

Qualifying an application for Automated Vacuum Gripping and Handling

Always ask if we can get products to test!

Questions to ask:

- Is the product porous or non-porous?
- Can we get a picture of the product we are lifting? This is mainly to see the shape and area we need to pick from. If not, we need a detailed description but that makes it harder.
- What are the dimensions of the object and how much do they weigh?
- Do we need to pick up more than one product at a time? If YES, see below for follow up questions:
 - Are we picking all products at once and then placing them, or do we need to have individual control of each part?
 - Are the products always in the same exact location? Ex. If the product can be +/- 2mm in any direction, this could make the entire array have huge variations and we must consider that variable in the design of the solution. (less common of an issue in box palletizing and depalletizing applications)
 - What are the array layouts for each product?
 - Are there any parameters for the multi-pick, ex. Vac Gripper needs to fit in a box to place so the gripper can only be so big. Reason; because of the space where it will be mounted since the gripper can only weigh so much because of the robot payload and product weight. (these questions can apply to a one product pick as well)
- Do they already have a vacuum source? Is compressed air possible? Larger grippers, porous products, cups open to atmosphere during the pick or a larger qty of venturis in the same plant might make a venturi debatable due to air consumption or lack of the flow needed. We may need to go to an electric pump: Rotary Vane, Regen blower or Claw depending on flow requirements for the pick.
- More than one identical gripper, i.e. Coval's CVGL and MVG, purchased at the same time *may* create cost savings but only if the grippers are identical. Ask if they need more than one.
- What is the cycle time?
- Can you describe the application movement? Is the product ever held in sheer?
- Are there any other parameters we should consider? Ex. FDA Compliance, dirt, grit, moisture or debris, wash down, temperature etc.
- Is this a Budgetary or does the customer need a finalized quote? How quickly do they need the quote by?



Sometimes you are looking at an application where the end customer is looking to upgrade a current tool or correct an issue they are having with a current tool. If this is the case, ask what exactly the issue they've been seeing is. This might be helpful for us in the design to make sure we don't follow that mistake.

This is a great place to start with customers when trying to qualify an application. Some of these questions may not apply depending on answers to previous questions. An application where a few cups are needed probably won't warrant a gripper (CVGL, MVG, CVGC) so some of the questions geared more towards a gripper, may not apply.



Vacuum gripper questionnaire

What are we gripping?

Click or tap here to enter text.

Shape of the load

- Flat
- Rounded
- Cylindrical
- Spherical
- Other Click or tap here to enter text.

Type of Material of the load

- Porous
- Deformable
- Rigid
- Fragile
- Other Click or tap here to enter text.

Condition of the surface

- Smooth
- Granular
- Ridged
- Abrasive
- Other Click or tap here to enter text.

Appearance of the load

- Damp
- Oily
- Dusty
- Viscous
- Dry
- Other Click or tap here to enter text.

Temperature of the workpiece

- Standard (+5C/41F - +40C/104F)
- Other Click or tap here to enter text.

Temperature of the environment

- Standard (+5C/41F - +40C/104F)
- Other Click or tap here to enter text.

Handling type

palletizing de-palletizing stacking de-stacking case packing

Other [Click or tap here to enter text.](#)

Which side of the workpiece is to be gripped?

top bottom side does not matter

Turning (i.e., Horizontal to Vertical movement)? This is important for safety factors, 2x for horizontal, 4x for vertical.

yes no

Horizontal rotations (i.e., rotating 90 degrees)?

yes no

Are the parts precisely located?

yes no

Description of handling process (including desired pick patterns, i.e., pick 3, drop 1, 1, 1 etc.):

[Click or tap here to enter text.](#)

Do slip sheet's need to be handled?

Yes No

Do Pallets need to be handled?

Yes No

Installation site:

Click or tap here to enter text.

Elevation:

Click or tap here to enter text.

Working area

Indoors Outdoors

Are there any regulatory requirements (i.e., FDA, Clean room etc.)?

Yes Click or tap here to enter text. No

What is the maximum size the actual gripper may be?

	Length (mm)	Width (mm)	Height (mm)
Dimensions	Click or tap here to enter text.	Click or tap here to enter text.	Click or tap here to enter text.

What do you plan to mount the vacuum gripper to?

- Gantry
- Industrial robot, 4-axis
- Industrial robot, 6-axis
- Collaborative robot
- Other Click or tap here to enter text.

Robot model: Click or tap here to enter text.

Robot payload: Click or tap here to enter text.

What is the duration of the total cycle time in seconds?

Click or tap here to enter text.

What is the number of cycles per minute?

Click or tap here to enter text.

What are the maximum speed and acceleration values?

Click or tap here to enter text.

Desired Electrical interfaces:

- Vacuum monitoring on each zone(s)
- IO link (not applicable for blower/pump configurations)

Vacuum generation:

The choices will depend on the evaluation of the system, but if there is a preference please advise:

- Electric (Pump/blower) Multi-Stage without valving Multi-Stage with valving (24V)
- Multi-Stage with IO link (Valving, part presence feedback etc.)

Are you able to provide samples?

- Yes No

If you could please provide a photo of the product with this form

If you could please provide an excel file with all the different potential SKU's (LxWxH & weight)

Here is how our process typically works:

- 1) Contact information@directpneumatics.com and send this form.
- 2) We set up a teams/zoom meeting with one of our world class engineers to review/answer questions.
- 3) We decide if sending samples is necessary or not (we always prefer to do testing)
- 4) Direct Pneumatics works with Coval to quote the project.
- 5) You place a Purchase Order with us.
- 6) Coval creates official CAD models of the vacuum grippers that we send to you via email.
- 7) You review the CAD models & advise if there is anything we need to review/modify.
- 8) If they look good to go, you would 'sign off' on the CAD models approving them.
- 9) Once approved, Coval begins production, taking anywhere from 3 – 6 weeks to deliver the vacuum gripper(s) depending on the complexity of the tool, and volume at the production facility.