Innovative vacuum for automation

SCHMALZ

Vacuum Gripping Systems

Applications & Products

Schmalz – World of Vacuum Technology

Strict customer-orientation and trend-setting innovations, excellent quality and comprehensive advisory skills make Schmalz the world's leading partner for vacuum technology in automation, handling and clamping technology.

As a company active worldwide with excellent products and services, we offer our customers trend-setting solutions. We have many enthusiastic customers in all sectors where production processes are made more efficient with the aid of vacuum technology.

Schmalz Services – Supporting You All The Way

Consultation
Professional project planning and expert realisation of your individual solution – profit from our experience.

Procurement
Attractive terms and reliable delivery service – Schmalz provides security for all your purchases.

Start of operations
We support you during the start of operations and assist you throughout the entire process.

Operation
Schmalz service technicians optimise the performance capability of your system. Innovative vacuum solutions ensure a high degree of equipment availability.

Training
Schmalz imparts knowledge – carefully tailored to the needs of your company´s employees.

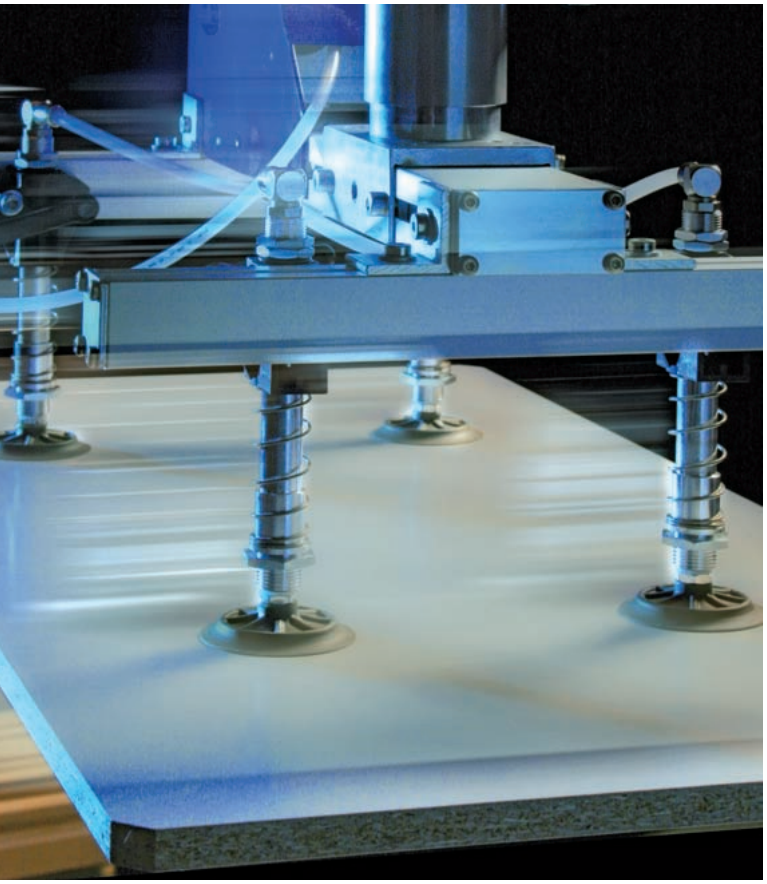
Repair service
The vacuum specialists of the Schmalz Group assist you in emergencies worldwide – quick and straightforward.

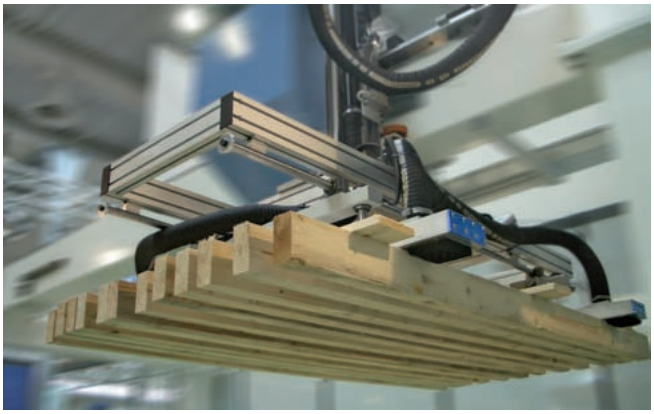
Contents

Industry solutions

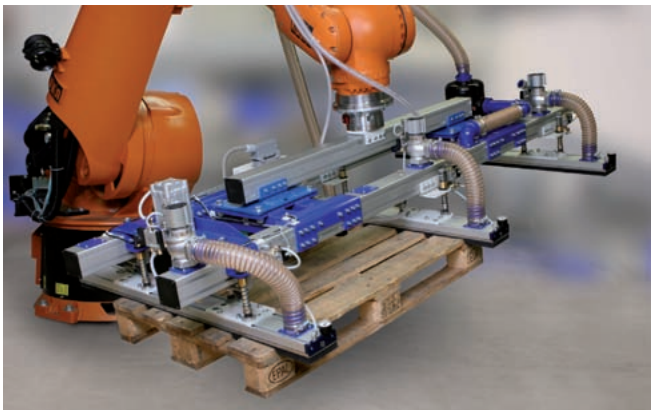
Products

Note:
In this brochure all technical data are based on an ambient pressure of 1000 mbar and an ambient temperature of 20 °C.



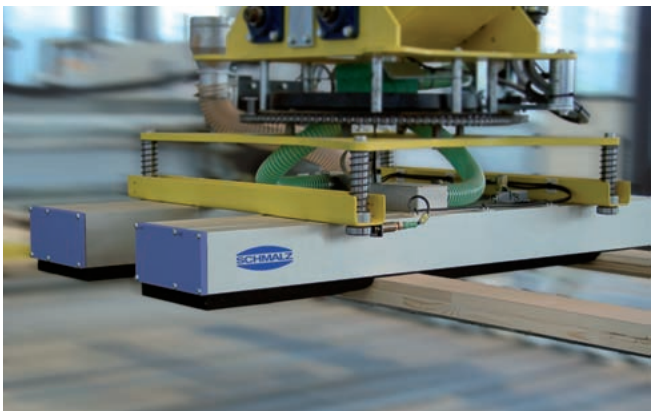


Large-area vacuum gripping system FMC for handling of wooden boards



Vacuum suction spider SSP-FMC for handling of pallets

Large-area vacuum gripping system FXC for handling of doors



Large-area vacuum gripping system SBX for handling of wooden boards

Woodworking industry

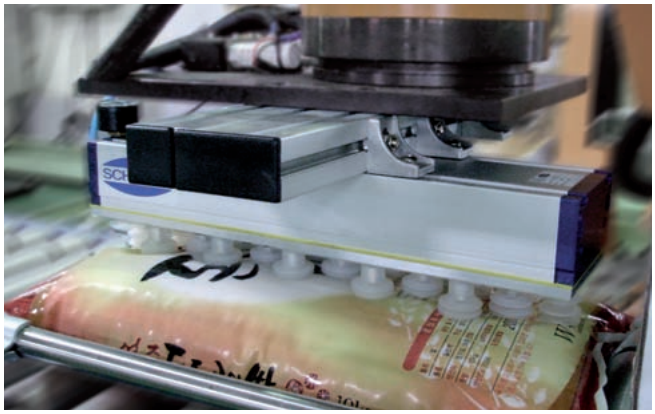
Increased productivity with powerful handling systems in demanding operating environments

Special industry requirements

- Untidy stacks, widely varying workpiece dimensions, undefined gripping positions
- Gripping and transporting of products without damage or marking
- Short cycle times, high acceleration values and a high degree of automation
- Naturally grown raw materials (knot-holes, porosity, warping, cracks)
- Rough operating conditions due to dust, chips and sharp edges

Possible applications of vacuum technology

- Automated palletizing and depalletizing, commissioning and sorting of many different goods, such as furniture elements, windows and doors
- Handling and quick separation of large-flat and porous workpieces, such as chipboards and MDF and OSB sheets
- Powerful handling of complete layers of sawn wood, glued beams, structural wood and pallets with portals or industrial robots
- Flexible handling, even of non-rigid workpieces such as sheets of wooden veneer



Large-area vacuum gripping system FXC-SG for handling of plastic bags

Large-area vacuum gripping system FXC-SG for handling of bending cardboard boxes

Large-area vacuum gripping system FXC with combifoam for handling of cans

Vacuum layer gripping system SPZ for handling of cardboard boxes

PACKAGING

Packaging industry

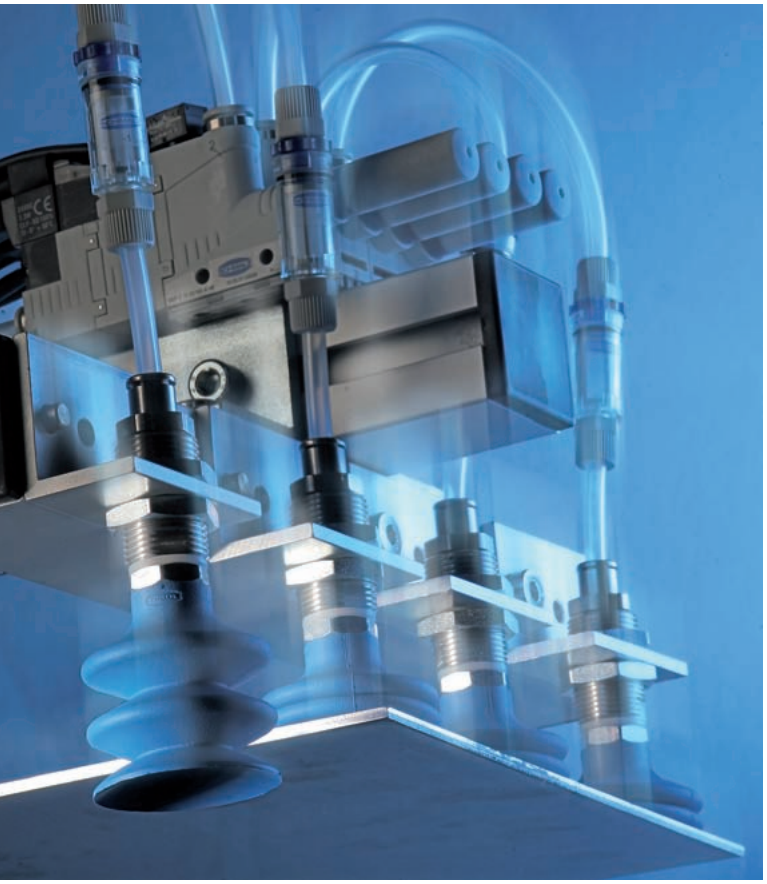
Handling of rigidly and non-rigidly packaged products with minimal cycle times

Special industry requirements

- Varying materials properties, such as non-rigid cardboard boxes, plastic films and porous materials
- Handling of layers with varying dimensions and undefined positions
- Short cycle times and high acceleration valves
- Additional special functions such as mechanical centering

Possible applications of vacuum technology

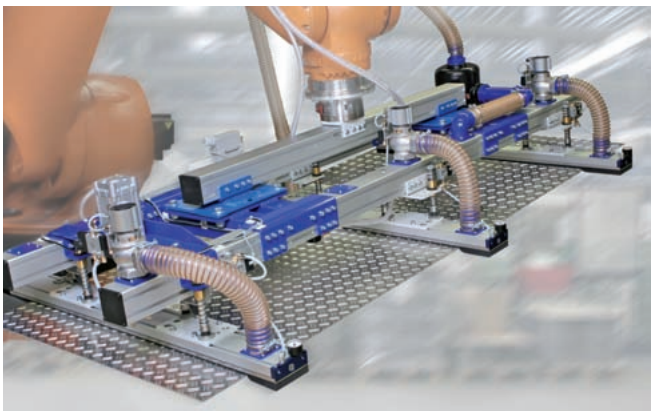
- Transportation of cardboard boxes, intermediate layers and trays without changing the gripping system
- Palletizing and separation of many different products from the conveyor belt (end-of-line palletizing), for example, cardboard boxes of different measurements and weights
- Palletizing and depalletizing complete layers of products with pallets of varying sizes
- Handling a wide variety of workpieces with gaps and/or structured surfaces



Large-area vacuum gripping system FXC for handling of buckets

Large-area vacuum gripping system FMC for layerwise handling of aluminium profiles

Large-area vacuum gripping system FXC for handling of car body parts



Vacuum suction spider SSP-FMC for handling of checker plates

Metal industry

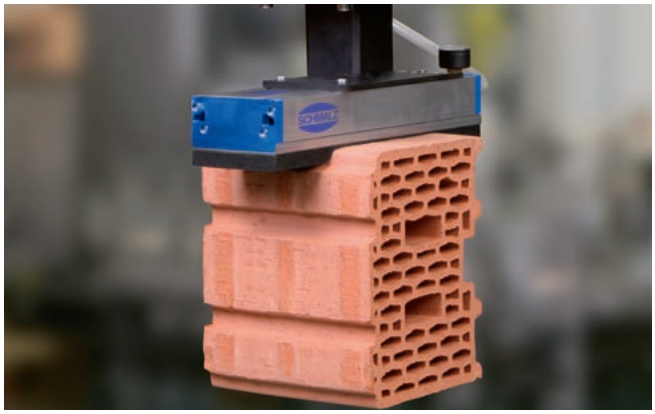
Short cycle times and high operational reliability

Special industry requirements

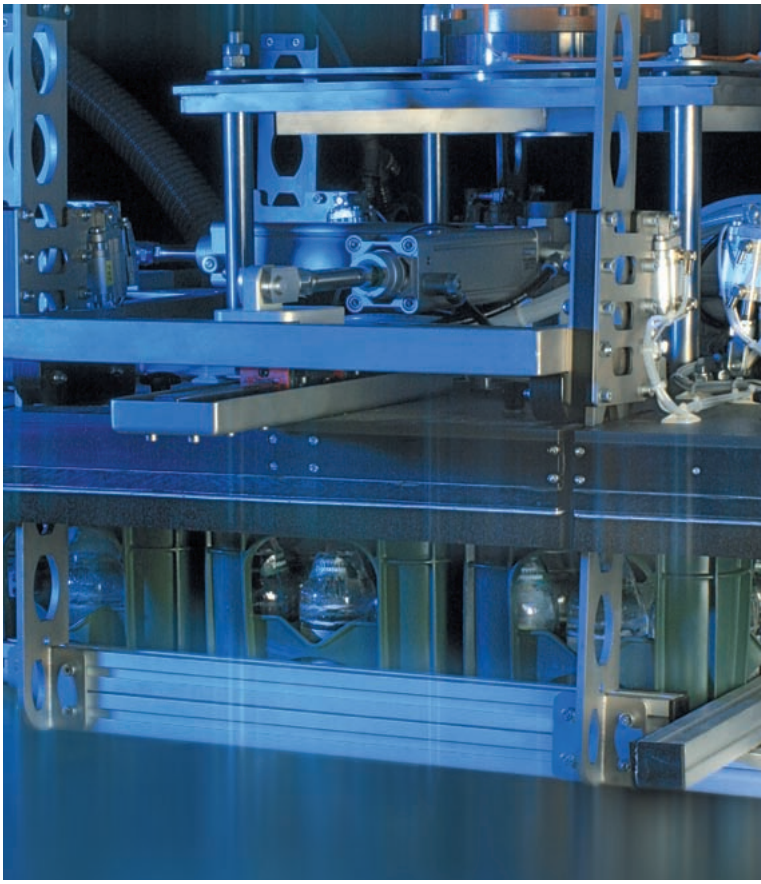
- Dynamic, safe and precise handling of metal sheets
- Ability to handle large, dynamic force and short cycle times with extended lifetime
- Resistance to oil and, in many cases, silicone free
- Handling of smooth, structured and curved metal sheets, in some cases with apertures

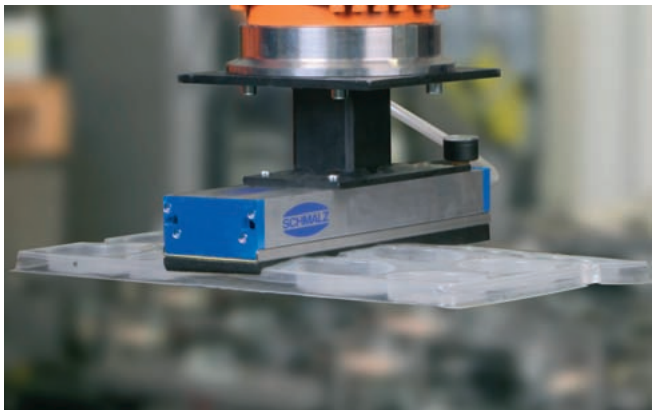
Possible applications of vacuum technology

- Energy-efficient handling of a wide variety of metal sheets with varying dimensions, undefined position, gaps and/or structural surfaces with high dynamics to shorten cycle times
- Handling of thin steel sheets and aluminium sheets without deformation
- Handling of long-narrow sheet-metal parts (such as stiffeners, ribs and reinforcing pieces)
- Handling, without slipping, of oily metal sheets for precise positioning in laser cutting and punching machines

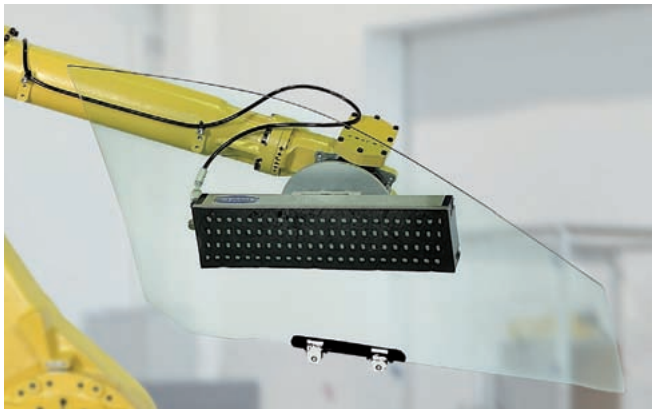


Stone industry: large-area vacuum gripping system FX/FXC for handling of bricks





Plastics industry: large-area vacuum gripping system FXC for handling of injection moulded parts



Glass industry: large-area vacuum gripping system FXC for handling of windows

Solar industry: vacuum suction spider SSP for handling of solar modules

Further industry solutions

Flexible systems for many different automated handling tasks

Special requirements

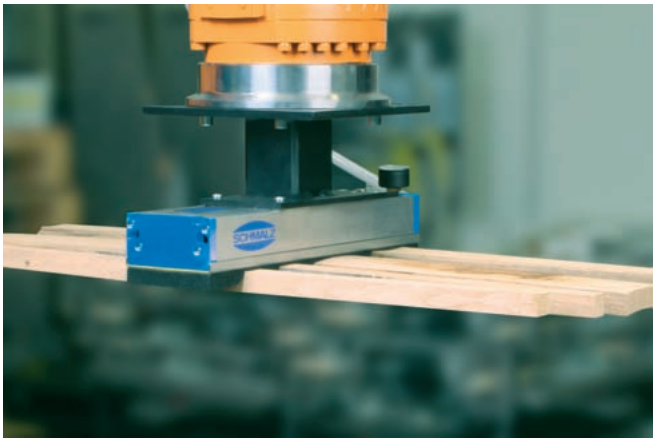
- Very dynamic operation and best minimum system downtime
- Reliability and a long operating lifetime
- Damage-free handling
- Solutions with combinations of different gripping principles (mechanical + vacuum)

Possible applications of vacuum technology

- Handling of many different types of goods with variable dimensions, undefined positions, apertures and/or structured surfaces
- Special customer-specific solutions, for example, for the handling of food, stone, glass, plastic, solar modules, electronic parts, etc.

Large-area vacuum gripping systems FXC/FMC

Maximum flexibility for automated handling processes



Large-area vacuum gripping system FXC for powerful handling of wooden boards

Applications

- Handling workpieces with a wide range of dimensions and/or undefined positions
- Handling workpieces with gaps
- Automated palletizing/depalletizing, order picking and sorting of a wide range of workpieces with only one type of gripper
- Handling workpieces made from various materials such as cardboard, wood, metal, glass or plastic

Large-area vacuum gripping system FXC

Large-area vacuum gripping system FMC

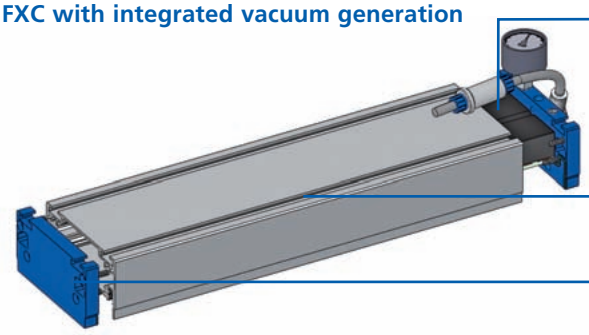
Our highlights…	Your benefits…
• Sealing plate	> Quick and cost-effective replacement of the plate
• Valve type protected against contamination and easy to clean	> Operational safety and a high degree of system availability
• Innovative valve concept	> Intelligent vacuum generation saves energy with fast cycle times
Type FXC	
• Integrated plug-in ejector	> Integrated, compact construction
• Extruded aluminium profile with integration of functions in the end covers	> Variable in length, robust lightweight design for fast cycle times
Type FMC	
• External vacuum generation	> Flexible vacuum generation adapted to the individual application
• Extruded aluminium profile with a minimal height	> Lightweight design for fast cycle times and cost-effective handling systems

Large-area vacuum gripping systems FXC/FMC

Modularity for device configuration as required

Modular component system FXC/FMC

FXC with integrated vacuum generation

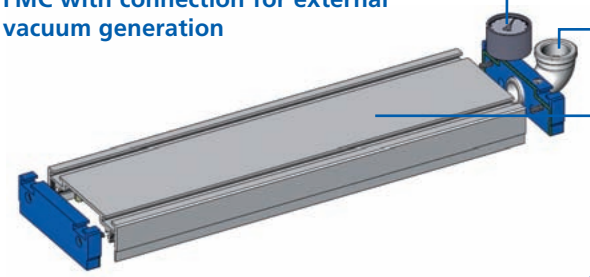


Vacuum generator (FXC)
- Plug-in ejector with lightweight design
- Quickly replaceable
- Alternatively with up to 4 multi-stage ejectors for optimum performance adjustment

T-slot
- For flexible mechanical attachment of the gripper

End cover with function modules
- For the "sensor", "blow-off" and "separation" connections

FMC with connection for external vacuum generation



Vacuum display using vacuum manometer

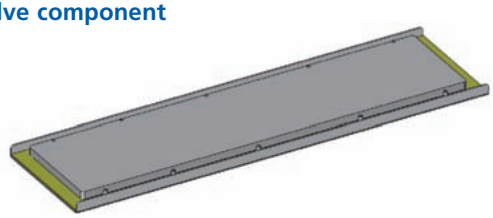
Connection pieces (FMC)
- For external vacuum generator

Main body
- Made from extruded aluminium section
- Variable in width by combining units
- Variable in length
- Protective housing for vacuum generator (FXC)
- Lower height with FMC type

Main body

+

Valve component



Valve type SVKW
- Quick blow-off and fast cycle times for increased production speed
- High degree of air passage for handling porous and rough workpieces

Valve type SW
- Flow screens for any installation position and high accelerations

Valve components

+

Sealing plate

Suction pads

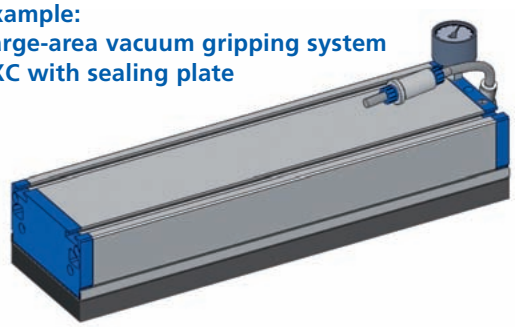
Sealing plate (foam)
- Flexible and highly resistant
- Different grids according to the width of the workpiece
- Quickly replaceable
- Optional: sealing plate with integrated filter screen to protect against contamination

Suction pads (elastomer)
- Soft, adaptable sealing lip
- Quickly replaceable

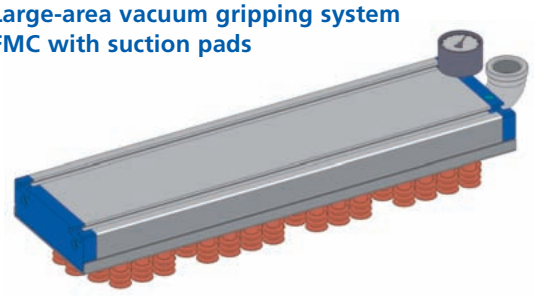
Sealing elements

=

Example:
Large-area vacuum gripping system
FXC with sealing plate



Example:
Large-area vacuum gripping system
FMC with suction pads



Complete large-area vacuum gripping systems

Large-area vacuum gripping systems FXC/FMC

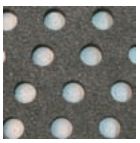
The sealing element – the interface to your workpiece

Sealing elements: Sealing plate and suction pads

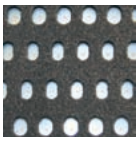
Sealing elements are the crucial interface between the gripping system and the workpiece. There are two different sealing elements available for the large-area vacuum gripping systems FXC/FMC: Sealing plate and suction pads. Large-area vacuum gripping systems with a sealing plate are perfect for handling rigid workpieces such as furniture, wooden boards, etc. Large-area vacuum gripping systems with suction pads are used to handle non-rigid workpieces such as shrink wrapped products, cardboard boxes, etc. Both versions have a quick-change mechanism that allows the elements to be quickly replaced. This minimizes maintenance and downtimes of the system.

Sealing plate (foam)

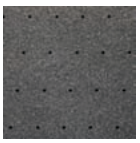
Large-area vacuum gripping systems FXC/FMC with various sealing plates



Standard foam with a medium grid
- For workpiece widths of 60 mm or higher
- Hole spacing 36 mm, foam height 20 mm



Standard foam with a fine grid
- For workpiece widths of 30 mm or higher
- Hole spacing 18 mm, foam height 20 mm



Combifoam
- For workpiece diameters of 50 mm or higher
- Hole spacing 18 mm, foam height 23 mm
- Patented innovative layer structure

Application areas

- Handling of rigid workpieces
- Standard foam with a grid is used for handling boards, plates, pallets, aluminium profiles and checker plates
- Combifoam is mainly used for handling glass, cosmetic cases, buckets and cans with a continuous edge (e.g. cans of drinks, etc.)

Specific product features

- Rugged, flexible foam ensures a long lifetime
- Quick-change adhesive rape ensures fast and simple foam replacement
- Different sealing plates ensure that a wide range of workpieces can be gripped and handled
- Optional separation function ensures safe handling of porous workpieces

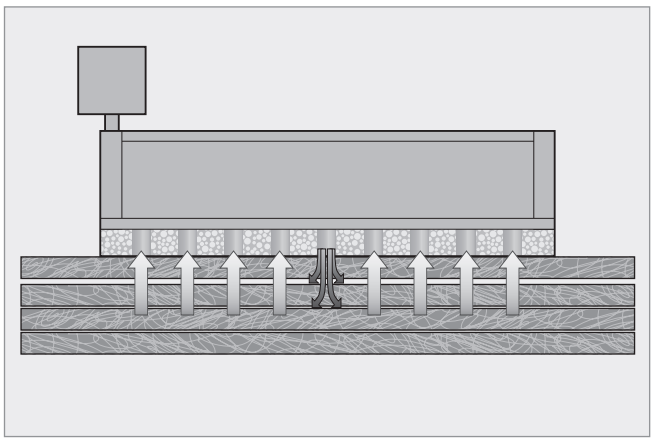


Diagram of the separation function

Optional separation function:

The separation function prevents several workpieces from sticking to each other when destacking. Applying a compressed-air jet through the sucked workpiece keeps the under-lying workpiece from being gripped. In this way, only one workpiece is picked up and held.

The separation function is used for all porous workpieces such as cardboard boxes, MDF or chipboards.

Type	Article number	Air consumption [l/min]	Weight [kg]
FXC-SW 435.5-V	10.01.21.00246	197	3.2

Note: Available on other sizes of vacuum gripping systems on request.

Large-area vacuum gripping systems FXC/FMC

The sealing element – the interface to your workpiece

Suction pads

Large-area vacuum gripping systems FXC/FMC with a wide range of suction pads

Standard suction pads
- Bellows suction pads (2.5 folds)
- Optimized shape for high suction power

Suction pads with sealing ring
- Bellows suction pads (2.5 folds)
- Additional foam sealing ring

Plug-in suction pads
- Plug-in suction pads with 2.5 bellows
- Integrated flow resistance
- Quick-change function as plug-in option

Application areas

- Handling of non-rigid workpieces such as cardboard boxes, plastic bags, trays, etc.

Specific product features

- Reduced energy consumption due to excellent sealing properties
- Adaptable, soft sealing lips ensure that curved and non-rigid surfaces are sealed
- Quick installation and removal of the suction pads minimizes maintenance and downtimes of the system

Special type: Large-area vacuum gripping system FXC/FMC for handling of doors

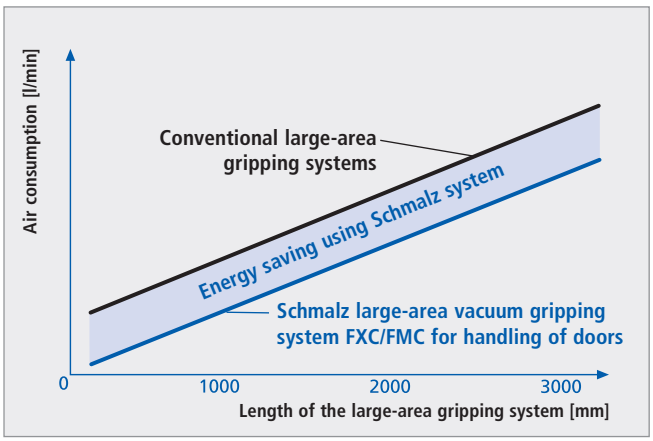
Application areas

- Handling of workpieces of various sizes and/or undefined positions
- Handling of workpieces with gaps for automated palletizing/depalletizing
- Order picking and sorting doors

Specific product features

- Reduction of energy consumption using the valve components that are optimized for handling doors
- Rugged, flexible foam with integrated sealing plate protected against contamination ensures a long lifetime
- Large-area vacuum gripping system with extended area of operation ensures flexible handling of doors with a frame width of only 80 mm

Large-area vacuum gripping system FXC/FMC for handling of doors

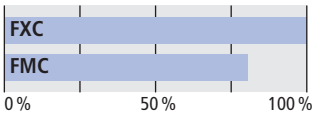
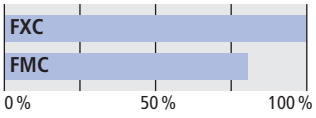
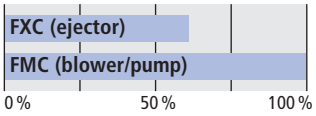
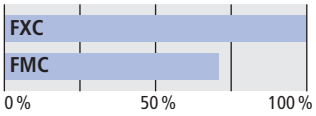
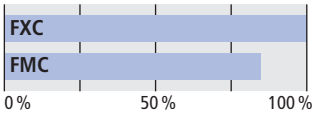


Energy saving using the large-area vacuum gripping system FXC/FMC for handling of doors

Large-area vacuum gripping systems FXC/FMC

Optimum selection of products

Selection criteria FXC/FMC

Application features	FXC/FMC comparison	Recommended type
Maximum effectiveness of vacuum generation Integration of vacuum generation at the effective location in the large-area vacuum gripping system	Flow effiencicy 	**FXC**
Integration of functions and process safety Process safety as well as minimization of protruding edges and risk of damage by avoiding vacuum hoses, distributors and attachment elements between the vacuum generator and the large-area vacuum gripping system	Integration of functions 	**FXC**
Minimal system costs Time and costs for purchasing and installing the vacuum generator	Investment cost comparison 	**FXC**
Dynamic and minimal cycle times Weight and large-area gripper height at the robot/portal head	Gripper weight 	**FMC**
Operation with electrical vacuum generation Operating costs for compressed-air (internal vacuum generator: ejector) or energy (external vacuum generator: vacuum pump or blower)	Operating costs (energy) 	**FMC**

Selection of product features based on application features

Application features	Recommended product features
Fast cycle times and rough workpiece surfaces	Valve type SVKW*
Cost-effective design	Valve type SW
Heavily soiled environment, dust (dry)	Sealing plate with integrated filter screen
Separation of porous materials from stack (e.g. chipboards, MDF)	FXC/FMC with integrated separation function (page 8)
Workpiece width	30 mm or higher for fine grid (18mm), 60 mm or higher for medium grid (36mm)
Non-rigid workpieces	Solution with large-area vacuum gripping system FXC-SG (page 9) or vacuum suction spider SSP (page 26)
Energy efficient and fast cycle times	Solution with large-area vacuum gripping system FXC/FMC-HD (page 17)
Handling doors with and without gaps	Solution with vacuum door gripper FXC/FMC (page 9)
Handling cans, exposed glass and trays	Solution with combifoam sealing plate for large-area vacuum gripping system FXC/FMC (page 8) or layer gripping system SPZ (page 23)

*SVKW application: up to a vertical acceleration of 5 m/s²; horizontal swivel range up to max. 45°

Service and practical tips

- Increase in load-bearing capacity and handling safety for uneven layers and rough surfaces by firmly pressing down on them as well as floating/flexible suspension of the large-area gripper.
- The lifetime of the sealing plate (foam) for linear attachment and lifting is generally 3 months to 1 year.
- The lifetime of the suction pads for linear attachment and lifting is generally 6 months to 1 year.
- Maintenance every 6 months increases the lifetime of the large-area vacuum gripping system.
- Suction tests with original workpieces are always required to ensure functionality. We perform these at our test centre individually for your application.

Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with sealing plate (foam)

Ordering data for large-area vacuum gripping systems FXC/FMC with sealing plate (foam)

Ordering guide for FXC/FMC large-area vacuum gripping system with sealing plate (foam)			
Abbreviated designation	**Valve technology**	**Length (x width) [mm]**	**Hole spacing**
Example: FXC	**SW**	**435.5**	**18**
FXC	SW…Flow resistance	435.5	18…fine
FMC	SVKW…Flow valve	831.5	36…medium

Type	Article number without filter	Article number with filter
FX-SW 120x60	10.01.11.01802	-
FX-SW 120x60 SEA*	10.01.11.01800	-
FXC-SW 435.5 18	10.01.21.00116	10.01.21.00121
FXC-SW 435.5 36	10.01.21.00126	10.01.21.00131
FXC-SW 633.5 18	10.01.21.00117	10.01.21.00122
FXC-SW 633.5 36	10.01.21.00127	10.01.21.00132
FXC-SW 831.5 18	10.01.21.00118	10.01.21.00123
FXC-SW 831.5 36	10.01.21.00128	10.01.21.00133
FXC-SW 1227.5 18	10.01.21.00119	10.01.21.00124
FXC-SW 1227.5 36	10.01.21.00129	10.01.21.00134
FXC-SW 1425.5 18	10.01.21.00120	10.01.21.00125
FXC-SW 1425.5 36	10.01.21.00130	10.01.21.00135
FXC-SVKW 435.5 18	10.01.21.00042	10.01.21.00151
FXC-SVKW 435.5 36	10.01.21.00155	10.01.21.00153
FXC-SVKW 633.5 18	10.01.21.00043	10.01.21.00152
FXC-SVKW 633.5 36	10.01.21.00156	10.01.21.00154
FXC-SVKW 831.5 18	10.01.21.00044	10.01.21.00110
FXC-SVKW 831.5 36	10.01.21.00107	10.01.21.00113
FXC-SVKW 1227.5 18	10.01.21.00105	10.01.21.00111
FXC-SVKW 1227.5 36	10.01.21.00108	10.01.21.00114
FXC-SVKW 1425.5 18	10.01.21.00106	10.01.21.00112
FXC-SVKW 1425.5 36	10.01.21.00109	10.01.21.00115

*Large-area gripping system blow-off function for fast releasing of workpieces

Type	Article number without filter	Article number with filter
FM-SW 76x22	10.01.11.00851	-
FM-SW 120x60	10.01.11.01823	-
FMC-SW 435.5 18	10.01.21.00101	10.01.21.00136
FMC-SW 435.5 36	10.01.21.00141	10.01.21.00146
FMC-SW 633.5 18	10.01.21.00102	10.01.21.00137
FMC-SW 633.5 36	10.01.21.00142	10.01.21.00147
FMC-SW 831.5 18	10.01.21.00103	10.01.21.00138
FMC-SW 831.5 36	10.01.21.00143	10.01.21.00148
FMC-SW 1227.5 18	10.01.21.00099	10.01.21.00139
FMC-SW 1227.5 36	10.01.21.00144	10.01.21.00149
FMC-SW 1425.5 18	10.01.21.00100	10.01.21.00140
FMC-SW 1425.5 36	10.01.21.00145	10.01.21.00150
FMC-SVKW 435.5 18	10.01.21.00052	10.01.21.00161
FMC-SVKW 435.5 36	10.01.21.00171	10.01.21.00166
FMC-SVKW 633.5 18	10.01.21.00157	10.01.21.00162
FMC-SVKW 633.5 36	10.01.21.00172	10.01.21.00167
FMC-SVKW 831.5 18	10.01.21.00158	10.01.21.00163
FMC-SVKW 831.5 36	10.01.21.00173	10.01.21.00168
FMC-SVKW 1227.5 18	10.01.21.00159	10.01.21.00164
FMC-SVKW 1227.5 36	10.01.21.00174	10.01.21.00169
FMC-SVKW 1425.5 18	10.01.21.00160	10.01.21.00165
FMC-SVKW 1425.5 36	10.01.21.00175	10.01.21.00170

Ordering data for sealing plates

Type	Article number without filter	Article number with filter
DI-PL 76x22	10.01.11.01388	-
DI-PL 120x60	10.01.10.00874	-
DI-PL 435.5x120 18	10.01.21.00018	10.01.21.00198
DI-PL 435.5x120 36	10.01.21.00022	10.01.21.00203
DI-PL 633.5x120 18	10.01.21.00046	10.01.21.00199
DI-PL 633.5x120 36	10.01.21.00062	10.01.21.00204
DI-PL 831.5x120 18	10.01.21.00059	10.01.21.00200
DI-PL 831.5x120 36	10.01.21.00063	10.01.21.00205
DI-PL 1227.5x120 18	10.01.21.00060	10.01.21.00201
DI-PL 1227.5x120 36	10.01.21.00064	10.01.21.00206
DI-PL 1425.5x120 18	10.01.21.00061	10.01.21.00202
DI-PL 1425.5x120 36	10.01.21.00065	10.01.21.00207

Note: For the sealing plate a special foam for vacuum applications is used. We also offer oil-resistant and temperature-resistant foams (temperature > 60°C) for special applications.

Ordering data for accessories

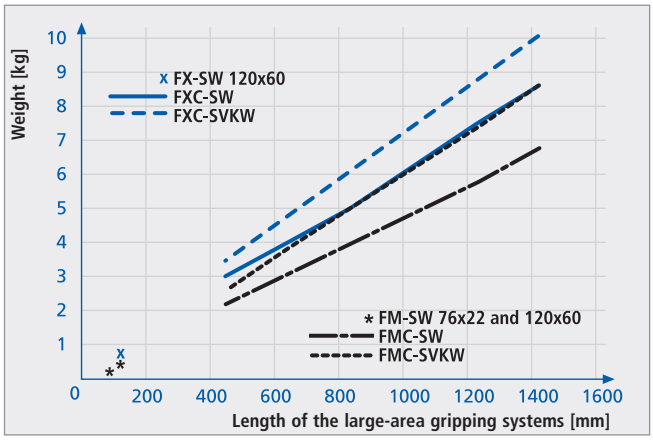
Type	Article number
Vacuum switch VS-V-D PNP	10.06.02.00343
Vacuum switch VS-V-D PNP with flange plate	10.01.10.00431
Solenoid valve kit suction on/off	10.01.21.00241
Solenoid valve kit blow-off on/off	10.01.21.02405
Solenoid valve kit suction on/off and blow-off on/off	10.01.21.00242
Attachment kit T-slot nuts	10.01.21.00243
Attachment kit robot flange	10.01.21.00244
Attachment kit spring-mounted suspension	10.01.21.02407

Note: It is possible use an additional silencer to reduce noise (FX 120 x 60).

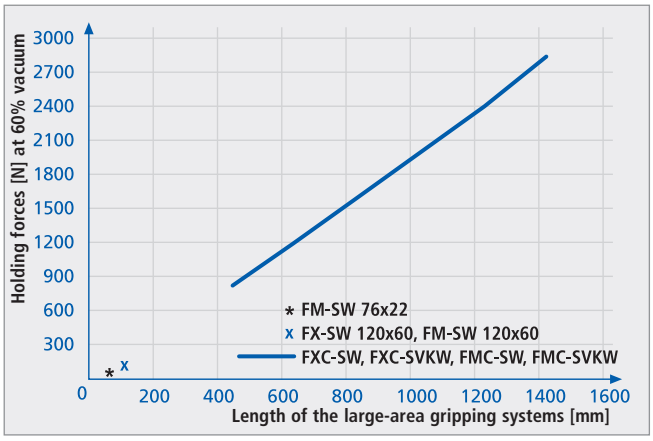
Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with sealing plate (foam)

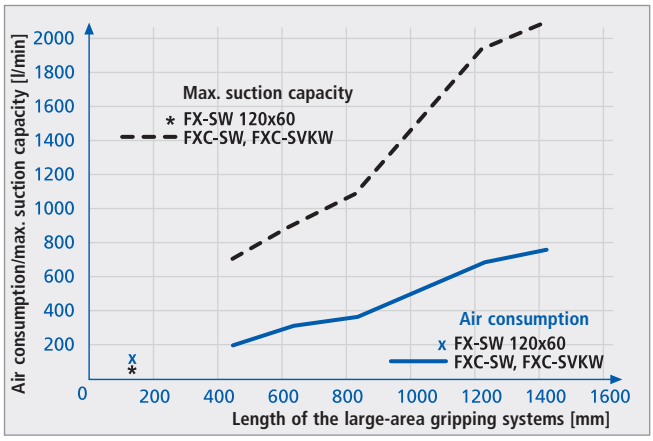
Technical data of large-area vacuum gripping systems FXC/FMC with sealing plate (foam)



Weight of the large-area vacuum gripping systems



Holding forces [N] at 60% vacuum and full coverage of the large-area vacuum gripping systems holding a rigid workpiece

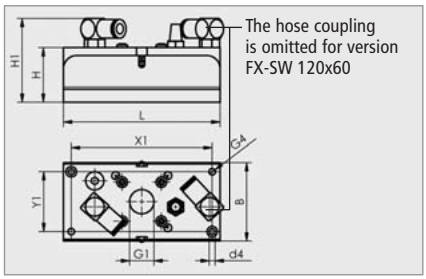


Air consumption and suction capacity of the large-area vacuum gripping system FX/FXC (FM/FMC can not be represented due to the external vacuum generator)

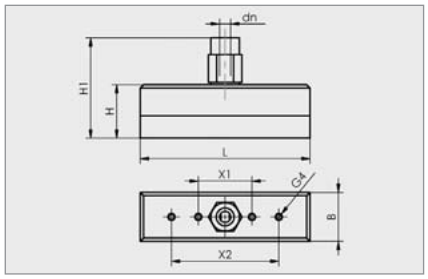
Type	Noise level [db (A)]	Max. evacuation level [%]
FXC	65	80
FMC	-*	-*

*FMC can not be represented due to the external vacuum generation

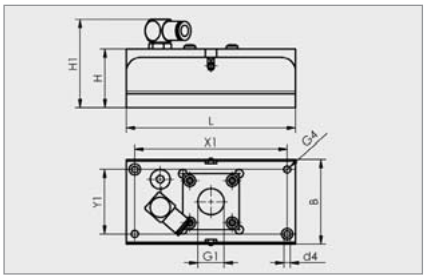
Construction data of the large-area vacuum gripping systems FX/FM with sealing plate (foam)



FX-SW 120x60 SEA



FM-SW 76x22



FM-SW 120x60

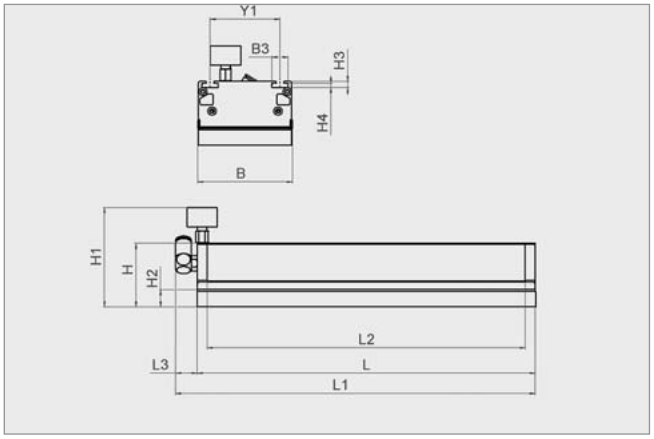
Type	Dimensions [mm]										
	B	d4	dn	G1	G4	H*	H1	L	X1	X2	Y1
FX-SW 120x60	60	4.5	-	G1/2"-IG	M6-IG	42	63	120	108	-	46
FX-SW 120x60 SEA**	60	4.5	-	G1/2"-IG	M6-IG	42	63	120	108	-	46
FM-SW 76x22	22	-	8	-	M3-IG	24	35	76	24	48	-
FM-SW 120x60	60	4.5	-	G1/2"-IG	M6-IG	42	63	120	108	-	46

*Other foam heights and foam types on request
**Gripping systems with integrated blow-off piston for quick lowering of the workpiece
Note: Type FX requires compressed-air hose 8/6mm, type FM requires vacuum hose 8/6mm.

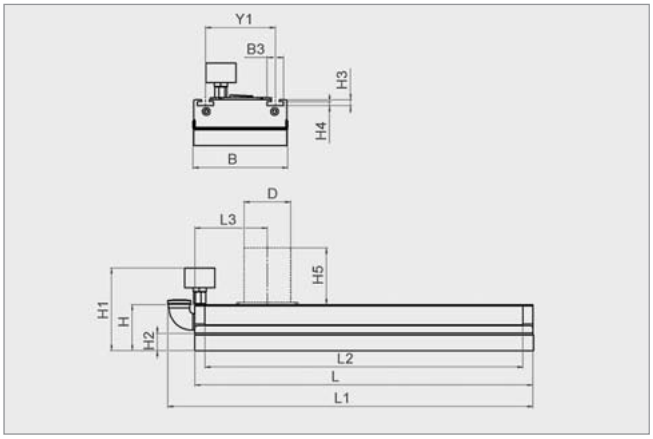
Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with sealing plate (foam)

Construction data of the large-area vacuum gripping systems FXC/FMC with sealing plate (foam)



FXC



FMC

Type	Dimensions [mm]													
	B	B3	D	H	H1	H2*	H3	H4	H5	L	L1	L2	L3	Y1
FXC-SW 435.5 18/36	122	21	-	82	128	22	7.7	5.2	-	435.5	462.5	409.5	27	90
FXC-SW 633.5 18/36	122	21	-	82	128	22	7.7	5.2	-	633.5	660.5	607.5	27	90
FXC-SW 831.5 18/36	122	21	-	82	128	22	7.7	5.2	-	831.5	858.5	805.5	27	90
FXC-SW 1227.5 18/36	122	21	-	82	128	22	7.7	5.2	-	1227.5	1281.5	1201.5	27	90
FXC-SW 1425.5 18/36	122	21	-	82	128	22	7.7	5.2	-	1425.5	1479.5	1399.5	27	90
FXC-SVKW 435.5 18/36	122	21	-	82	128	22	7.7	5.2	-	435.5	462.5	409.5	27	90
FXC-SVKW 633.5 18/36	122	21	-	82	128	22	7.7	5.2	-	633.5	660.5	607.5	27	90
FXC-SVKW 831.5 18/36	122	21	-	82	128	22	7.7	5.2	-	831.5	858.5	805.5	27	90
FXC-SVKW 1227.5 18/36	122	21	-	82	128	22	7.7	5.2	-	1227.5	1281.5	1201.5	27	90
FXC-SVKW 1425.5 18/36	122	21	-	82	128	22	7.7	5.2	-	1425.5	1479.5	1399.5	27	90
FMC-SW 435.5 18/36**	122	21	3/4"-IG	59	128	22	7.7	5.2	-	435.5	479.5	409.5	-	90
FMC-SW 633.5 18/36	122	21	1 1/4"-AG	59	128	22	7.7	5.2	36	633.5	633.5	607.5	-	90
FMC-SW 831.5 18/36	122	21	60	59	128	22	7.7	5.2	73	831.5	831.5	805.5	103	90
FMC-SW 1227.5 18/36	122	21	60	59	128	22	7.7	5.2	73	1227.5	1227.5	1201.5	103	90
FMC-SW 1425.5 18/36	122	21	60	59	128	22	7.7	5.2	73	1425.5	1425.5	1399.5	103	90
FMC-SVKW 435.5 18/36**	122	21	3/4"-IG	59	128	22	7.7	5.2	-	435.5	479.5	409.5	-	90
FMC-SVKW 633.5 18/36	122	21	1 1/4"-AG	59	128	22	7.7	5.2	36	633.5	633.5	607.5	-	90
FMC-SVKW 831.5 18/36	122	21	60	59	128	22	7.7	5.2	73	831.5	831.5	805.5	103	90
FMC-SVKW 1227.5 18/36	122	21	60	59	128	22	7.7	5.2	73	1227.5	1227.5	1201.5	103	90
FMC-SVKW 1425.5 18/36	122	21	60	59	128	22	7.7	5.2	73	1425.5	1425.5	1399.5	103	90

*Other foam heights and foam types on request
**With side connection piece
Note: Type FXC requires compressed-air hose 8/6mm, type FMC requires vacuum hose (dimension D). Customer-specific gripper solutions on request.

Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with suction pads

Ordering data for large-area vacuum gripping systems FXC/FMC with suction pads

Ordering guide for FXC/FMC large-area vacuum gripping system with suction pads

Abbreviated designation	Valve technology	Length (x width) [mm]	Grid	Suction pads
Example: FXC	**SW**	**435.5**	**54**	**FG 32**
FXC	SW…Flow resistance	435.5	36	FG 20
FMC	SVKW…Flow valve	831.5	54	FG 32 (with/without sealing ring)

Type	Article number without filter	Article number with filter
FX-SW 120x60 20 FG12	10.01.11.02009	-
FX-SW 120x60 20 FG12 SEA*	10.01.11.02008	-
FXC-SW 435.5 36 FG20	10.01.21.01819	10.01.21.02753
FXC-SW 435.5 54 FG32	10.01.21.01814	10.01.21.02728
FXC-SW 435.5 54 FG52	10.01.21.01669	10.01.21.02720
FXC-SW 633.5 36 FG20	10.01.21.01820	10.01.21.02754
FXC-SW 633.5 54 FG32	10.01.21.01815	10.01.21.02729
FXC-SW 633.5 54 FG52	10.01.21.01670	10.01.21.02721
FXC-SW 831.5 36 FG20	10.01.21.01821	10.01.21.02755
FXC-SW 831.5 54 FG32	10.01.21.01816	10.01.21.02730
FXC-SW 831.5 54 FG52	10.01.21.01811	10.01.21.02722
FXC-SW 1227.5 36 FG20	10.01.21.01822	10.01.21.02756
FXC-SW 1227.5 54 FG32	10.01.21.01817	10.01.21.02731
FXC-SW 1227.5 54 FG52	10.01.21.01812	10.01.21.02723
FXC-SVKW 435.5 36 FG20	10.01.21.01662	10.01.21.02761
FXC-SVKW 435.5 54 FG32	10.01.21.01528	10.01.21.02740
FXC-SVKW 435.5 54 FG52	10.01.21.01653	10.01.21.02736
FXC-SVKW 633.5 36 FG20	10.01.21.01664	10.01.21.02762
FXC-SVKW 633.5 54 FG32	10.01.21.01634	10.01.21.02741
FXC-SVKW 633.5 54 FG52	10.01.21.01658	10.01.21.02737
FXC-SVKW 831.5 36 FG20	10.01.21.01665	10.01.21.02763
FXC-SVKW 831.5 54 FG32	10.01.21.01636	10.01.21.02742
FXC-SVKW 831.5 54 FG52	10.01.21.01659	10.01.21.02738
FXC-SVKW 1227.5 36 FG20	10.01.21.01666	10.01.21.02764
FXC-SVKW 1227.5 54 FG32	10.01.21.01642	10.01.21.02743
FXC-SVKW 1227.5 54 FG52	10.01.21.01660	10.01.21.02739

Type	Article number without filter	Article number with filter
FM-SW 120x60 20 FG12	10.01.11.02010	-
FMC-SW 435.5 36 FG20	10.01.21.01836	10.01.21.02757
FMC-SW 435.5 54 FG32	10.01.21.01830	10.01.21.02732
FMC-SW 435.5 54 FG52	10.01.21.01824	10.01.21.02724
FMC-SW 633.5 36 FG20	10.01.21.01837	10.01.21.02758
FMC-SW 633.5 54 FG32	10.01.21.01831	10.01.21.02733
FMC-SW 633.5 54 FG52	10.01.21.01825	10.01.21.02725
FMC-SW 831.5 36 FG20	10.01.21.01838	10.01.21.02759
FMC-SW 831.5 54 FG32	10.01.21.01832	10.01.21.02734
FMC-SW 831.5 54 FG52	10.01.21.01826	10.01.21.02726
FMC-SW 1227.5 36 FG20	10.01.21.01840	10.01.21.02760
FMC-SW 1227.5 54 FG32	10.01.21.01833	10.01.21.02735
FMC-SW 1227.5 54 FG52	10.01.21.01827	10.01.21.02727
FMC-SVKW 435.5 36 FG20	10.01.21.01805	10.01.21.02765
FMC-SVKW 435.5 54 FG32	10.01.21.01800	10.01.21.02748
FMC-SVKW 435.5 54 FG52	10.01.21.01795	10.01.21.02744
FMC-SVKW 633.5 36 FG20	10.01.21.01806	10.01.21.02766
FMC-SVKW 633.5 54 FG32	10.01.21.01801	10.01.21.02749
FMC-SVKW 633.5 54 FG52	10.01.21.01796	10.01.21.02745
FMC-SVKW 831.5 36 FG20	10.01.21.01807	10.01.21.02767
FMC-SVKW 831.5 54 FG32	10.01.21.01802	10.01.21.02750
FMC-SVKW 831.5 54 FG52	10.01.21.01797	10.01.21.02746
FMC-SVKW 1227.5 36 FG20	10.01.21.01808	10.01.21.02768
FMC-SVKW 1227.5 54 FG32	10.01.21.01803	10.01.21.02751
FMC-SVKW 1227.5 54 FG52	10.01.21.01798	10.01.21.02747

*Large-area gripping system blow-off function for fast releasing of workpieces
Note: Types FXC 1227.5 and 1425.5 have a second slide-in ejector.

Ordering data for suction pads

Type	Article number without filter	Article number with filter
FG12*	10.01.06.00558	-
FG20 (plug-in suction pads)	10.01.06.01562	10.01.06.02536
FG32 (without sealing ring)	10.01.06.00457	10.01.06.02530
FG32 (with sealing ring)	10.01.06.02439	10.01.06.02531
FG52 (without sealing ring)	10.01.06.00583	10.01.06.02532
FG52 (with sealing ring)	10.01.06.02376	10.01.06.02533

*For Type FX/FM
Note: Other types of suction pads (design, material) on request.

Ordering data for accessories

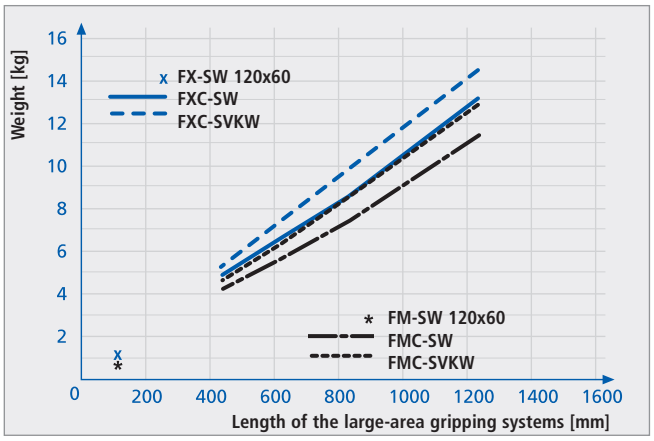
Type	Article number
Vacuum switch VS-V-D PNP	10.06.02.00343
Vacuum switch VS-V-D PNP with flange plate	10.01.10.00431
Solenoid valve kit suction on/off	10.01.21.00241
Solenoid valve kit blow-off on/off	10.01.21.02405
Solenoid valve kit suction on/off and blow-off on/off	10.01.21.00242
Attachment kit T-slot nuts	10.01.21.00243
Attachment kit robot flange	10.01.21.00244
Attachment kit spring-mounted suspension	10.01.21.02407

Note: it is possible use an additional silencer to reduce noise (FX 120x60).

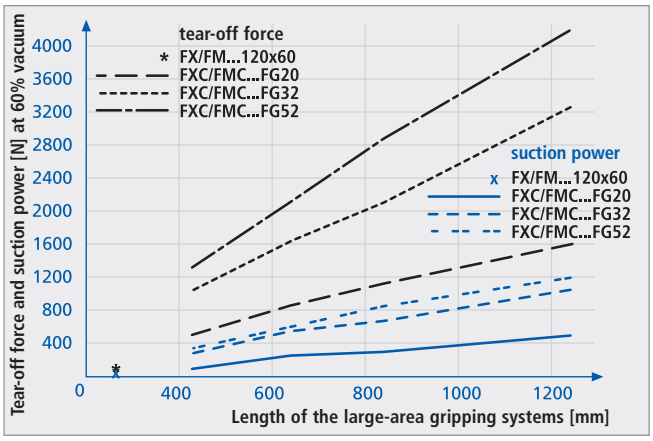
Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with suction pads

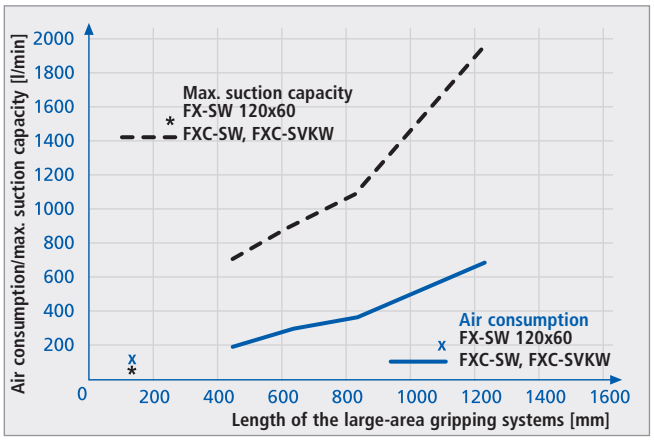
Technical data of large-area vacuum gripping systems FXC/FMC with suction pads



Weight of the large-area vacuum gripping systems (Types FXC-SW and FMC-SW with suction pads FG20 are lighter)



Tear-off force and suction power [N] at 60% vacuum and full coverage of the large-area vacuum gripping systems holding a rigid workpiece

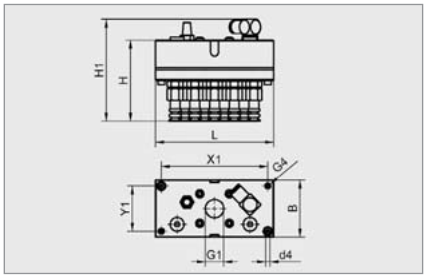


Air consumption and suction capacity of the large-area vacuum gripping system FX/FXC (FM/FMC can not be represented due to the external vacuum generator)

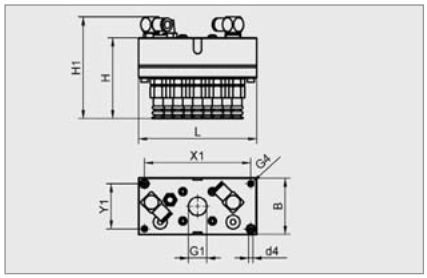
Type	Noise level [db (A)]	Max. evacuation level [%]
FXC	65	80
FMC	-*	-*

*FMC can not be represented due to the external vacuum generation

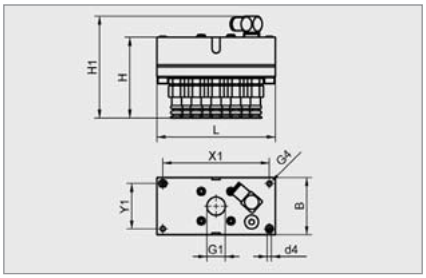
Construction data of the large-area vacuum gripping systems FX/FM with suction pads



FX-SG 120x60



FX-SG 120x60 SEA



FM-SG 120x60

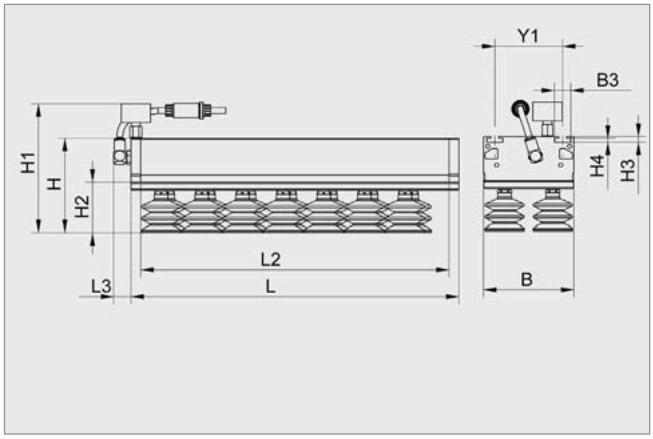
Type	Dimensions [mm]									
	B	d4	G1	G4	H*	H1	L	X1	Y1	N***
FX-SW 120x60 20 FG12	60	4.5	G1/2"-IG	M6-IG	82	103	120	108	46	14
FX-SW 120x60 20 FG12 SEA**	60	4.5	G1/2"-IG	M6-IG	82	103	120	108	46	14
FM-SW 120x60 20 FG12	60	4.5	G1/2"-IG	M6-IG	82	103	120	108	46	14

*Other types of suction pads (design, material) on request
**Gripping systems with integrated blow-off piston for quick lowering of the workpiece
***Number of suction pads
Note: Type FX requires compressed-air hose 8/6mm, type FM requires vacuum hose 8/6mm.

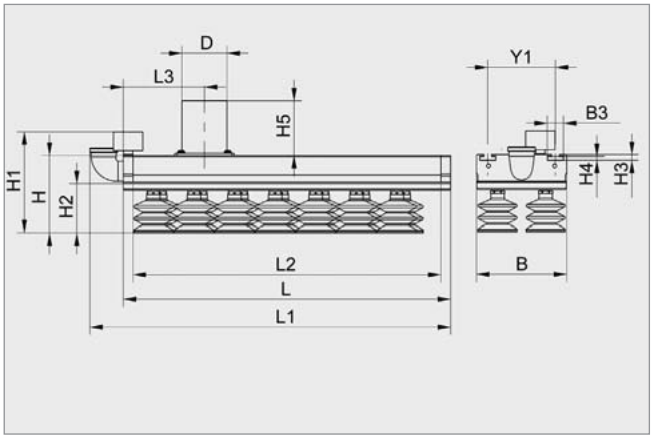
Large-area vacuum gripping systems FXC/FMC

Product specifications of FXC/FMC with suction pads

Construction data of the large-area vacuum gripping systems FXC/FMC with suction pads



FXC



FMC

Type	Dimensions [mm]														
	B	B3	D	H	H1	H2*	H3	H4	H5	L	L1	L2	L3	Y1	N***
FXC-SW 435.5 36 FG20	122	21	-	87.5	133.5	27	7.7	5.2	-	435.5	-	409.5	27	90	44
FXC-SVKW 435.5 36 FG20	120	21	-	104	150	43.5	7.7	5.2	-	435.5	-	409.5	27	90	44
FXC-SW/SVKW 435.5 54 FG32	120	21	-	120.5	166.5	60	7.7	5.2	-	435.5	-	409.5	27	90	28
FXC-SW/SVKW 435.5 54 FG52	120	21	-	126.5	172.5	66	7.7	5.2	-	435.5	-	409.5	27	90	14
FXC-SW 633.5 36 FG20	122	21	-	87.5	133.5	27	7.7	5.2	-	633.5	-	607.5	27	90	68
FXC-SVKW 633.5 36 FG20	120	21	-	104	150	43.5	7.7	5.2	-	633.5	-	607.5	27	90	68
FXC-SW/SVKW 633.5 54 FG32	120	21	-	120.5	166.5	60	7.7	5.2	-	633.5	-	607.5	27	90	44
FXC-SW/SVKW 633.5 54 FG52	120	21	-	126.5	172.5	66	7.7	5.2	-	633.5	-	607.5	27	90	22
FXC-SW 831.5 36 FG20	122	21	-	87.5	133.5	27	7.7	5.2	-	831.5	-	805.5	27	90	90
FXC-SVKW 831.5 36 FG20	120	21	-	104	150	43.5	7.7	5.2	-	831.5	-	805.5	27	90	90
FXC-SW/SVKW 831.5 54 FG32	120	21	-	120.5	166.5	60	7.7	5.2	-	831.5	-	805.5	27	90	58
FXC-SW/SVKW 831.5 54 FG52	120	21	-	126.5	172.5	66	7.7	5.2	-	831.5	-	805.5	27	90	30
FXC-SW 1227.5 36 FG20	122	21	-	87.5	133.5	27	7.7	5.2	-	1227.5	-	1201.5	27	90	132
FXC-SVKW 1227.5 36 FG20	120	21	-	104	150	43.5	7.7	5.2	-	1227.5	-	1201.5	27	90	132
FXC-SW/SVKW 1227.5 54 FG32	120	21	-	120.5	166.5	60	7.7	5.2	-	1227.5	-	1201.5	27	90	88
FXC-SW/SVKW 1227.5 54 FG52	120	21	-	126.5	172.5	66	7.7	5.2	-	1227.5	-	1201.5	27	90	44
FMC-SW 435.5 36 FG20**	122	21	3/4"-IG	64	110	27	7.7	5.2	-	435.5	479.5	409.5	-	90	44
FMC-SVKW 435.5 36 FG20**	120	21	3/4"-IG	80.5	126.5	43.5	7.7	5.2	-	435.5	479.5	409.5	-	90	44
FMC-SW/SVKW 435.5 54 FG32**	120	21	3/4"-IG	97	143	60	7.7	5.2	-	435.5	479.5	409.5	-	90	28
FMC-SW/SVKW 435.5 54 FG52**	120	21	3/4"-IG	103	149	66	7.7	5.2	-	435.5	479.5	409.5	-	90	14
FMC-SW 633.5 36 FG20	122	21	1 1/4"-AG	64	110	27	7.7	5.2	36	633.5	633.5	607.5	103	90	68
FMC-SVKW 633.5 36 FG20	120	21	1 1/4"-AG	80.5	126.5	43.5	7.7	5.2	36	633.5	633.5	607.5	103	90	68
FMC-SW/SVKW 633.5 54 FG32	120	21	1 1/4"-AG	97	143	60	7.7	5.2	36	633.5	633.5	607.5	103	90	44
FMC-SW/SVKW 633.5 54 FG52	120	21	1 1/4"-AG	103	149	66	7.7	5.2	36	633.5	633.5	607.5	103	90	22
FMC-SW 831.5 36 FG20	122	21	60	64	110	27	7.7	5.2	73	831.5	831.5	805.5	103	90	90
FMC-SVKW 831.5 36 FG20	120	21	60	80.5	126.5	43.5	7.7	5.2	73	831.5	831.5	805.5	103	90	90
FMC-SW/SVKW 831.5 54 FG32	120	21	60	97	143	60	7.7	5.2	73	831.5	831.5	805.5	103	90	58
FMC-SW/SVKW 831.5 54 FG52	120	21	60	103	149	66	7.7	5.2	73	831.5	831.5	805.5	103	90	30
FMC-SW 1227.5 36 FG20	122	21	60	64	110	27	7.7	5.2	73	1227.5	1227.5	1201.5	103	90	132
FMC-SVKW 1227.5 36 FG20	120	21	60	80.5	126.5	43.5	7.7	5.2	73	1227.5	1227.5	1201.5	103	90	132
FMC-SW/SVKW 1227.5 54 FG32	120	21	60	97	143	60	7.7	5.2	73	1227.5	1227.5	1201.5	103	90	88
FMC-SW/SVKW 1227.5 54 FG52	120	21	60	103	149	66	7.7	5.2	73	1227.5	1227.5	1201.5	103	90	44

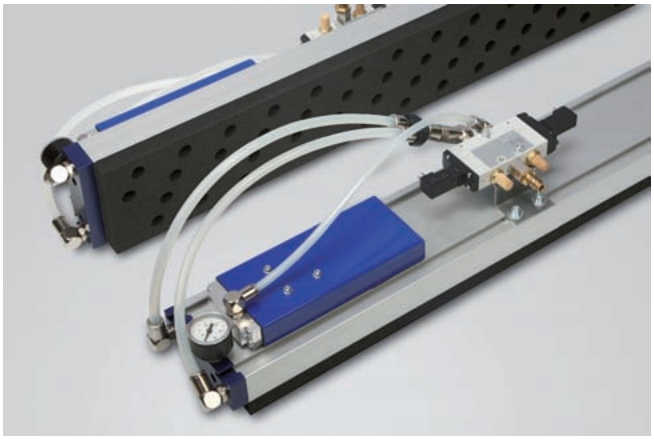
*Other types of suction pads (design, material) on request
**With side connection piece
***Number of suction pads
Note: Type FXC requires compressed-air hose 8/6 mm, type FMC requires vacuum hose (dimension, D). Customer-specific gripper solutions on request.

Large-area vacuum gripping systems FXC-HD/FMC-HD

Heavy-duty – Robust, fast, energy efficient

Supplementary product features for FXC/FMC – HD version

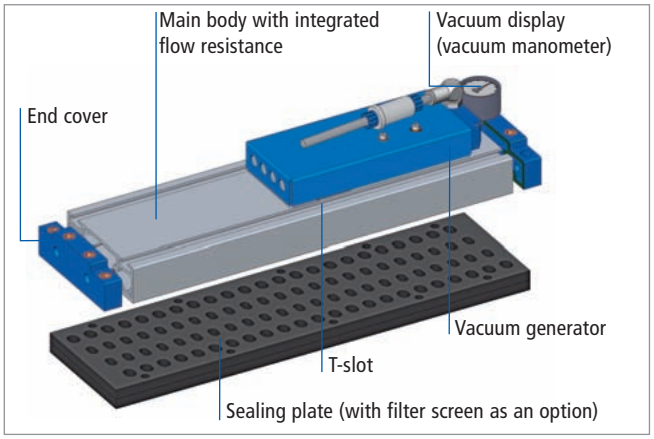
- Reduced energy consumption using optimized technology
- High level of stability using 3 chamber solid profile
- Faster cycle times using lower inner volume
- High degree of durability using a very stable main body



Large-area vacuum gripping system FXC-HD

Applications

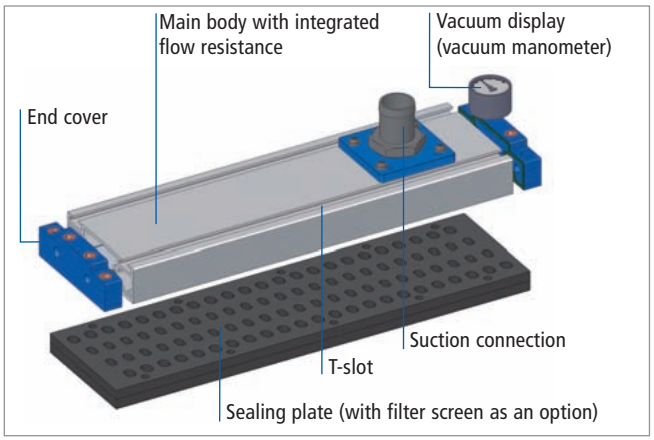
- Handling workpieces with a wide range of dimensions and/or undefined positions
- Handling workpieces with gaps
- Automated palletizing/depalletizing, order picking and sorting of a wide range of workpieces with only one type of gripper
- Handling workpieces made from various materials such as cardboard, wood, metal, glass or plastic



Large-area vacuum gripping system FXC-HD with vacuum generator directly mounted

Design

- Large-area vacuum gripping system FXC-HD with vacuum generator directly mounted
- Large-area vacuum gripping system FMC-HD with connection for external vacuum generation
- Increased operating pressure of 6 bar
- Separate suction and blow-off chamber ensure faster handling
- Various formats can adapt to a wide range of handling tasks



Large-area vacuum gripping system FMC-HD with connection for external vacuum generation

Our highlights…	Your benefits…
• Extra robust	> Fast lowering and high blow-off pressure
• Optimized interior volume	> Minimal suction and releasing times ensure savings in energy costs
• Separate suction and blow-off chamber (air for suction and blow-off flows through separate flow resistances)	> Faster releasing with reduced energy consumption

Large-area vacuum gripping systems FXC-HD/FMC-HD

Product specifications

Ordering data for large-area vacuum gripping systems FXC-HD/FMC-HD

Ordering guide for large-area vacuum gripping systems FXC-HD/FMC-HD				
Abbreviated designation	**Valve technology**	**Type**	**Length [mm]**	**Hole spacing**
Example: FXC	**SW**	**HD**	**435**	**18**
FXC	SW…Flow resistance	HD…Heavy Duty	435	18…fine
FMC			633	36…medium

Type	Article number without filter	Article number with filter
FXC-SW-HD 435 18	10.01.21.02637	10.01.21.02396
FXC-SW-HD 435 36	10.01.21.02638	10.01.21.02639
FXC-SW-HD 633 18	10.01.21.02640	10.01.21.02641
FXC-SW-HD 633 36	10.01.21.02642	10.01.21.02643
FXC-SW-HD 831 18	10.01.21.02644	10.01.21.02645
FXC-SW-HD 831 36	10.01.21.02646	10.01.21.02647
FXC-SW-HD 1227 18	10.01.21.02648	10.01.21.02649
FXC-SW-HD 1227 36	10.01.21.02650	10.01.21.02651
FXC-SW-HD 1425 18	10.01.21.02652	10.01.21.02653
FXC-SW-HD 1425 36	10.01.21.02654	10.01.21.02655

Type	Article number without filter	Article number with filter
FMC-SW-HD 435 18	10.01.21.02656	10.01.21.02657
FMC-SW-HD 435 36	10.01.21.02658	10.01.21.02659
FMC-SW-HD 633 18	10.01.21.02660	10.01.21.02661
FMC-SW-HD 633 36	10.01.21.02662	10.01.21.02663
FMC-SW-HD 831 18	10.01.21.02664	10.01.21.02665
FMC-SW-HD 831 36	10.01.21.02666	10.01.21.02667
FMC-SW-HD 1227 18	10.01.21.02668	10.01.21.02669
FMC-SW-HD 1227 36	10.01.21.02670	10.01.21.02671
FMC-SW-HD 1425 18	10.01.21.02672	10.01.21.02673
FMC-SW-HD 1425 36	10.01.21.02674	10.01.21.02675

Ordering data for sealing plates

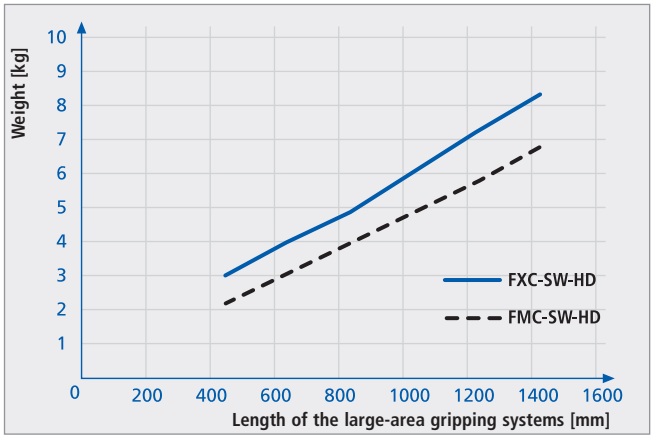
Type sealing plate FXC-HD/FMC-HD*	Article number without filter	Article number with filter
DI-PL 399x120 18	10.01.21.02687	10.01.21.02677
DI-PL 399x120 36	10.01.21.02688	10.01.21.02678
DI-PL 597x120 18	10.01.21.02689	10.01.21.02679
DI-PL 597x120 36	10.01.21.02690	10.01.21.02680
DI-PL 795x120 18	10.01.21.02691	10.01.21.02681
DI-PL 795x120 36	10.01.21.02692	10.01.21.02682
DI-PL 1191x120 18	10.01.21.02693	10.01.21.02683
DI-PL 1191x120 36	10.01.21.02694	10.01.21.02684
DI-PL 1389x120 18	10.01.21.02695	10.01.21.02685
DI-PL 1389x120 36	10.01.21.02696	10.01.21.02686

*Shortened sealing plate (see construction data page 19, dimension L2)

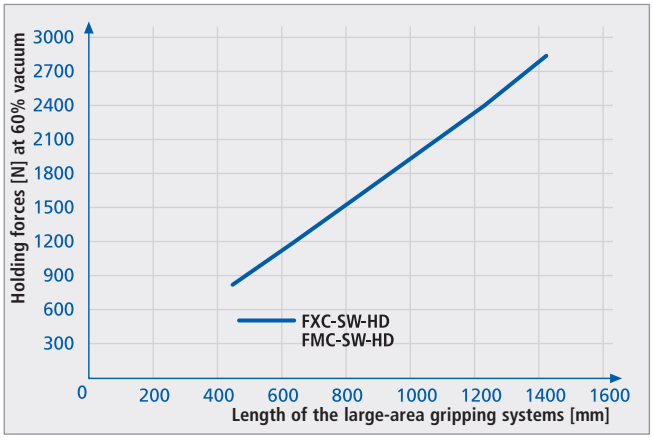
Ordering data for accessories

Type	Article number
Vacuum switch VS-V-D PNP	10.06.02.00343
Vacuum switch VS-V-D PNP with flange plate	10.01.10.00431
Solenoid valve kit suction on/off	10.01.21.00241
Solenoid valve kit blow-off on/off	10.01.21.02405
Solenoid valve kit suction on/off and blow-off on/off	10.01.21.00242
Attachment kit T-slot nuts	10.01.21.00243
Attachment kit robot flange	10.01.21.00244
Attachment kit spring-mounted suspension	10.01.21.02407

Technical data for large-area vacuum gripping systems FXC-HD/FMC-HD



Weight of the large-area vacuum gripping systems FXC-HD/FMC-HD

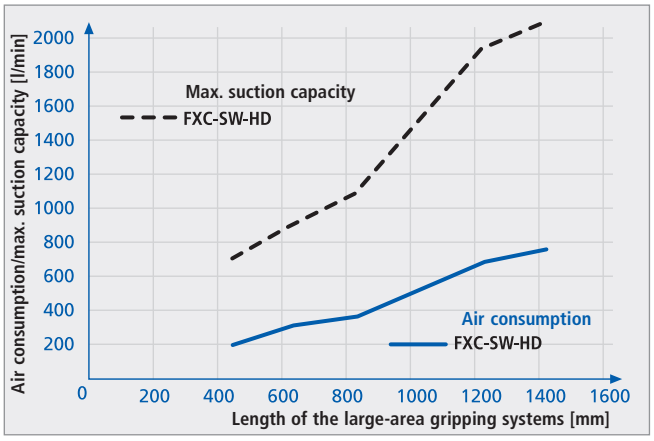


Holding forces [N] at 60% vacuum and full coverage of the large-area vacuum gripping systems FXC-HD/FMC-HD holding a rigid workpiece

Large-area vacuum gripping systems FXC-HD/FMC-HD

Product specifications

Technical data for large-area vacuum gripping systems FXC-HD/FMC-HD

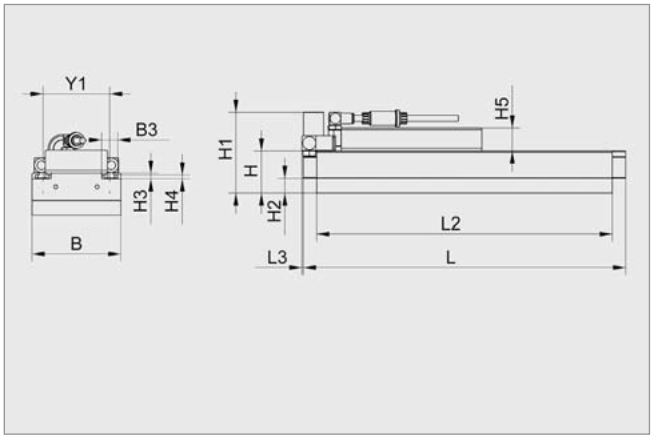


Air consumption and suction capacity of the large-area vacuum gripping system FXC-HD (FMC-HD can not be represented due to the external vacuum generator)

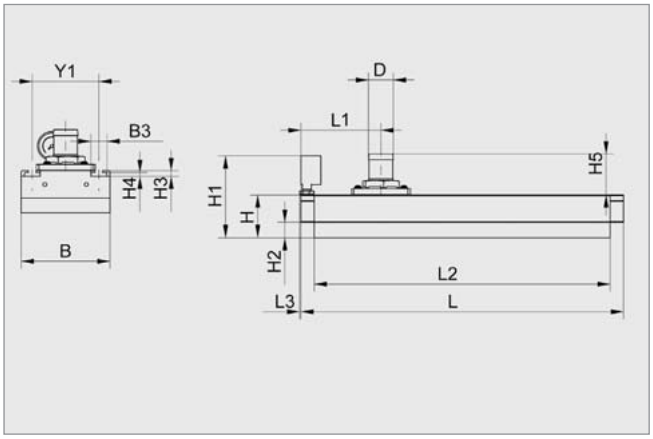
Type	Noise level [db (A)]	max. evacuation level [%]
FXC-HD	74	80
FMC-HD	-*	-*

*FMC-HD can not be represented due to the external vacuum generation

Construction data for large-area vacuum gripping systems FXC-HD/FMC-HD



FXC-HD



FMC-HD

Type	Dimensions [mm]													
	B	B3	D	H	H1	H2*	H3	H4	H5	L	L1	L2	L3	Y1
FXC-SW-HD 435 18/36	120	21	-	57	113	20	7.7	5.2	29	435.5	-	399.5	2	90
FXC-SW-HD 633 18/36	120	21	-	57	113	20	7.7	5.2	29	633.5	-	597.5	2	90
FXC-SW-HD 831 18/36	120	21	-	57	113	20	7.7	5.2	29	831.5	-	795.5	2	90
FXC-SW-HD 1227 18/36	120	21	-	57	113	20	7.7	5.2	29	1227.5	-	1191.5	2	90
FXC-SW-HD 1425 18/36	120	21	-	57	113	20	7.7	5.2	29	1425.5	-	1389.5	2	90
FMC-SW-HD 435 18/36	120	21	1¼"-AG	57	113	20	7.7	5.2	36	435.5	103	399.5	2	90
FMC-SW-HD 633 18/36	120	21	1¼"-AG	57	113	20	7.7	5.2	36	633.5	103	597.5	2	90
FMC-SW-HD 831 18/36	120	21	60	57	113	20	7.7	5.2	73	831.5	103	795.5	2	90
FMC-SW-HD 1227 18/36	120	21	60	57	113	20	7.7	5.2	73	1227.5	103	1191.5	2	90
FMC-SW-HD 1425 18/36	120	21	60	57	113	20	7.7	5.2	73	1425.5	103	1389.5	2	90

*Other foam heights and foam types on request

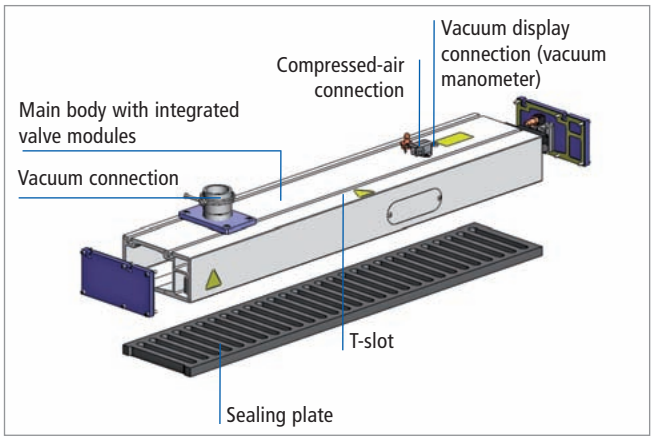
Large-area vacuum gripping systems SBX

Powerful handling with maximum flexibility

Large-area vacuum gripping system SBX for handling of wooden boards

Applications

- Handling (generally layers) of sawn timber, sheet materials, laminated beams, steel profiles, construction timber and pallets with heavily warped, rough surfaces
- The low weight and compact size make it ideal for operating with industrial robots and portals



Large-area vacuum gripping system SBX with connection for external vacuum generation

Design

- Patented large-area vacuum gripping system SBX as modular component system with integrated functions for the vacuum generation, the activation of the valve chamber and the release of workpieces
- Various vacuum generators (ejector, pump or blower) can be selected according to the application
- Variable length of the large-area vacuum gripping system SBX according to the application

Large-area vacuum gripping system SBX with connection for external vacuum generation

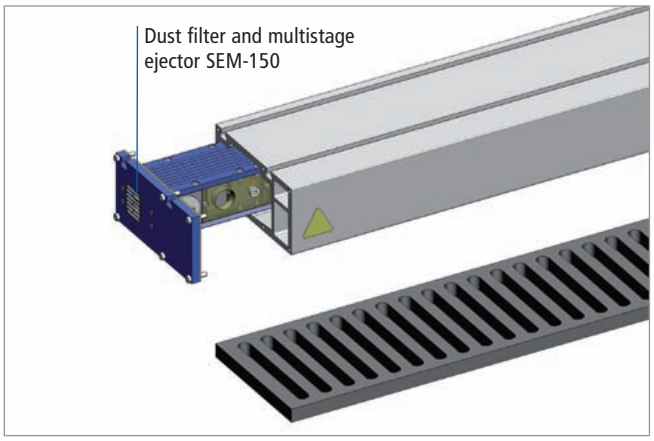
Our highlights…	Your benefits…
• Integrated flow valves	> Suction openings that are not in use automatically close; extra strong holding force
• Modular design of gripper with various types of vacuum generation	> Flexible adjustment to the respective requirements
• Design with integrated vacuum generation	> Fast vacuum generation ensures minimization of cycle times
• Can also be used as double beam	> Safe handling of long and heavy workpieces
• High storage chamber vacuum pressure (energy density to -0.9 bar)	> Handling of uneven or warped workpieces

Large-area vacuum gripping systems SBX

Product specifications

SBX types

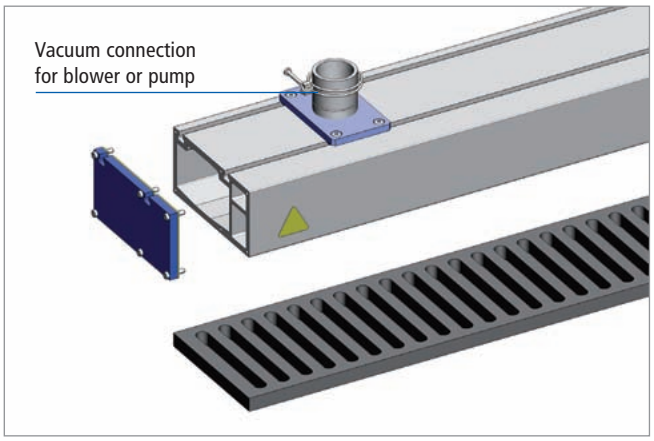
The large-area vacuum gripping system SBX is available in two designs that have different methods of vacuum generation (ejector or blower/pump). They are used especially in the wood industry.



Large-area vacuum gripping system SBX with integrated vacuum generator

SBX with integrated vacuum generator

- Design with integrated vacuum generator (multi-stage ejector SEM-150) and dust filter
- Minimization of cycle times
- Fast vacuum generation
- Hoses and connections are integrated in the large-area vacuum gripping system ensuring no interfering contours
- Simple installation by connecting only one cable as well as the compressed-air connection
- Ejector and dust filter can also be attached externally (optional)



Large-area vacuum gripping system SBX with connection for external vacuum generation

SBX with connection for external vacuum generation

- Design for operation with external vacuum generator (blower/pump)
- Simple maintenance work using external vacuum generation (blower/pump)
- Low operating costs using electrical vacuum generation
- Large volume flow for handling of heavily warped and porous workpieces

Ordering data for large-area vacuum gripping systems SBX

Ordering guide for large-area vacuum gripping system SBX

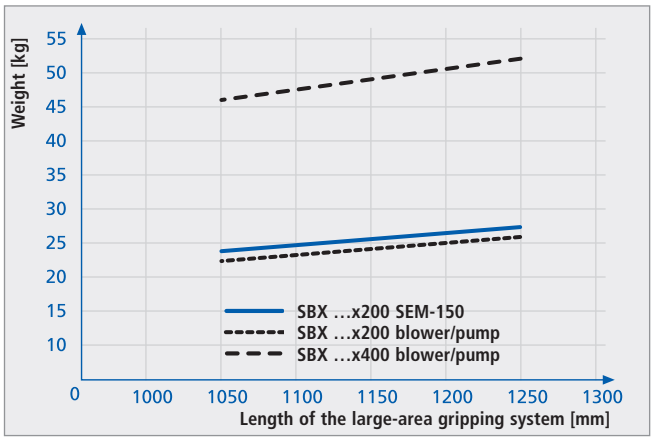
Abbreviated designation	Length x width [mm]	Hole spacing	Foam height [mm]	Vacuum generation
Example: SBX	**1040x200**	**35**	**20**	**SEM-150**
SBX	1040x200 1040x400	35…medium	20	SEM-150…multi-stage ejector blower/pump

Type	Article number
SBX 1040x200 35 20 SEM-150	10.01.20.00003
SBX 1250x200 35 20 SEM-150	10.01.20.00004
SBX 1040x200 35 20	10.01.20.00005
SBX 1250x200 35 20	10.01.20.00006
SBX 1040x400 35 20	10.01.20.00022
SBX 1250x400 35 20	10.01.20.00023

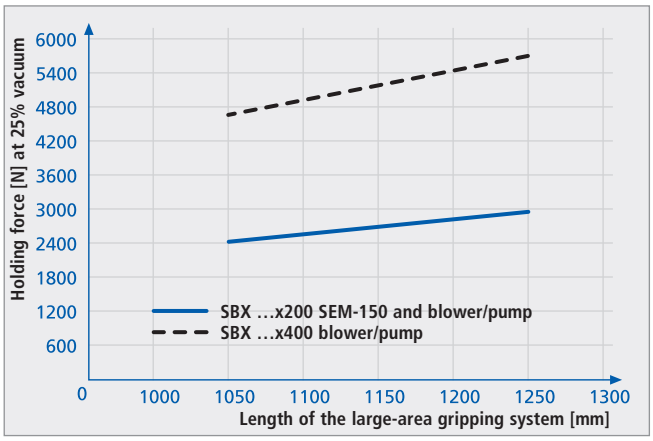
Large-area vacuum gripping systems SBX

Product specifications

Technical data of large-area vacuum gripping systems SBX



Weight of the large-area vacuum gripping system SBX

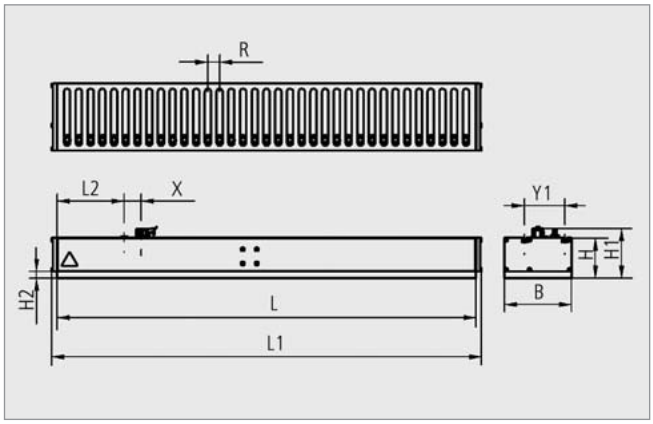


Holding force [N] at 25% vacuum of the large-area vacuum gripping system SBX

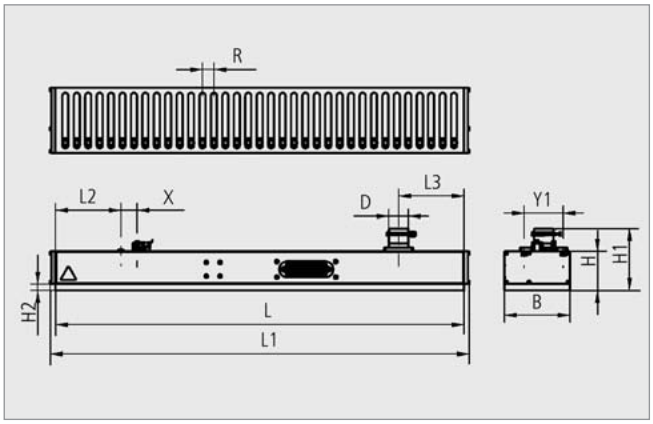
Type	Width [mm]	Vacuum generator	Noise level [db (A)]	Max. evacuation level [%]	Air consumption [l/min]	Max. suction capacity [l/min]
SBX	200	ejector	78	80	640	1400
SBX	400	blower/pump	-*	-*	-*	-*
SBX	400	blower/pump	-*	-*	-*	-*

*Can not be represented due to external vacuum generation

Construction data for large-area vacuum gripping systems SBX



Large-area vacuum gripping system SBX with integrated vacuum generator



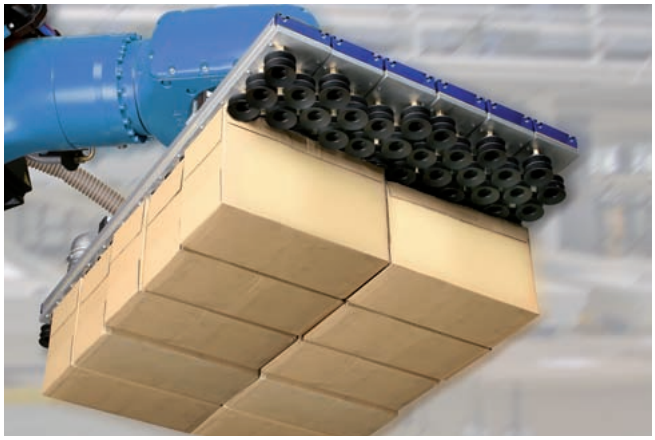
Large-area vacuum gripping system SBX with connection for external vacuum generation

Type	Dimensions [mm]											
	L	L1	L2	L3	B	H*	H1	H2	D	R	X	Y1
SBX 1040x200 35 20 SEM-150	1040	1073	200	200	200	120	148	20	60	35	50	120
SBX 1250x200 35 20 SEM-150	1250	1283	200	200	200	120	148	20	60	35	50	120
SBX 1040x200 35 20	1040	1073	200	200	200	120	188.5	20	60	35	50	120
SBX 1250x200 35 20	1250	1283	200	200	200	120	188.5	20	60	35	50	120
SBX 1040x400 35 20	1040	1073	200	200	400	120	188.5	20	60	35	50	120
SBX 1250x400 35 20	1250	1283	200	200	400	120	188.5	20	60	35	50	120

*Other foam heights and foam types on request
Note: Type SBX requires compressed-air 15/9mm. Customer-specific gripper solutions on request.

Layer gripping systems SPZ

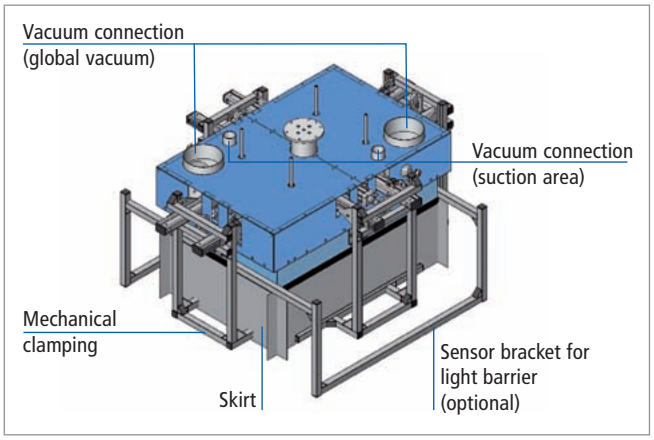
Palletizing and depalletizing with minimal cycle times



Layer gripping system SPZ

Applications

- Palletizing/depalletizing of complete product layers
- Use in warehouse logistics and intralogistics
- A combination of vacuum technology and mechanical clamping is used for palletizing and depalletizing part-pallets
- Universal gripping system for handling intermediate layers, pallets, cardboard, boxes, film packaging, products in trays etc.



Layer gripping system SPZ-M-C with mechanical clamping and skirt

Design

- Vacuum layer gripping system with state-of-the-art valve and vacuum flow technology as well as modular gripper modules based on the tried and tested technology of the FXC/FMC series (page 6)
- Options for mechanical gripping modules that can be controlled pneumatically or by an electric motor
- Modern construction optimized for weight and force according to FMEA (Failure Mode and Effect Analysis)
- Modular components for all conventional bus controllers
- Optional energy saving versions for all designs
- Vacuum connections (suction area and global vacuum chamber within the skirt) to generate the vacuum in both circuits

Layer gripping system SPZ-M-C with mechanical clamping and skirt

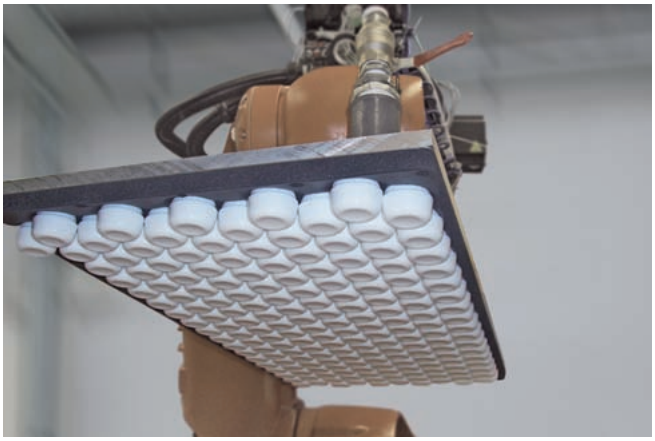
Our highlights…	Your benefits…
• Layer gripping system for various product layer sizes and layer arrangements	> Palletizing and depalletizing of complete product layers (minimization of cycle time)
• Suction area made of flexible special foam or alternatively of individual suction pads	> Can be perfectly adapted to workpiece structure; no gripper replacement for heterogeneous workpieces required
• Modular structure	> Can be adjusted to fit every application optimally
• Version for deep freeze sector	> Automated palletizing/ depalletizing to -30°C

Layer gripping systems SPZ

Product versions for various applications

SPZ types

The layer gripping system SPZ is available in three designs. Each one combines different methods of gripping. There is a suitable solution for every application including handling with only vacuum, support with a mechanical clamping and an additional global vacuum chamber including skirt. All designs can be configured for operation in the deep freeze sector to -30°C.

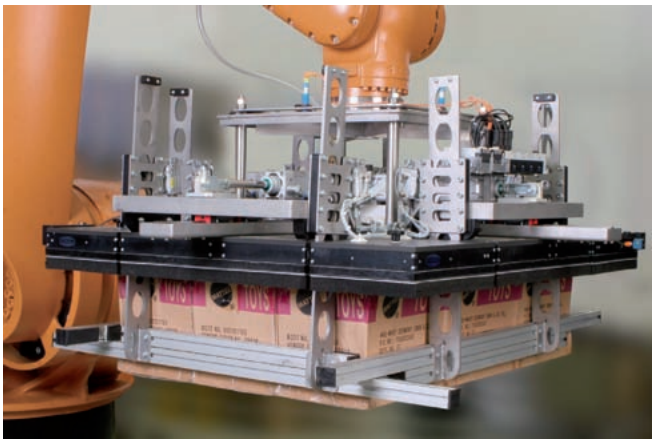


Layer gripping system SPZ without mechanical clamping

SPZ without mechanical clamping

The SPZ has modular, locked large-area vacuum grippers and is the basic design with which complete layers of a pallet are handled.

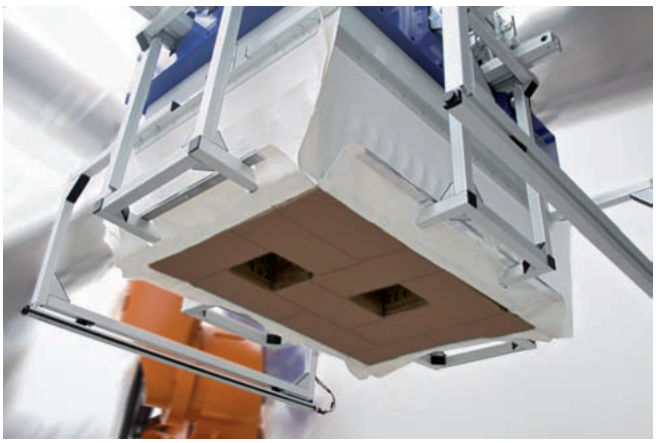
The picture shows a typical handling example with combifoam (page 8).



Layer gripping system SPZ with mechanical clamping

SPZ-M with mechanical clamping

Workpieces that are difficult to pick up with vacuum only due to their surface can be handled with the layer gripping system with mechanical clamping support, which provides additional force and stability.



Layer gripping system SPZ with mechanical clamping and skirt

SPZ-M-C with mechanical clamping and skirt

A global vacuum chamber is generated using the patented skirt concept. Together with the mechanical clamping, the layer gripping system SPZ-M-C also handles products that, until now, had to be transported manually or were much more difficult to handle automatically.

Optional with a mounting system for sensor technology.

Suction tests with original workpieces are always required to ensure functionality. We perform these in our test centre individually for your application.

Layer gripping systems SPZ

Product specifications

Range of applications and workpieces

The innovative gripper principles of the layer gripping system SPZ allow automated handling of almost all product layers, intermediate layers and pallets. It is therefore ideal for use in the warehouse logistics and intralogistics sector. It enables:

- Careful handling of products
- High processing speed
- No gripper replacement and no set-up times changing applications

Products in unmixed layers for depalletizing/palletizing applications with SPZ-M and SPZ-M-C

Large range of products that can be handled

- Cardboard boxes, combipacks, bottles, cans, glass, foils, sacks, etc.
- Shrink wrapped goods (primary and secondary packaging)
- Packaged goods in trays (closed trays and trays open)
- Cooled and frozen goods
- Handling with and without intermediate layers
- Optional: intermediate layer separation

Special application areas

- Layering pattern with "chimneys" (gaps in the layering pattern)
- Products with removable and hinged lids
- Inhomogeneous products such as soft plastic bottles

Technical data and construction data of layer gripping systems SPZ

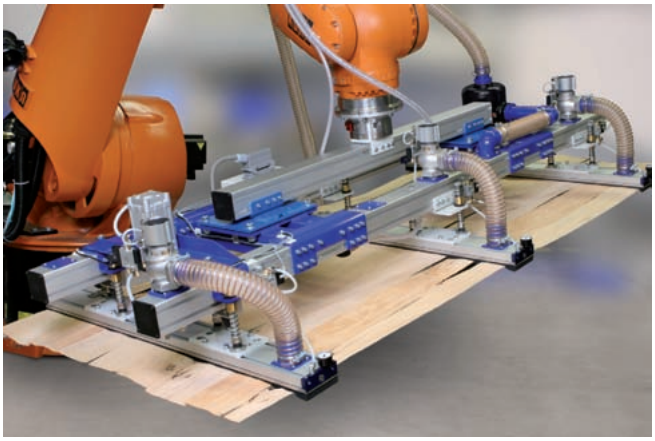
The data of the layer gripping system SPZ varies according to the respective configuration depending on the numerous types. The following table shows the most important features of the basic types of the layer gripping system SPZ.

Type	Gripping principles			Pallet size [mm]	Ambient temperature [°C]
	Vacuum suction area	Mechanical gripper	Global vacuum chamber incl. skirt		
SPZ	✓			Euro pallet (1200 x 800) Industry pallet (1200 x 1000) US pallet (1210 x 1010) Special sizes on request	Standard design: 0 to +40 °C (ice free) Deep freeze design: up to -30 °C
SPZ-M	✓	✓			
SPZ-M-C	✓*	✓	✓		

* SPZ-M-C can be optionally equipped with a metal plate instead of the suction surface
The workpieces are then handled by using the mechanical clamping and the global vacuum chamber.

Vacuum suction spiders SSP

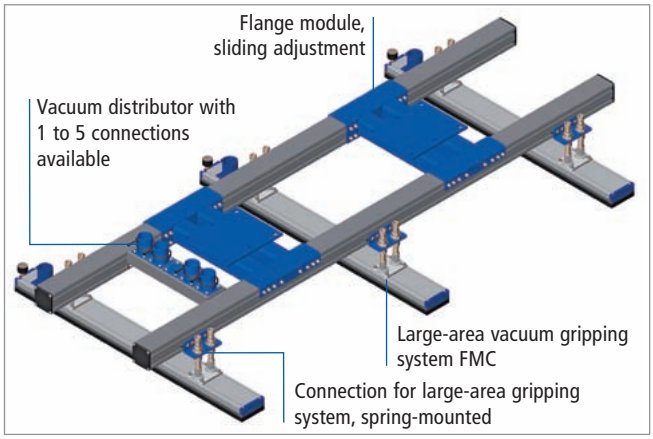
Sophisticated, complete systems for individual applications



Vacuum suction spider SSP-FMC with large-area grippers

Applications

- Linking robots in presses and bending centers, automating plastic machines, injection-mould machines and deep drawing machines, working centers in wood/plastic sector, water jet machines, laser machines and punching/nipple machines
- Order picking in storage and distribution centers to portal or industrial robots
- Metal sections, blanks, stone, sheet materials, car body parts, glass and ceramic components, solar panels as well as non-rigid workpieces, etc.



Vacuum suction spider SSP-FMC with large-area vacuum gripping systems as basic design

Design

- The modular system enables optimal selection of suction pads, large-area vacuum gripping systems, magnets or mechanical grippers together with plungers, holders and profiles, valve modules with sensors
- Various vacuum generators (ejector, pump, blower) can be selected according to the application
- Options for quick adjustment or fixed setting, blank separation, workpiece request or collision protection
- Sealing elements in various designs of types FXC/FMC (page 8) and SBX (page 20)

Vacuum suction spider SSP with suction plates

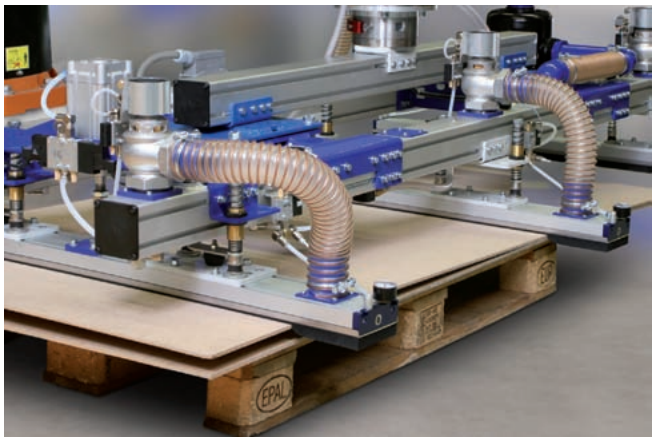
Our highlights…	Your benefits…
• Modular component gripping system consisting of various individual coordinated components	> Fast and cost-effective structure of complete gripping systems for minimal cycle times and the highest degree of process safety
• Combination of various gripping principles (vacuum, mechanical, magnet etc.)	> Flexible adaptation to the relevant requirement saving time and high process costs
• Standard solutions made from aluminium, steel pipe elements and plastic elements	> Low weight and high acceleration using an optimum selection of materials
• Intelligent valve modules for unused suction pads	> Highly modern gripping technology saves time when removing the workpieces

Vacuum suction spiders SSP

Modular system for individual configuration

SSP types

Modular system of vacuum suction spiders SSP



Expanded design of the vacuum suction spider SSP-FMC, optimized for handling chipboards

The vacuum suction spider SSP was designed according to a modular principle. All versions of the vacuum suction spider are derived from the basic design. They can be flexibly optimized using various extensions for complex handling tasks.

Basic design

The large-area vacuum gripping system FMC is used as standard with a low height and an external vacuum generator – alternatively it can be fitted with the large-area vacuum gripping system FXC or SBX as well as suction pads.

Expansion options

The following expansion options are available for the vacuum suction spider based on the basic design:

- Separation functions of the FXC/FMC large-area vacuum gripper enable safe separation of porous workpieces
- Peeling unit enables separation of airtight workpieces
- Electrical terminal box with multi-pin connection plugs enables very quick installation
- Valve unit enables optimal adjustment of the blower output or suction capacity for the workpiece to be handled
- Sensor unit enables part recognition and optimization of cycle times

Customer-specific design of the vacuum suction spider SSP

Customer-specific design of the vacuum suction spider SSP for handling various large cardboard boxes

The vacuum suction spider SSP can be adjusted to the finest details for customer requirements regardless of the module. Almost all combinations of vacuum components such as vacuum suction pads, vacuum generators, connections and attachment elements can be used. The vacuum suction spider can be adapted perfectly to any application.

Project planning and consultation

Schmalz customers benefit from expert consulting and innovative solutions in all areas of automation technology thanks to our global distribution of vacuum gripping systems. Our know-how and many years of experience as a vacuum gripper system manufacturer provide our customers with special competitive advantages.

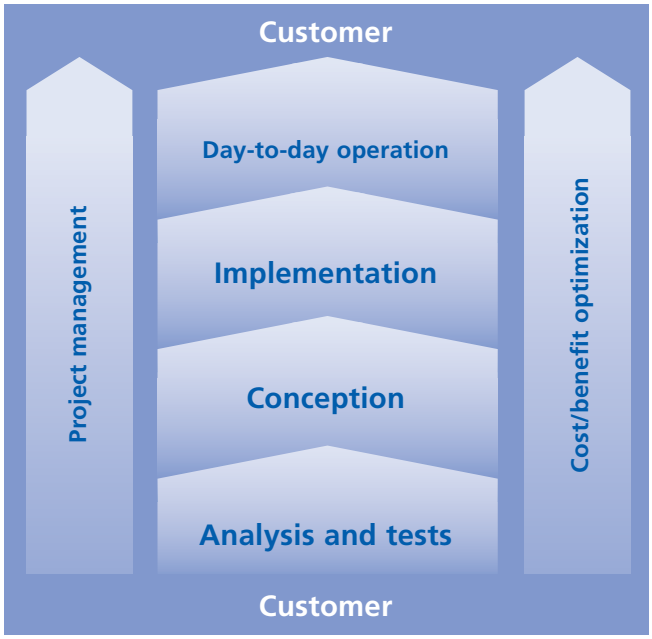
Vacuum gripping systems delivered ready for connection – integrated system solutions
From the planning stage, through installation and commissioning to the intended use of the system, your personal project engineer accompanies you through all stages of your project.

- **Analysis and tests**
  An intensive analysis and test phase form the basis for a practice-oriented task evaluation. Trials are performed with original workpieces to ensure functionality. This are performed individually for each application at our in-house test centre.

- **Conception**
  The conception of the solution, with a high degree of innovation, functionality and industry expertise guarantees an economical and future-proof design.

- **Implementation**
  The system is implemented on the agreed date and at the highest technical level, resulting in vacuum gripping systems for industrial robots or portals which are configured specifically for each customer and are delivered ready for connection.

- **Day-to-day operation**
  Comprehensive after-sales services and practically oriented training courses matched to the customer's needs improve productivity and ensure optimal availability of the systems.



Consultation for system configuration

In order to adapt our vacuum gripper system ideally for your application, there are questionnaires available for download at our website at **www.schmalz.com**. These allow you to make a simple description of your task. You can find these questionnaires in the **Services section** under **Consultation > Product Inquiries**. Our system consultant will contact you immediately after receiving a questionnaire.

Naturally you can personally contact our system advisors.

Vacuum Components

In addition to vacuum gripping systems, Schmalz offers a wide product range of vacuum components. This includes everything you need to build your individual vacuum system.

Typical application of vacuum components

Handling workpieces in automated processes, especially alongside robot applications and automated portals.

The Schmalz product range

- Vacuum suction pads
- Special grippers
- Mounting elements
- Vacuum generators
- Valve technology
- Switches and system monitoring
- Filters and connectors

For application in the following industries

- Metal/metal sheets
- Automotive
- Wood
- Plastics
- Packaging
- Solar

Vacuum component catalogue

Detailed information about Schmalz vacuum technology products can be found in our comprehensive vacuum component catalogue. We would be glad to send you a copy in print form or as a CD-ROM.

www.schmalz.com

The Schmalz Online Shop

The Schmalz online shop at www.schmalz.com contains over 3,000 items with extensive technical information, design data and CAD data. You can also find information regarding industry solutions as well as practical application examples of Schmalz products. Along with a variety of helpful services and downloads, a personal account at the online shop makes it easier and faster to place an order at attractive terms.

Vacuum Components

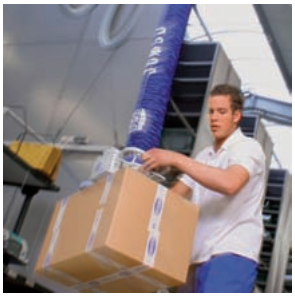
Innovative vacuum components from Schmalz offer many users in various sectors of industry reliable support in the solution of automation and handling tasks. The wide range of components extends from suction pads and vacuum generators to mounting elements and system monitoring devices.

Tel. +49 (0)7443 2403 102
Fax +49 (0)7443 2403 597

Vacuum Gripping Systems

Complex vacuum gripping systems from Schmalz permit decisive productivity improvements to be achieved. The range extends from layer and large-area gripping systems to complete vacuum spiders, delivered ready for connection, for use in all areas of automation.

Tel. +49 (0)7443 2403 107
Fax +49 (0)7443 2403 596



Vacuum Handling Systems

Ergonomical vacuum lifting devices Jumbo and VacuMaster for effortless, damage-free handling of workpieces. Crane systems to supplement these to form complete system solutions which are precisely matched to the planned application. Workshop equipment as practical aids in trade and industry.

Tel. +49 (0)7443 2403 108
Fax +49 (0)7443 2403 399

Vacuum Clamping Systems

Future-oriented vacuum clamping technology from Schmalz is the intelligent response to the continually increasing demands for more productivity and economic operation of CNC machine tools.

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