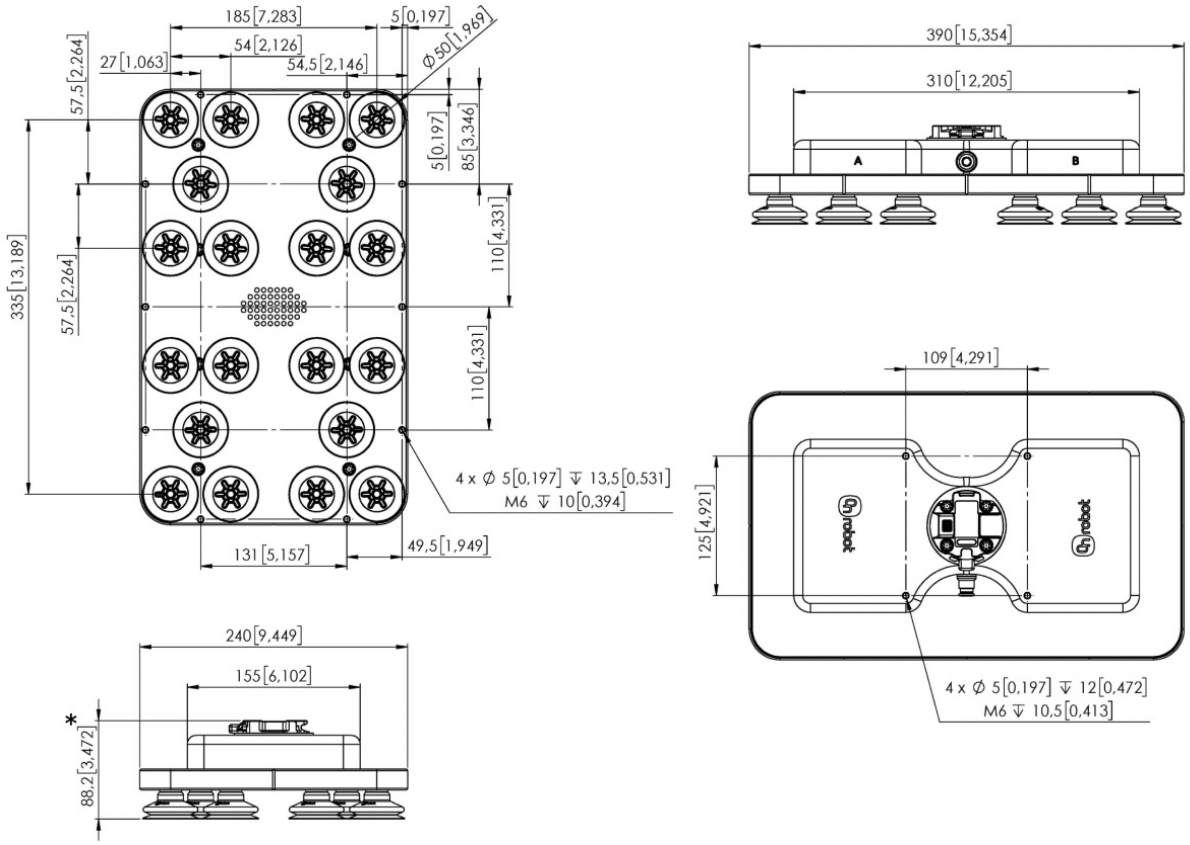


1.2. VGP30 box content

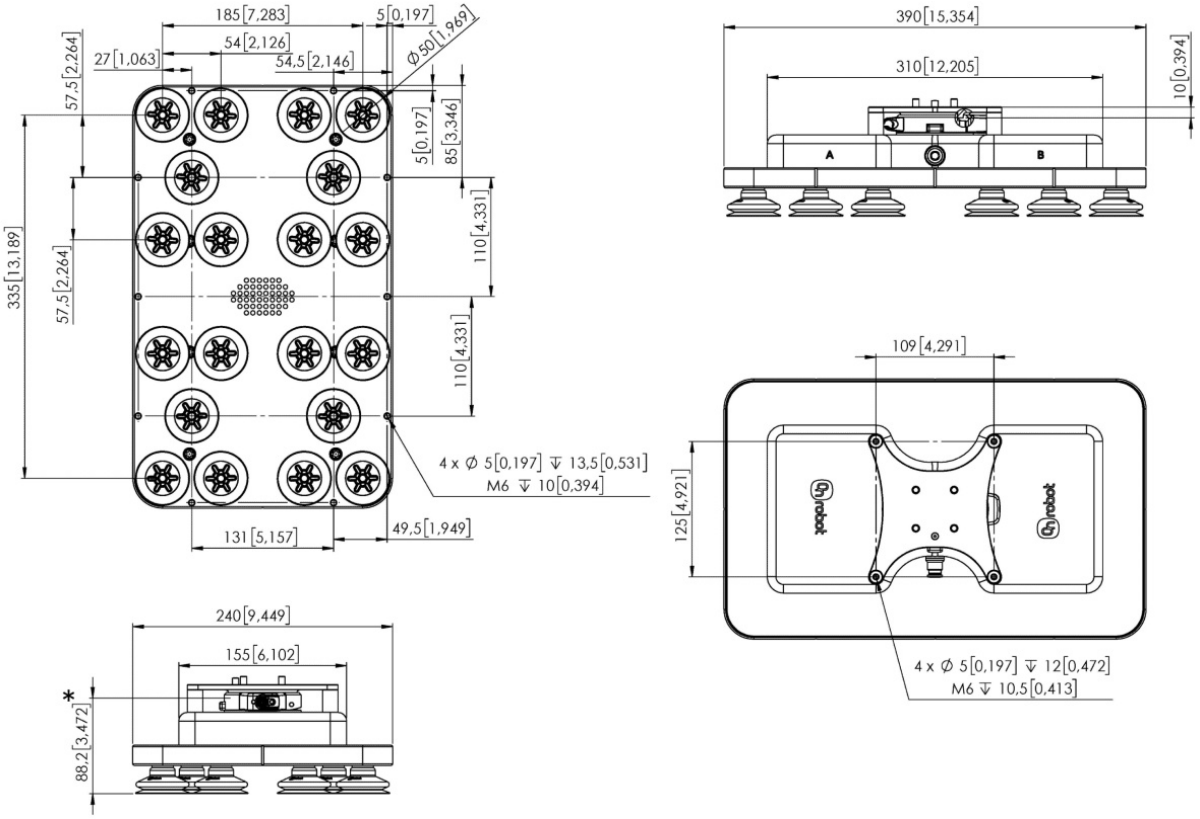


1 VGP30	4 Allen key 6 mm	7 Pin Ø6h8x25mm ISO 2338
2 Reinforcement Bracket	5 Screws M6x40mm ISO14581	8 Bushings
3 Allen key 8 mm	6 Screw M6x25mm ISO14580	9 Blinds 3/8 size

1.3. VGP30



VGP30 with the Reinforcement Bracket



* 3 mm [0.118] more with OnRobot cups with check valves.

All dimensions are in mm and [inches].