

**JOULIN**



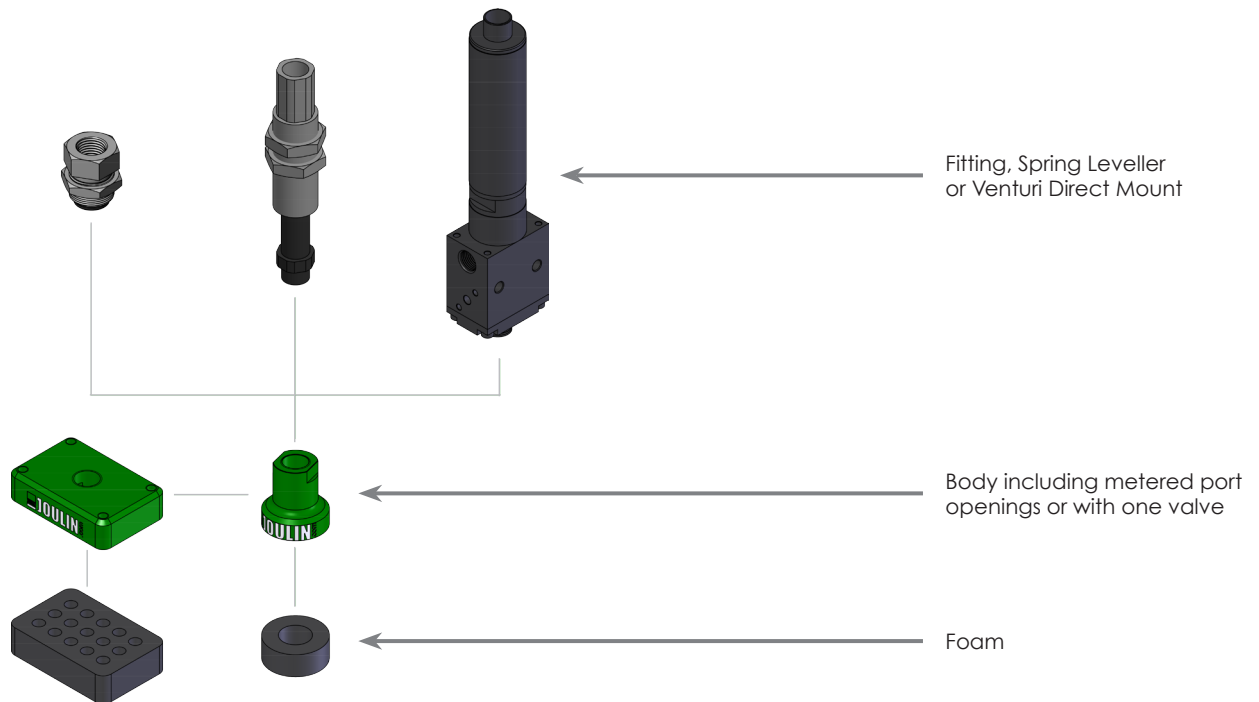
# MINIGRIP

## Foam Vacuum Gripper

**For a compact,  
and durable design  
look no further!**

# MINIGRIP

## Foam Vacuum Gripper



## versatile

- Foams adjust to smooth and rough surfaces easily
- Level compensators allow the Mini-Gripper to adjust for uneven layer heights without changing the mount
- Ability to pick a variety of products without adjustment
- Unlike larger grippers with fixed hole locations, arrayed Mini-Gripper(s) may be moved to obtain a variety of pitches
- Provides a new way to obtain faster cycle times!

## compact

- Easily adaptable to current tight clearance applications comparable to vacuum cups
- No need to over size for small applications. MGs do the trick!
- The vacuum source can be installed directly to or close to the Mini-Gripper to maximize its capability and efficiency. If using the manifold (VM) vacuum source, it must be installed close to the gripper/s.
- Much smaller sizes compared to FlexiGrip grippers

## easy to install

- Initial installation or changing a MG out for another is a snap!
- One 10mm compressed air fitting makes for quick push-lock connection to airline (airline - 10mm O.D.)
- Retrofit existing cups or existing pump system

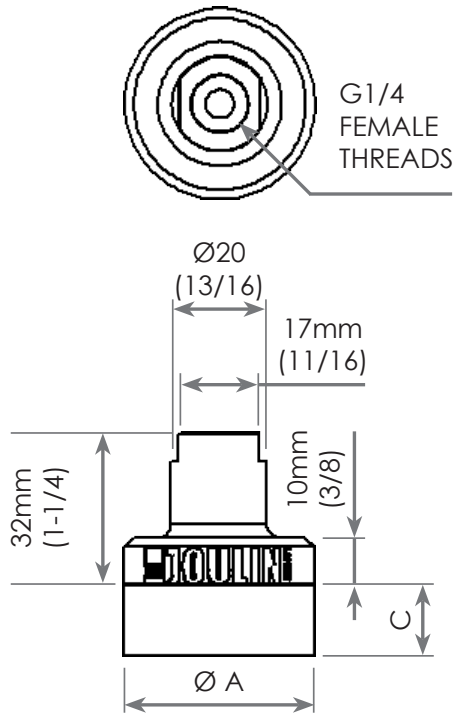
Click here or flash this code to see the video !



# MINIGRIP

## Foam Vacuum Gripper

# ROUND



**MG-**

Gripper Range

**VG-**

Technology:  
- VG = Valve Gripper  
- PG = Port Gripper

**GR25**

Style (A):  
- GR25 [31/32]  
- GR30 [1-3/16]  
- GR40 [1-9/16]  
- GR50 [1-31/32]  
- GR60 [2-3/8]  
- GR70 [2-3/4]

**-REG**

Flow (PG or VG):  
- REG = Regular  
- HG = High

Example:

**MG-VG-GR60-HG** = Valve Gripper 60mm O.D. footprint; High flow

| Style / Dimensions                  | GR25          | GR30           | GR40           | GR50            | GR60          | GR70          |
|-------------------------------------|---------------|----------------|----------------|-----------------|---------------|---------------|
| <b>A</b> (Size) - mm (in)           | Ø25mm (31/32) | Ø30mm (1-3/16) | Ø40mm (1-9/16) | Ø50mm (1-31/32) | Ø60mm (2-3/8) | Ø70mm (2-3/4) |
| Fitting size                        | G1/4"         | G1/4"          | G1/4"          | G1/4"           | G1/4"         | G1/4"         |
| <b>C</b> (Foam Thickness) - mm (in) | 12 (15/32)    | 12 (15/32)     | 15 (19/32)     | 15 (19/32)      | 24 (15/16)    | 24 (15/16)    |
| Weight w/o fitting - g (oz)         | 23 (0.81)     | 29 (1.02)      | 44 (1.55)      | 63 (2.22)       | 86 (3.03)     | 115 (4.06)    |

|                                   | Holding Force N (lbs)* - 70% vacuum |           |            |          |          |          |
|-----------------------------------|-------------------------------------|-----------|------------|----------|----------|----------|
| Non porous... <i>like steel</i>   | 4.7 (1)                             | 7 (1.5)   | 11.1 (2.4) | 17 (3.8) | 21 (4.7) | 38 (8.5) |
| Semi-porous... <i>like wood</i>   | 3.8 (0.8)                           | 5.7 (1.2) | 9.1 (2)    | 14 (3.1) | 18 (4)   | 31 (6.9) |
| Porous... <i>like cardboard</i>   | 3.5 (0.7)                           | 5.2 (1.1) | 8.3 (1.8)  | 11 (2.4) | 13 (2.9) | 17 (3.8) |
| Vacuum consumption... <i>Nl/s</i> | 0.06                                | 0.07      | 0.09       | 0.12     | 0.14     | 0.17     |

\* Fully covered, safety factor 2 already applied

\* Forces and flow data given as a design assistance; these may vary depending on the surface.

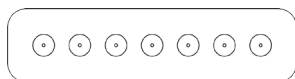
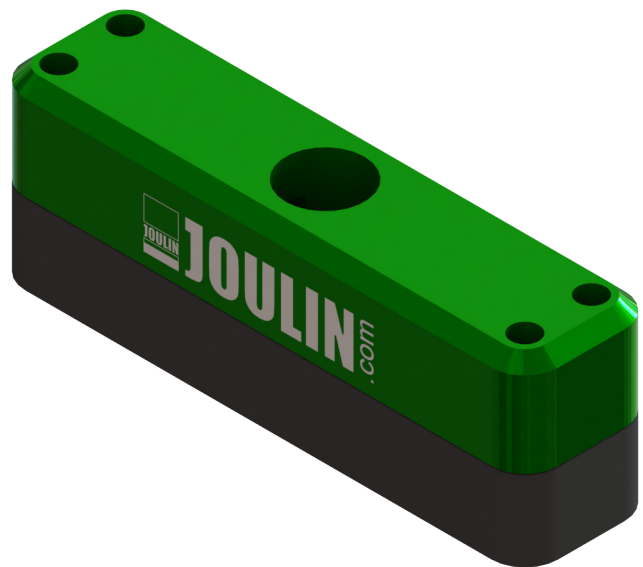
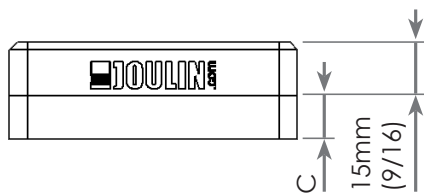
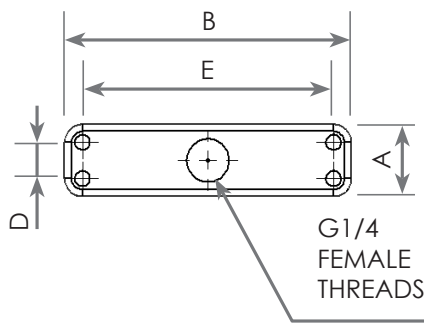
PG : metered port openings

VG : one valve in the only opening surface.

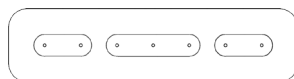
# MINIGRIP

## Foam Vacuum Gripper

# RECTANGULAR



Type **PGR** - When partially covered or multiple parts



Type **PGO** - When fully covered or large parts

**MG-**  
Gripper  
Range

**PGO-**  
Technology:  
- PGR = Port Gripper Round  
- PGO = Port Gripper Oblong

**20X80**  
Dimensions (AxB):  
- 20x80 [25/32 x 3-5/32]  
- 20x120 [25/32 x 4-23/31]  
- 40x60 [1-9/16 x 3-15/16]  
- 40x100 [1-9/16 x 3-15/16]

**-REG**  
Flow (PG):  
- REG = Regular  
- HG = High

Example:

**MG-PGO-20X80-REG** = Port Gripper 20mm x 80mm footprint; Oblong holes in the foam; Regular flow

| Overall Dimensions           | 20x80      | 20x120        | 40x60       | 40x100       |
|------------------------------|------------|---------------|-------------|--------------|
| Dimension <b>C</b> - mm (in) | 12 (15/32) | 12 (15/32)    | 15 (19/32)  | 15 (19/32)   |
| Dimension <b>D</b> - mm (in) | 10 (3/8)   | 10 (3/8)      | 30 (1-3/16) | 30 (1-3/16)  |
| Dimension <b>E</b> - mm (in) | 70 (2-3/4) | 110 (4-11/32) | 50 (2)      | 90 (3-17/32) |
| Weight w/o fitting - g (oz)  | 49 (1.73)  | 75 (2.65)     | 71 (2.5)    | 118 (4.16)   |

|                                   | Holding Force N (lbs)* - 70% vacuum |          |          |           |
|-----------------------------------|-------------------------------------|----------|----------|-----------|
| Non porous... <i>like steel</i>   | 16 (3.5)                            | 25 (5.6) | 31 (6.9) | 59 (13.2) |
| Semi-porous... <i>like wood</i>   | 14 (3.1)                            | 22 (4.9) | 27 (6.0) | 52 (11.6) |
| Porous... <i>like cardboard</i>   | 12 (2.6)                            | 19 (4.2) | 23 (5.1) | 41 (9.2)  |
| Vacuum consumption... <i>NI/s</i> | 0.1                                 | 0.15     | 0.21     | 0.38      |

\* Fully covered, safety factor 2 already applied

\* Forces and flow data given as a design assistance; these may great vary depending on the surface.

PG : metered port openings

# MINIGRIP

## Foam Vacuum Gripper

### I. HOW IT WORKS

The **Valve Mini-Gripper** (MG-VG) operates with a single check valve which automatically closes if no product is fully present and where a larger gripper is unnecessary. Example: arraying MG-VGs for the purpose of picking light weight narrow parts that are to be picked and placed horizontally (< **60° angle**).

The **Port Mini-Gripper** (MG-PG) operates with a single port or multiple open ports. The gripper will still pick light weight products if at least 80% of the gripper covers it. Again, these are handy where a larger gripper is not necessary. An application example may be picking single can drinks that are to be picked and placed horizontally or vertically. MG-PG grippers can be flipped 360° with products attached. Of course, these MGs can be arrayed with other MG Grippers as well.

### II. START UP

1. Put the MiniGrip on the frame in desired position.

2. Plug vacuum fittings, minimum diameter of fittings and hose must be larger than 8mm (0.31in):

- ✓ External Vacuum:  
Try to minimize the distance between vacuum generator and MGs to limit the loss of vacuum.
- ✓ Joulin Vacuum Source:
  - \* **VD/VI**: Plug only with compressed air
  - \* **VM**: Plug (A) with compressed air and B1/B2/C1/C2 to the MGs. Try to minimize distance between the generator and the MGs to limit the loss of vacuum.

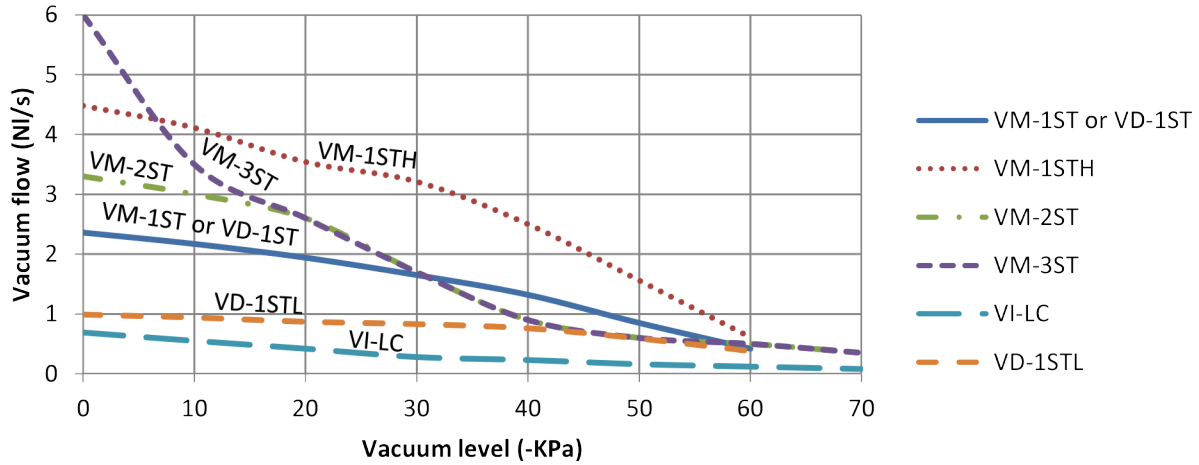
3. When all MGs are plugged in, test with products:

- ✓ Go in contact with the products to handle. Take care to compress the foam before starting vacuum, risk of swallowing of the foam if it's not enough compressed.
- ✓ Start vacuum.
- ✓ Execute wanted cycle.
- ✓ Stop vacuum to release the product.

# MINIGRIP

## Foam Vacuum Gripper

### III. VACUUM GENERATOR



| Type             | Max vacuum kPa | Feed pressure mPa | Air consumption NI/s | Vacuum flow NI/s at different vacuum levels -kPa |      |      |      |      |      |      |      |
|------------------|----------------|-------------------|----------------------|--|------|------|------|------|------|------|------|
|                  |                |                   |                      | 0  | 10   | 20   | 30   | 40   | 50   | 60   | 70   |
| VM-1ST or VD-1ST | 65             | 0.6               | 1.79                 | 2.36   | 2.17 | 1.94 | 1.65 | 1.32 | 0.85 | 0.42 | -    |
| VM-1STH          | 65             | 0.6               | 3.86                 | 4.48   | 4.11 | 3.54 | 3.21 | 2.5  | 1.56 | 0.61 | -    |
| VM-2ST           | 75             | 0.6               | 1.75                 | 3.3  | 3    | 2.6  | 1.7  | 0.9  | 0.6  | 0.5  | 0.35 |
| VM-3ST           | 75             | 0.6               | 1.75                 | 6  | 3.5  | 2.6  | 1.7  | 0.9  | 0.6  | 0.5  | 0.35 |
| VD-1STL          | 65             | 0.6               | 0.85                 | 0.99   | 0.94 | 0.87 | 0.83 | 0.76 | 0.59 | 0.38 | -    |
| VI-LC            | 75             | 0.6               | 0.44                 | 0.69   | 0.55 | 0.42 | 0.28 | 0.23 | 0.16 | 0.12 | 0.08 |

| Type             | Max vacuum scfm | Feed pressure psi | Air consumption scfm | Vacuum flow scfm at different vacuum levels -inHg |      |      |      |      |      |      |      |
|------------------|-----------------|-------------------|----------------------|---|------|------|------|------|------|------|------|
|                  |                 |                   |                      | 0   | 3    | 6    | 9    | 12   | 15   | 18   | 21   |
| VM-1ST or VD-1ST | 19.5            | 87                | 3.79                 | 4.99  | 4.59 | 4.10 | 3.49 | 2.79 | 1.79 | 0.88 | -    |
| VM-1STH          | 19.5            | 87                | 8.18                 | 9.48  | 8.69 | 7.49 | 6.79 | 5.29 | 3.30 | 1.19 | -    |
| VM-2ST           | 22.5            | 87                | 3.71                 | 6.98  | 6.35 | 5.50 | 3.59 | 1.90 | 1.27 | 1.05 | 0.74 |
| VM-3ST           | 22.5            | 87                | 3.71                 | 12.7  | 7.40 | 5.50 | 3.59 | 1.90 | 1.27 | 1.05 | 0.74 |
| VD-1STL          | 19.5            | 87                | 1.8                  | 2.09  | 1.98 | 1.84 | 1.75 | 1.60 | 1.24 | 0.80 | -    |
| VI-LC            | 22.5            | 87                | 0.93                 | 1.46  | 1.16 | 0.88 | 0.59 | 0.48 | 0.33 | 0.25 | 0.16 |

# MINIGRIP

## Foam Vacuum Gripper

### IV. SERVICE AND MAINTENANCE



**MG range is non-dismantable. Please contact us for more information.**

#### A. CLEANING OF VALVES / HOLES

*Step 1:* Detach the foam from the gripper.

*Step 2:* Clean from the bottom side with a pressure washer (maintaining a minimum distance of 50cm - 1,64' between nozzle and gripper) or with hot water jet.

*Step 3:* In case of PG gripper, ensure that all holes of the bottom plate are well opened.

*Step 4:* Dry.

*Step 5:* Adhere new foam pad to gripper.

#### B. STATE OF FOAMS

After a large number of cycles, the cell structure of the foams can change (dependent upon product and cycles). When the closed cells of the foam are damaged and opened, they let more air flow through the gripper than the vacuum generator is able to compensate for.

Convenient vacuum levels can no longer be obtained and foams will need to be changed.

Ensure that the holes in the foam pad and bottom plate align properly to avoid blocking vacuum ports.

The condition of the foam is much more sensitive when gripping small surface products. You can assess foam condition by using the gripper to pick small products and then larger products.

#### C. HOW TO REPLACE FOAM PADS

*Step 1:* Pull out old foam

*Step 2:* Clean gripper's bottom side with dish detergent.

*Step 3:* Pull out protection sheet from new pad.

*Step 4:* Apply new pad on bottom side while making sure foam's holes coincide with gripper's holes.

*Step 5:* Pick a non-porous plate (wood, aluminum, etc...) a few seconds for a better grip.

✓ If possible, run manipulator just after changing foams in order to better adhere the foam(s).

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## Foam Vacuum Gripper

### IV. PROBLEM ANALYSIS TABLE

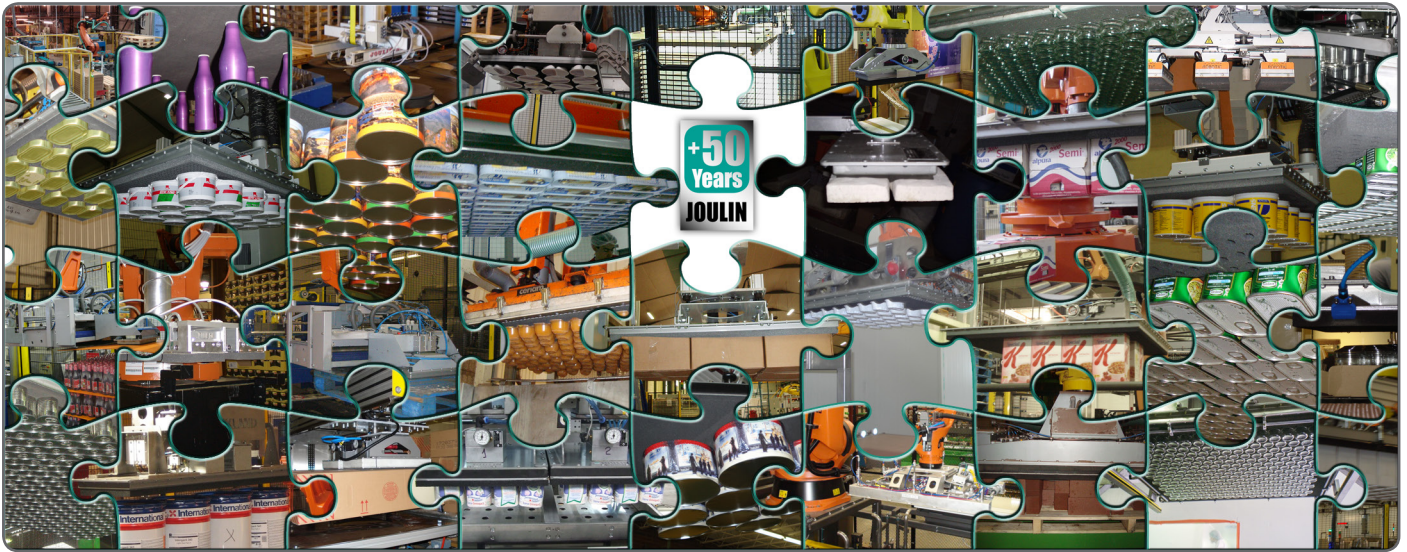
| Anomaly   | Probable Causes  | Remedies  |
|---|--|---|
| ✓   | First assure that holes in the foam pad are precisely corresponding to gripper's bottom plate holes. |   |
| ✓   | First assure that compressed air infeed is according to manufacturer specifications.                 |   |
| Vacuum Gripper cannot pick products<br>OR<br>Products fall down during manipulation | Old foams  | Control state of foams. In most cases, problems arising are coming from used foam pads. Change if necessary.  |
|   | Dirty ejectors   | Proceed to cleaning cartridge manifolds.  |
|   | Pneumatic diagram is not respected.  | Times necessary during pick-up and release positions may not exactly be respected.<br>Check that electrovalves control is corresponding to pneumatic diagram. |
|   | Products different from application's original design.   | Products may be different from which the gripper has been designed.   |
|   | Leakage from gripper   | Check state of joint between gripper's bottom side (VG version only).   |
|   | Offset foams   | Check the position of foams in relation to clover or holes in the bottom plate.   |
|   | Insufficient compressed air  | Check compressed air network (minimum 6 bar - 87 psi).  |
| Very short foam life cycle  | The foam isn't compressed enough   | Check sequencing to make sure the foam is fully compressed when the vacuum is applied.  |
|   | The foam is sheared  | Check sequencing to make sure the MG has no relative speed to the product when they come in contact and the vacuum is applied                                 |

### V. PERIODIC CONTROLS

| Elements               | Daily | Weekly | Monthly | Type  | Observations   |
|------------------------|-------|--------|---------|---|--|
| Foams                  | X     |        |         | Visual  | If gripper is not working properly, refer to gripper's instruction of use. |
| Vacuum Filter (option) | X     |        |         | Visual  | If gripper is not working properly, refer to gripper's instruction of use. |
| Vacuum source          |       |        | X       | Refer to vacuum generator instructions of use | Replace air tightness joints if necessary.                                 |



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**Have a problem handling your products ?**

Team Joulin has 50 years of Research and Development resulting in better solutions, more options, and vacuum systems offering greater flexibility than ever before.