



## Vacuum Components

Modular System for Vacuum End Effectors VEE

# Vacuum End Effector VEE

## Application



Vacuum end effector with bellows suction pads SPB1 for cardboard packaging



Vacuum end effector with bellows suction pads SPB4 for flow-wrapped packaging



Vacuum end effector with flat suction pads SGPN for firm foil packaging

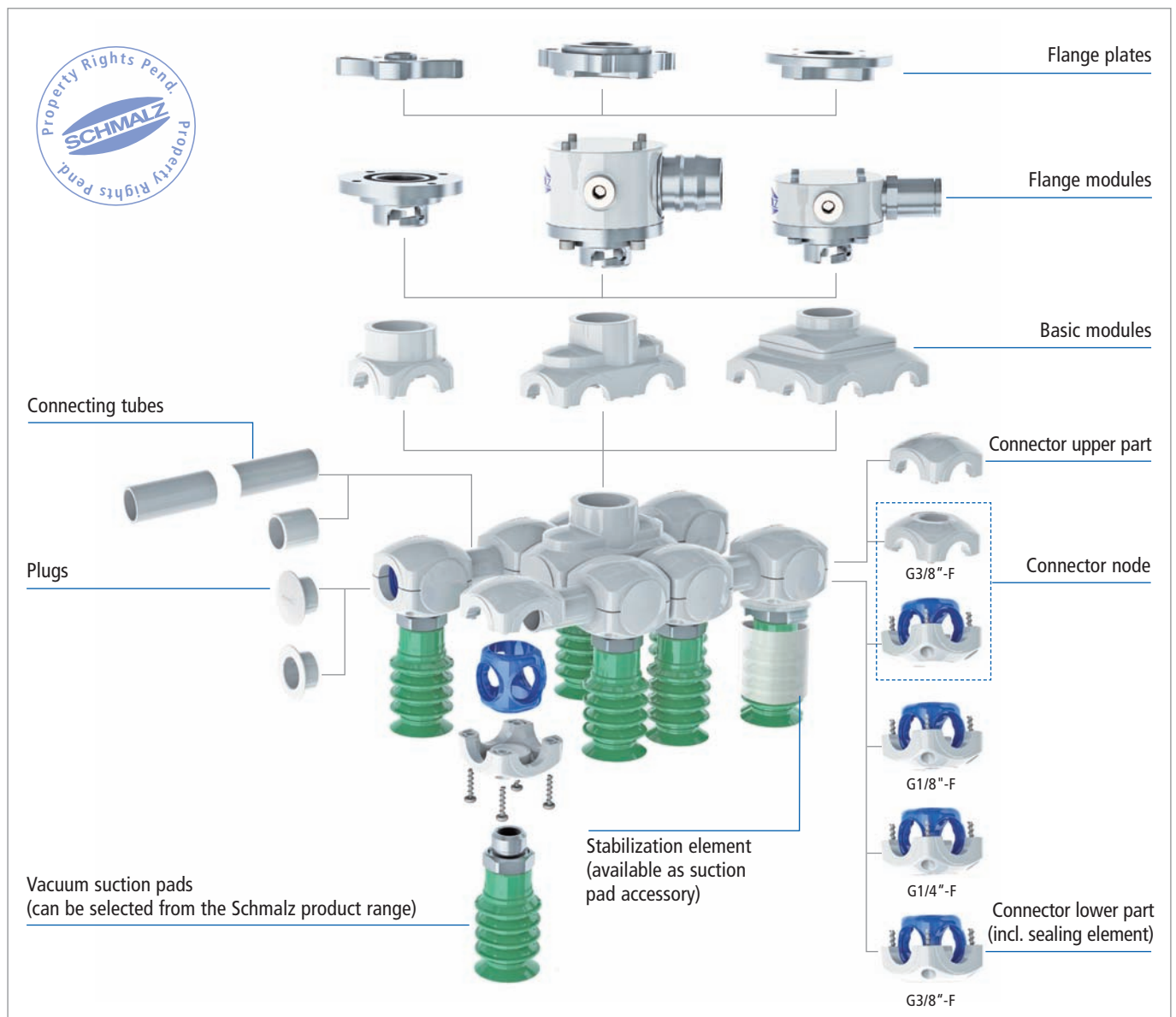
### Modular system for quick and cost-efficient assembly of vacuum end effectors

- Fast pick-and-place processes in combination with delta and SCARA robots
- Use in both primary and secondary packaging processes
- Automated filling of cardboard boxes using case packers
- Use in top-loading machines as well as in cardboard box and tray aligners
- Use in flexible packaging machines with frequent format changes



Vacuum end effector with bellows suction pads SPB4 for stand-up bags

# Assembly and Sample Configurations



## Sample configuration 1

- Based on 1-connection basic module with six suction pads
- Gripper weight only 395 g
- Gripper size approx. 200 mm x 200 mm



## Sample configuration 2

- Based on 2-connection basic module with six suction pads
- Gripper weight only 350 g
- Gripper size approx. 160 mm x 80 mm



## Sample configuration 3

- Based on 4-connection basic module with eight suction pads
- Gripper weight only 425 g
- Gripper size approx. 220 mm x 80 mm

# System Modules



## Flange plates FLAN-PL

Quick and easy connection of the flange module to the robot; available for all conventional robot types and as a universal flange.

[www.schmalz.com/flan-pl](http://www.schmalz.com/flan-pl)



## Flange modules VEE-QCM

Quick-change adapter and vacuum connection; either horizontal (max. 20 m<sup>3</sup>/h and max. 60 m<sup>3</sup>/h volume flow rate) or vertical (max. 60 m<sup>3</sup>/h volume flow rate).

[www.schmalz.com/vee-qcm](http://www.schmalz.com/vee-qcm)



## Basic modules VEE-QCF

Tool-free connection of the end effector to the flange module and central vacuum feed; available as a 1-, 2-, or 4-connection module.

[www.schmalz.com/vee-qcf](http://www.schmalz.com/vee-qcf)



## Connector upper part VEE-CO-U

Top half-shell for assembly of connecting nodes; available in closed design or with connection for additional vacuum feed (G3/8"-F).

[www.schmalz.com/vee-co-u](http://www.schmalz.com/vee-co-u)



## Connector lower part VEE-CO-L

Bottom half-shell including sealing element and screws for assembly of connecting nodes; either closed or with connection for suction pad (G1/8"-F, G1/4"-F, G3/8"-F).

[www.schmalz.com/vee-co-l](http://www.schmalz.com/vee-co-l)



## Connecting tubes VEE-TU

Vacuum guide and variable connection of nodes; available in 18 mm and 200 mm lengths. Pipe scissors for quick and safe cutting available as accessory.

[www.schmalz.com/vee-tu](http://www.schmalz.com/vee-tu)



## Plugs VEE-PL

For sealing unneeded connections on connecting nodes, lateral vacuum feed and partitioning into different vacuum zones.

[www.schmalz.com/vee-pl](http://www.schmalz.com/vee-pl)



## Stabilization element SP

Increased process speed by additional support of the workpiece; available as an option for bellows suction pads.

## Vacuum Suction Pads for the Packaging Industry



### Flat suction pads SPF/ Bellows suction pads SPB1

- For intrinsically stable and slightly unstable cardboard boxes and packaging
- High intrinsic stability
- Wear-proof material ELASTODUR ED-65

[www.schmalz.com/spf.../spb1](http://www.schmalz.com/spf.../spb1)



### Bellows suction pads SPB4

- For bags and other flexible packaging
- Reinforced basic body with 4.5 folds
- Flexible sealing lip
- FDA-compliant silicone material SI-55

[www.schmalz.com/spb4](http://www.schmalz.com/spb4)



### Flat suction pads SGPN

- For films, blister packs and other sensitive packaging
- Extremely thin sealing lip
- Natural rubber material NK-40 or FDA-compliant silicone material SI-50

[www.schmalz.com/sgpn](http://www.schmalz.com/sgpn)



### Bellows suction pads FSG/FSGA

- Standard suction pads for various packaging applications
- Stable basic body with 1.5 or 2.5 folds
- FDA-compliant silicone material SI-55

[www.schmalz.com/fsg.../fsga](http://www.schmalz.com/fsg.../fsga)

# Vacuum End Effector VEE

## Overview of Highlights

### Modular system for time and cost saving construction of vacuum end effectors



#### Individual configuration

- Flexible modular design with perfectly coordinated parts
- Variable number of suction pads and variable suction pad distances
- Hose-free vacuum distribution



#### Reduced construction and manufacturing effort

- Significant reduction of construction effort by modular design principle and CAD data (available online)
- Minimizes configuration and production time by more than 80 %
- Reduces manufacturing costs by up to 75 %



#### Minimum weight for maximum process speeds

- Complete end effector with SPB4-30 bellows suction pad and quick change coupler weighs as low as 95 g (even by selective laser sintering SLS, this can hardly be achieved)
- Designed for high-speed applications with accelerations up to 10 g (100 m/s<sup>2</sup>)



#### Outstanding hygiene properties

- FDA-compliant polysulfone material (PSU)
- Suitable for steam sterilization (up to 134°C at 3 bars pressure)
- Excellent resistance to cleaning agents used in the food industry

## All you need for a quick start

### The Vacuum End Effector Starter Set

The VEE starter set (Article No. 10.01.36.00030) allows you to configure vacuum end effectors for high-speed packaging processes within minutes.

#### Contents

- 120-piece starter set with all components for assembling up to two VEE vacuum end effectors
- Eight vacuum suction pads SPB4-30 for bags and other flexible packaging
- Quick-change coupler with bayonet fastener
- In sturdy plastic case with detailed assembly instructions

 [www.schmalz.com/vee-starterset](http://www.schmalz.com/vee-starterset)



# Vacuum End Effector VEE

## Technical Data and Design Data



### Technical Data

| Specification           | Vacuum end effectors from the VEE modular system |
|-------------------------|--|
| Max. rated flow         | 60 m <sup>3</sup> /h                             |
| Max. vacuum value       | -980 mbar  |
| Overpressure resistance | up to 3 bar                                      |
| Temperature range       | -25 °C to +80 °C                                 |
| Material                | Polysulfone PSU (BfR and FDA approved)           |
| Max. load capacity      | 2,000 g  |



### Design Data

The modular system VEE allows you to freely configure individual end effectors. This together with the large selection of suction pads for the packaging industry leads to a nearly unlimited number of possible applications.

| Specification                 | Vacuum end effectors from the VEE modular system     |  |
|-------------------------------|--|--|
|                               | Minimum configuration<br>(1-connection basic module) | Maximum configuration<br>(4-connection basic module) |
| Gripper size                  | 38 x 38 mm   | 300 x 200 mm   |
| Gripper weight <sup>1</sup>   | 40 g   | 800 g  |
| Suction pad connection thread | G1/8"-F<br>G1/4"-F<br>G3/8"-F                        | G1/8"-F<br>G1/4"-F<br>G3/8"-F                        |
| Qty. of suction pads          | 1  | 12   |
| Workpiece size                | 15 x 15 mm   | 400 x 300 mm   |

<sup>1</sup> without flange module and suction pad

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PDF brochure



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