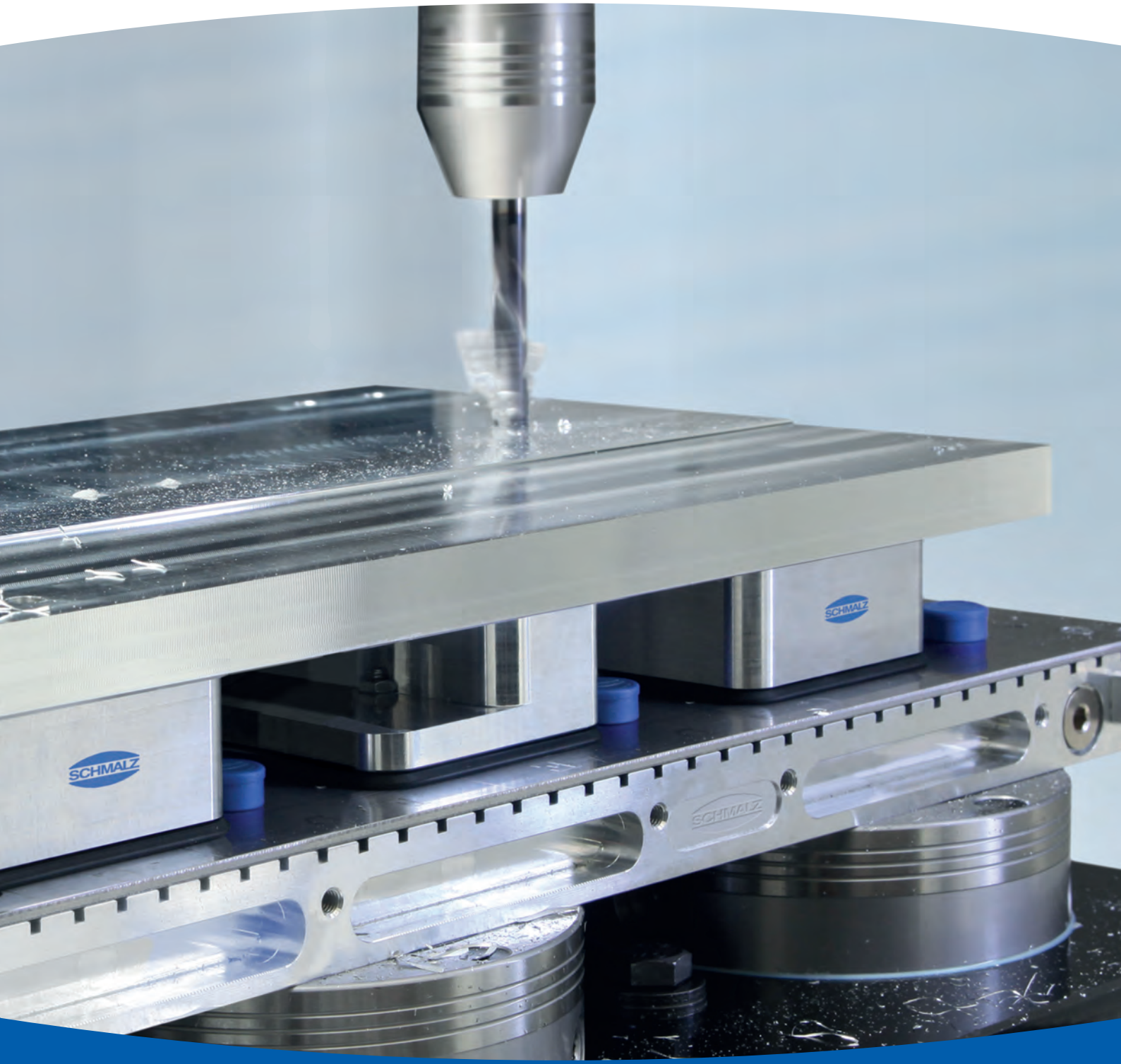
Efficient Clamping Systems



Incl. 3D Clamping Systems
3D
Incl. 3D Clamping Systems

Vacuum Clamping Systems

Clamping Solutions for CNC Machining

Schmalz

World of Vacuum Technology

Customer focus, groundbreaking innovations, excellent quality and comprehensive consulting competence make Schmalz the world's leading partner for vacuum technology in automation, handling and clamping applications.

As a company that acts globally and offers innovative products and services, we provide our customers with efficient solutions tailored precisely to their particular applications' requirements. We inspire our customers everywhere where production processes are designed more efficiently through the use of vacuum technology.

With our certifications, including ISO 9001 for quality management, ISO 14001 for environmental management and ISO 50001 for energy management, we guarantee our partners standardized and sustainable processes.

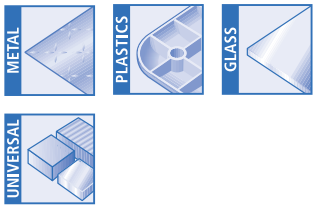
Looking for Clamping Solutions for Woodworking?

Schmalz offers considerable experience and expertise in vacuum clamping technology, gained from working in partnership with well-known machine manufacturers over many years. Whether its initial equipment, retrofit solutions or spare parts, Schmalz offers a large selection of high-quality clamping equipment for your CNC woodworking center – regardless of manufacturer or machine table type. By developing their versatile vacuum clamping system Multi-Clamp, Schmalz has added a solution to its product range for processing workpieces manually, including sawing, sanding, drilling or screwing.

Download or request brochure at www.schmalz.com/catalogs

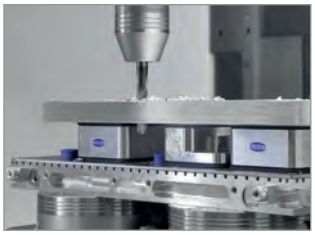
Contents

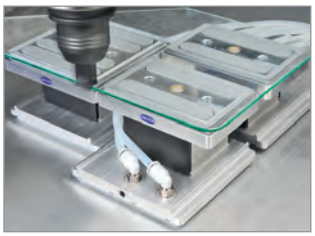
Applications



Order online now:
www.schmalz.com

Clamping Systems for CNC Machining Centers





Vacuum Generation for CNC Machining Centers

Contact 31

*Bystronic is a registered and protected brand name. The items listed here are products of J. Schmalz GmbH that have been designed to fit Bystronic machining centers.

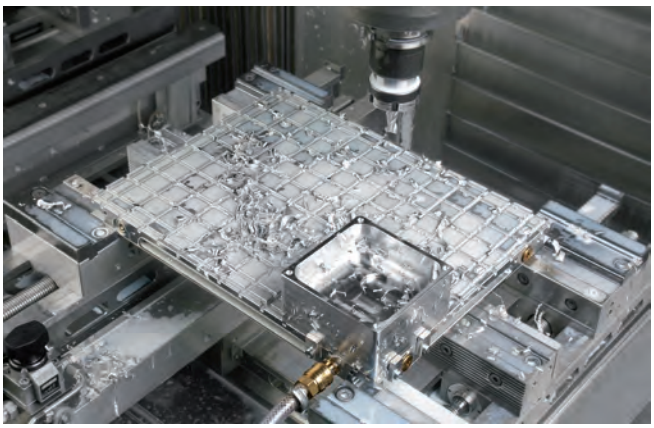
Vacuum clamping system Matrix-Plate with Innospann Steel-Plate and vacuum block for the production of recesses in five-axis processing

Vacuum Clamping Systems in Use

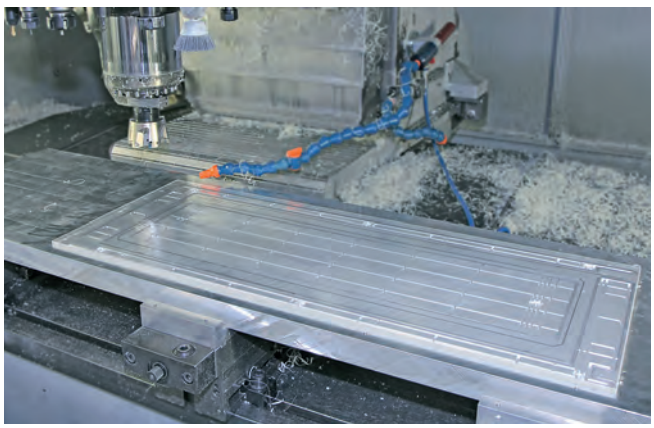
Metal and Plastics

Economic and Flexible Right from Production Batch One
Schmalz clamping solutions provide increased flexibility and reduce setup work for metal and plastics processing. Even the smallest quantities can be produced economically and in reproducible quality.

Vacuum clamping system Matrix-Plate engraving a brass sign



Vacuum clamping system Matrix-Plate processing thin walled aluminum cubes



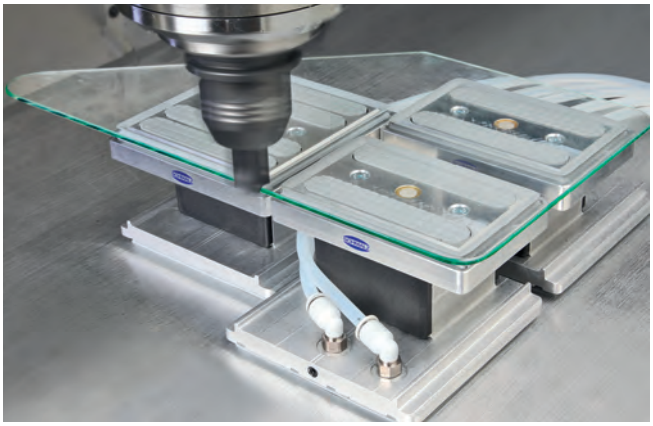
Vacuum clamping system Matrix-Plate in a customer specific design, here processing a plastic sheet

Vacuum clamping system Matrix-Plate with Innospann Steel-Plate and vacuum block, here involved in five-axis processing of a plexiglass plate

Glass

The Highest Level of Security and Precision

Schmalz clamping solutions ensure flexible and efficient production processes in glass working. Suction pads with special friction pads are wear resistant and guarantee precise results, even in challenging operating conditions.



Vacuum block VCBL-G processing the edges of a glass sheet

Schmalz Quick-Change System SQC clamping glass components on a Bystronic CNC machining center

Quick-change suction cups SQC-C offer minimal set-up times and maximum flexibility

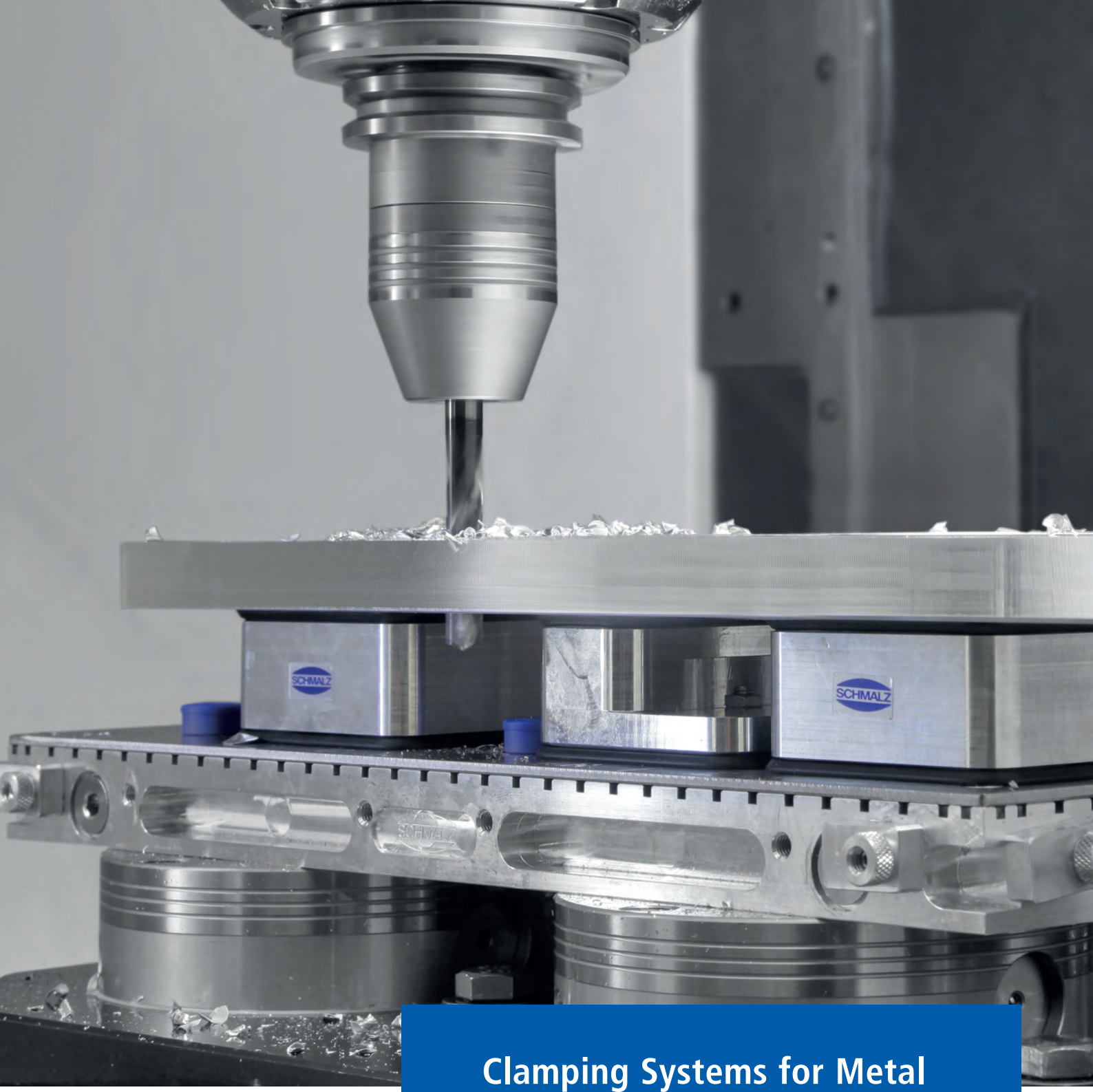
3D Clamping Systems

Complex Components Under Control

The trend towards lightweight design involving innovative materials and complex geometries presents new challenges for clamping technology. Schmalz has developed the Basic Holding Fixture BHF for fixing workpieces with freeform surfaces securely and with low warping. The flexible vacuum clamping system is ideal for laser and milling processes in the fiber composite industry as well as for applications in the metal, plastics or woodworking industry.

Basic Holding Fixture BHF shown here processing a CFX component

Suction cup with angle compensation for 3D freeform surfaces



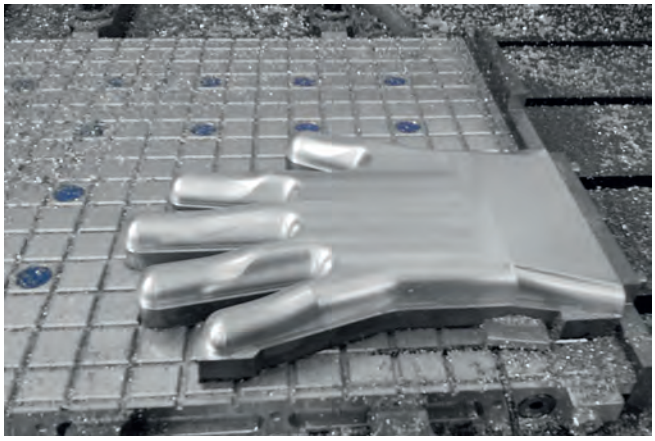
Clamping Systems for Metal and Plastic Processing

Reduce Set-up Times, Increase Flexibility

The Schmalz Matrix-Plate guarantees minimal set-up times when clamping flat workpieces with flat undersides on CNC machining centers. Using the vacuum clamping system, even components that are difficult to clamp mechanically (e.g. aluminum workpieces) can be secured precisely, quickly and without distortion. Flexibility is increased again when combined with the Innospann Steel-Plate. Productivity and set-up times can be further optimized, particularly when workpieces are changed frequently.

Clamping Systems for Metal and Plastic Processing

Vacuum Clamping System Matrix-Plate

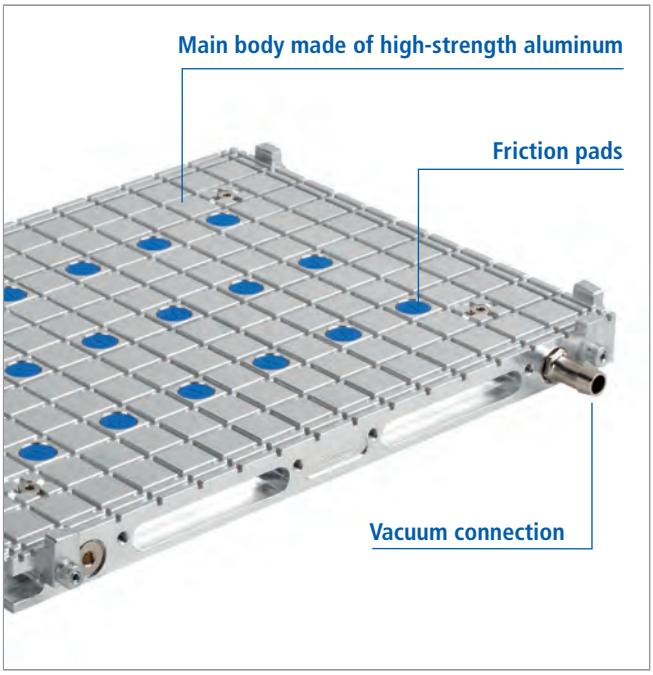


Vacuum clamping system Matrix-Plate with friction pads machining and shaping a specialist glove

Applications

Universal Clamping of Flat Workpieces with Flat Undersides

- For workpieces made of aluminum and other non-ferromagnetic materials such as CFK or plastic
- Short set-up times due to simple handling
- Modular structure allows flexible adaptation to the workpiece geometry and the type of processing
- Enlargement of clamping area possible by connecting several matrix plates
- Simple mounting on the machine table using clamping claws or a zero point clamping system
- Mechanical stops serve as positioning aids and for taking up additional lateral forces
- Production of recesses can be easily achieved in combination with the Innospann Steel-Plate (see page 10)



Patented Friction Pads for 30 % Greater Shear Force Absorption

Friction pad deactivated

Friction pad activated

- Extremely strong holding forces generates reliable clamping
- Gentle handling, as friction pads apply no additional force on the workpiece
- Automatic activation and deactivation by means of vacuum supply
- Oil and ozone resistant, can be individually replaced when worn

Video: Efficient Clamping in Just a Few Steps

1.
Mount Matrix-Plate

2.
Insert sealing gasket

3.
Position workpiece

4.
Activate vacuum – done!

Watch video:
www.schmalz.com/mpl-video

Clamping Systems for Metal and Plastic Processing

Vacuum Clamping System Matrix-Plate

Ordering Data Matrix-Plate

- Clamping system made of high-strength aluminum
- Stops, hose nozzle, plugs and sealing gasket are all included in delivery
- Optional friction pads (RI) for 30 % greater shear force absorption
- High dimensional accuracy: Flatness < 0.1 mm, parallelism < 0.05 mm

MPL 300x200x28 12.5x12.5 3x3

Matrix-Plate MPL 300 x 200

Ordering Data Matrix-Plate Type	Grid dimensions [mm]	Version	Part no.
MPL 300x200x28 12.5x12.5 3x3	12.5 x 12.5	No friction pads	10.01.27.00100
MPL 300x200x28 25x25 3x3	25 x 25	No friction pads	10.01.27.00101
MPL 300x200x28 25x25 3x3 RI	25 x 25	With friction pads	10.01.27.00102

MPL 400x300x28 25x25 3x3 RI

Matrix-Plate MPL 400 x 300

Ordering Data Matrix-Plate Type	Grid dimensions [mm]	Version	Part no.
MPL 400x300x28 12.5x12.5 3x3	12.5 x 12.5	No friction pads	10.01.27.00103
MPL 400x300x28 25x25 3x3	25 x 25	No friction pads	10.01.27.00104
MPL 400x300x28 25x25 3x3 RI	25 x 25	With friction pads No	10.01.27.00106
MPL 400x300x28 30x30 5x5	30 x 30	friction pads	10.01.27.00105
MPL 400x300x28 30x30 5x5 RI	30 x 30	With friction pads	10.01.27.00107

MPL 600x400x28 25x25 3x3

Matrix-Plate MPL 600 x 400

Ordering Data Matrix-Plate Type	Grid dimensions [mm]	Version	Part no.
MPL 600x400x28 12.5x12.5 3x3	12.5 x 12.5	No friction pads	10.01.27.00108
MPL 600x400x28 25x25 3x3	25 x 25	No friction pads	10.01.27.00109
MPL 600x400x28 25x25 3x3 RI	25 x 25	With friction pads	10.01.27.00111
MPL 600x400x28 30x30 5x5	30 x 30	No friction pads	10.01.27.00110
MPL 600x400x28 30x30 5x5 RI	30 x 30	With friction pads	10.01.27.00112

Spare Parts and Accessories

Ordering Data Spare Parts Type	Suitable for...	Part no.
Sealing gasket Ø 3.0 mm (by the meter)	Matrix-Plate MPL…3x3 (overmilled)	10.07.04.00088
Sealing gasket Ø 3.5 mm (by the meter)	Matrix-Plate MPL…3x3	10.07.04.00091
Sealing gasket Ø 5.0 mm (by the meter)	Matrix-Plate MPL…5x5 (overmilled)	10.07.04.00094
Sealing gasket Ø 5.5 mm (by the meter)	Matrix-Plate MPL…5x5	10.07.04.00095
Clamping claw	universal	10.01.27.00009
Stop	universal	10.01.27.00079
Friction pad	universal	10.01.27.00060
Vacuum hose 21 – 12, PVC	Vacuum unit VAGG-6 / VAGG-18	10.07.09.00006
Vacuum hose 34 – 25, PVC	Vacuum unit VAGG-40 / VAGG-63	10.07.09.00041
Hose clamp 16 – 27	Vacuum hose 21-12	10.07.10.00002
Hose clamp 20 – 32	Vacuum hose 34-25	10.07.10.00003

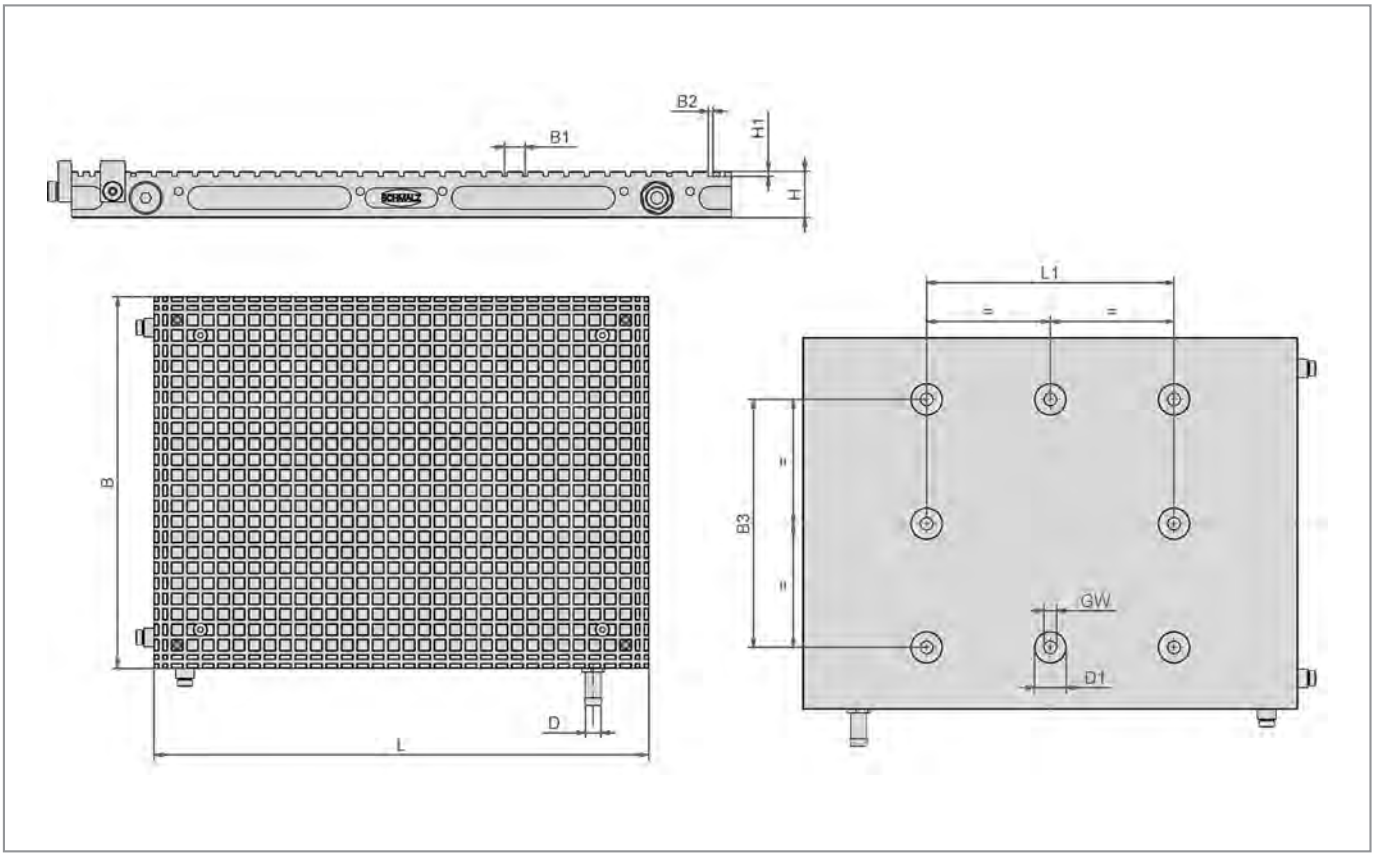
Clamping Systems for Metal and Plastic Processing

Vacuum Clamping System Matrix-Plate

Spare Parts and Accessories

Ordering Data Accessory Parts Type	Suitable for...	Part no.
Hose nozzle G1/4-AG 12	Vacuum unit VAGG-6	10.08.03.00158
Hose nozzle G3/4-AG 12	Vacuum unit VAGG-18	10.08.03.00164
Hose nozzle G3/4-AG 25	Vacuum unit VAGG-40 / VAGG-63	10.08.03.00166
Distributor G3/4-IG 8xG1/4	universal	10.01.27.00126
Connection set for Matrix-Plate incl. gauge	universal	10.01.27.00456

Design Data Matrix-Plate

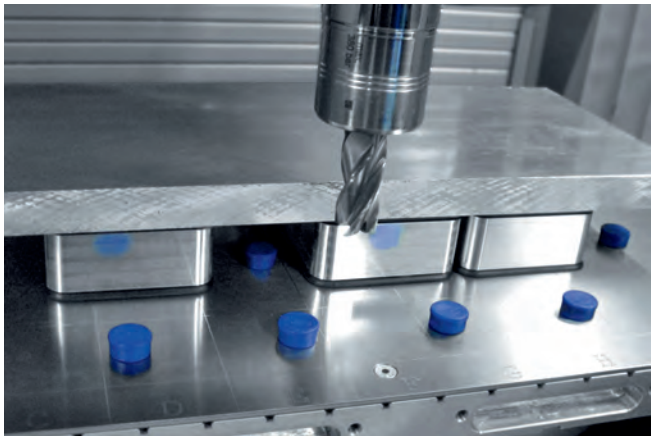


MPL 300x200x28 to 600x400x28

Type	Dimensions in mm										
	L	L1	B	B1	B2	B3	H	H1	D	D1	GW
MPL 300x200x28 12.5x12.5 3x3	300	200	200	12,5	3	-	28	3	12.5	25	M12
MPL 300x200x28 25x25 3x3	300	200	200	25	3	-	28	3	12.5	25	M12
MPL 300x200x28 25x25 3x3 RI	300	200	200	25	3	-	28	3	12.5	25	M12
MPL 400x300x28 12.5x12.5 3x3	400	200	300	12.5	3	200	28	3	12.5	25	M12
MPL 400x300x28 25x25 3x3	400	200	300	25	3	200	28	3	12.5	25	M12
MPL 400x300x28 25x25 3x3 RI	400	200	300	25	3	200	28	3	12.5	25	M12
MPL 400x300x28 30x30 5x5	400	200	300	30	5	200	28	5	12.5	25	M12
MPL 400x300x28 30x30 5x5 RI	400	200	300	30	5	200	28	5	12.5	25	M12
MPL 600x400x28 12.5x12.5 3x3	600	200	400	12.5	3	200	28	3	12.5	25	M12
MPL 600x400x28 25x25 3x3	600	200	400	25	3	200	28	3	12.5	25	M12
MPL 600x400x28 25x25 3x3 RI	600	200	400	25	3	200	28	3	12.5	25	M12
MPL 600x400x28 30x30 5x5	600	200	400	30	5	200	28	5	12.5	25	M12
MPL 600x400x28 30x30 5x5 RI	600	200	400	30	5	200	28	5	12.5	25	M12

Clamping Systems for Metal and Plastic Processing

Innospann Steel-Plate Systems

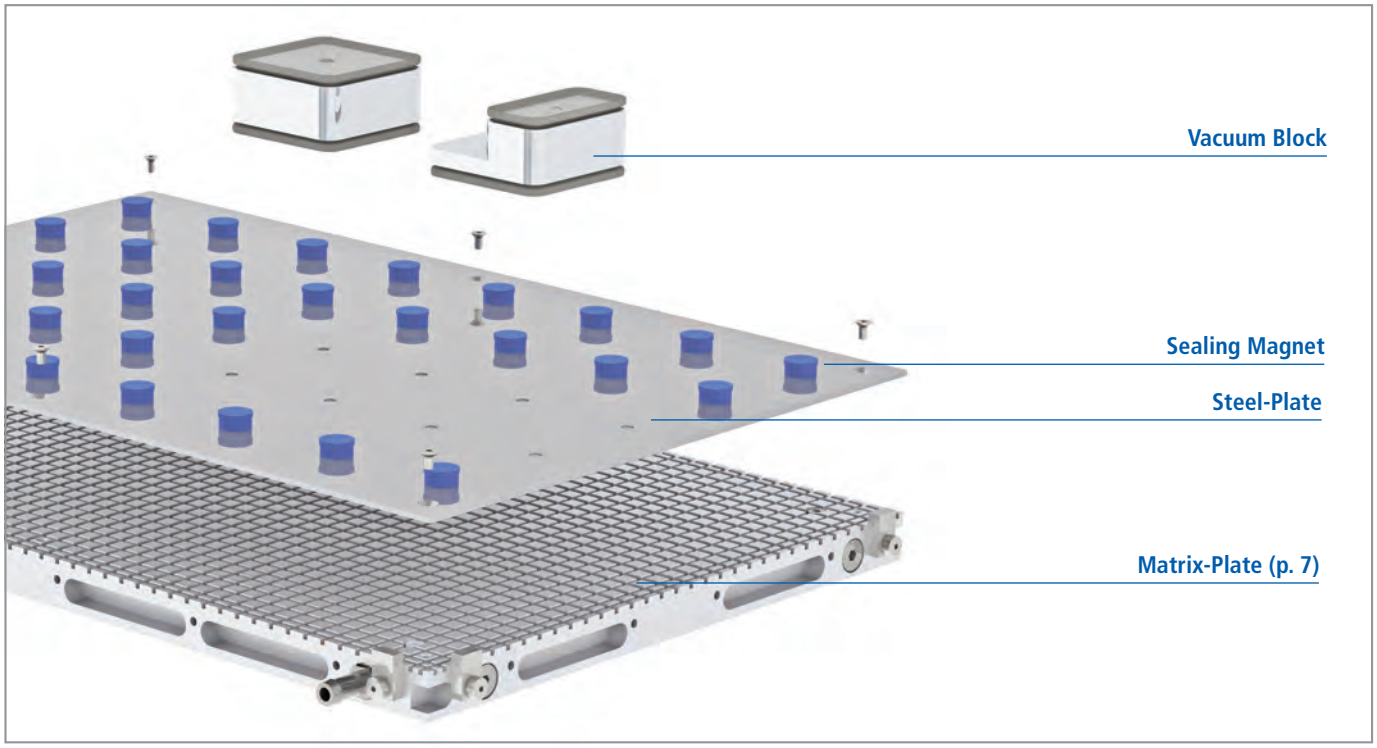


Matrix-Plate with Innospann Steel-Plate for milling recesses

Applications

Production of Workpiece Recesses Primarily in Five-axis Processing

- The Steel-Plate for flexible positioning of vacuum blocks is mounted on a Schmalz Matrix-Plate
- Can be retrofitted for matrix plates already installed
- Swift retooling when workpieces are changed frequently
- Reduced set-up times and increased holding force
- Vacuum block is hose free and can be positioned without difficulty
- Magnetic pre-fastening of vacuum blocks
- A laser grid acts as orientation assistance
- Also suited to challenging conditions due to wear resistant sealing lips and robust aluminum design
- Special friction plates for optimal shear force absorption on smooth surface



Video: Flexible Clamping in Just a Few Steps

1.
Position vacuum block

2.
Close uncovered vacuum openings

3.
Position workpiece

4.
Activate vacuum – done!

Watch video:
www.schmalz.com/mpl-isst-video

Clamping Systems for Metal and Plastic Processing

Innospann Steel-Plate Systems

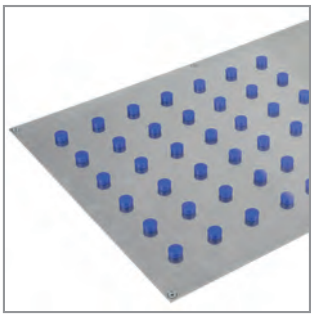
Ordering Data Innospann Steel-Plate Systems

- A complete clamping system consists of Matrix-Plate (step 1), Steel-Plate (step 2), vacuum blocks (step 3) and sealing magnets

Step 1: Select Matrix-Plate

- See page 8 for Matrix-Plate information and ordering data

Step 2: Select Steel-Plate



Steel-Plate ISST 600x400x3

Steel-Plate

- Sealing magnet, fastening screws and sealing gasket are included in the Steel-Plate's scope of delivery

Ordering Data Steel-Plate

Type	Dimensions L x B x H [mm]	Part no.
ISST 300x200x3	300 x 200 x 3	10.01.14.01124
ISST 400x300x3	400 x 300 x 3	10.01.14.01125
ISST 600x400x3	600 x 400 x 3	10.01.14.01126

Ordering Data Spare Parts

Name	Dimensions Ø [mm]	Part no.
Sealing magnet set for Steel-Plate (4 magnets)	19	10.01.14.00847

Step 3: Select Vacuum Block

- Aluminum vacuum block with special friction pad for metal working
- Magnetic pre-fastening on Steel-Plate
- Upper and lower sealing frame replaceable
- High size accuracy to ±0.05 mm

Vacuum block ISBL 80x80

Vacuum Block ISBL 80x80

Ordering Data Vacuum Block

Type	Suction area L x B [mm]	Height H [mm]	Part no.
ISBL 80x80x38	80 x 80	38	10.01.15.00654
ISBL 80x80x97	80 x 80	97	10.01.15.00657

Ordering Data Spare Parts

Type	Part no.
Sealing frame (upper and lower)	10.01.15.00158

Vacuum block ISBL 80x40

Vacuum Block ISBL 80x40

Ordering Data Vacuum Block

Type	Suction area L X B [mm]	Height H [mm]	Part no.
ISBL 80x40x38	80 x 40	38	10.01.15.00655
ISBL 80x40x97	80 x 40	97	10.01.15.00658

Ordering Data Spare Parts

Type	Part no.
Upper sealing frame	10.01.15.00418
Lower sealing frame	10.01.15.00158

Step 3: Select Vacuum Block

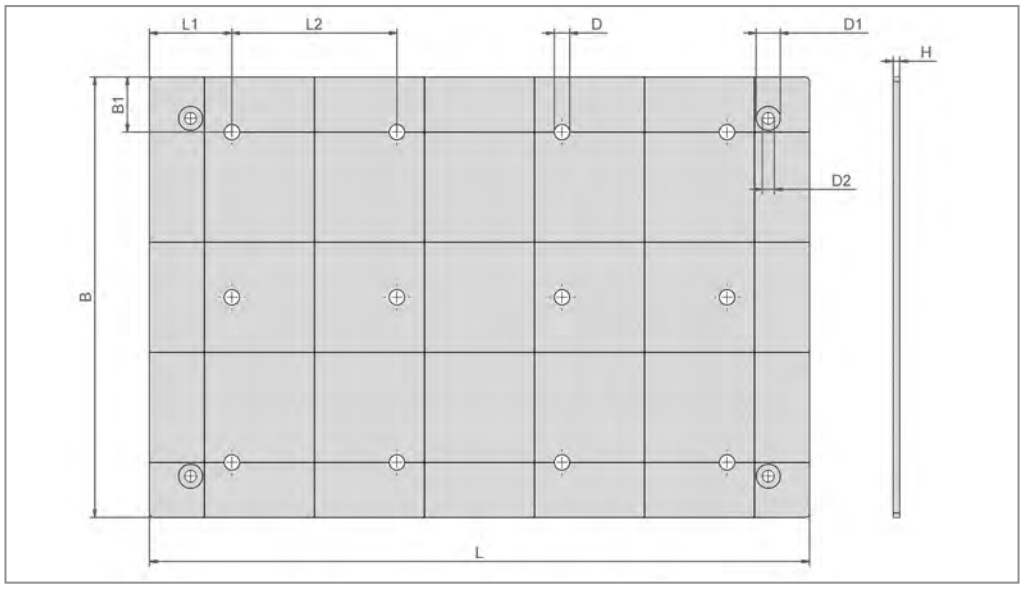
Vacuum block ISBL 80x28

Vacuum Block ISBL 80x28

Ordering Data Vacuum Block			
Type	**Suction area L x B [mm]**	**Height H [mm]**	**Part no.**
ISBL 80x28x38	80 x 28	38	10.01.15.00656
ISBL 80x28x97	80 x 28	97	10.01.15.00659

Ordering Data Spare Parts	
Type	**Part no.**
Lower sealing frame	10.01.15.00419
Upper sealing frame	10.01.15.00158

Design Data Innospann Steel-Plate



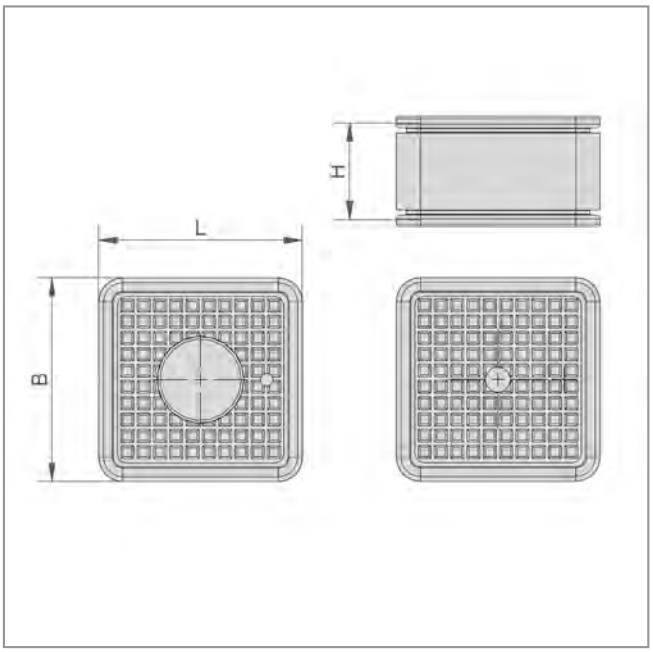
ISST 300x200x3 to 600x400x3

Type	Dimensions in mm									No.
	L	L1	L2	B	B1	H	D	D1	D2	Vacuum openings
ISST 300x200x3	300	37.5	75	200	25	3	7	11	5.5	12
ISST 400x300x3	400	37.5	75	300	25	3	7	11	5.5	20
ISST 600x400x3	600	37.5	75	400	25	3	7	11	5.5	40

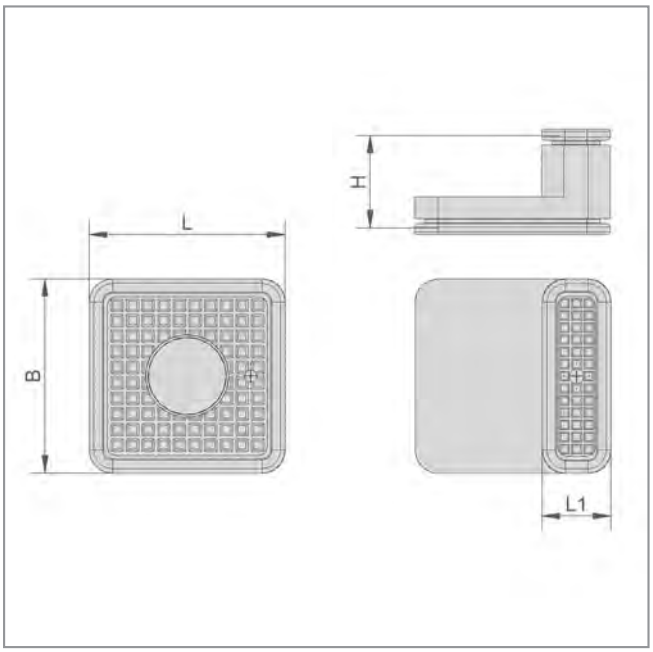
Clamping Systems for Metal and Plastic Processing

Innospann Steel-Plate Systems

Design Data Innospann Vacuum Block



ISBL 80x80



ISBL 80x40/28

Type	Dimensions in mm			
	L	L1	B	H
ISBL 80x80x38	80	80	80	38
ISBL 80x80x97	80	80	80	97
ISBL 80x40x38	80	40	80	38
ISBL 80x40x97	80	40	80	97
ISBL 80x28x38	80	28	80	38
ISBL 80x28x97	80	28	80	97

Clamping Systems for Glass Working

Quick and Simple Setup on Smooth Machine Tables

Flat table CNC machining centers can be set up quickly and easily using Schmalz vacuum clamping solutions. Special vacuum blocks for glass working can be used on all tables with the two-circuit vacuum system. The Schmalz Innospann system offers a flexible alternative to individual suction pads and requires fewer hoses.

Clamping Solutions for Glass Working

Vacuum Block VCBL-G for Flat Tables

Vacuum block VCBL-G

Applications

Vacuum Blocks for Safe and Precise Clamping of Workpieces on Flat Table Glass Working Centers

- Vacuum block with two-circuit hose system
- Circuit 1: Pre-fastening on the machine table
- Circuit 2: Clamping the workpiece
- Excellent holding force and precision through friction plates with special friction pad
- Designed for the challenging operating conditions in glass working, including grinding water and glass dust
- Minimal wear due to resilient sealing materials

Ordering Data Vacuum Block

Vacuum block VCBL-G 120x120x81.5

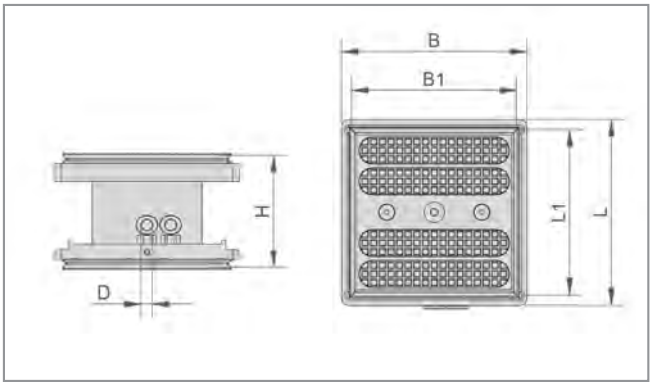
Vacuum Block VCBL-G

- Aluminum vacuum block with hose connection (8/6 mm) for flat tables
- Upper and lower sealing frame replaceable – no tools required
- High size accuracy to ±0.05 mm

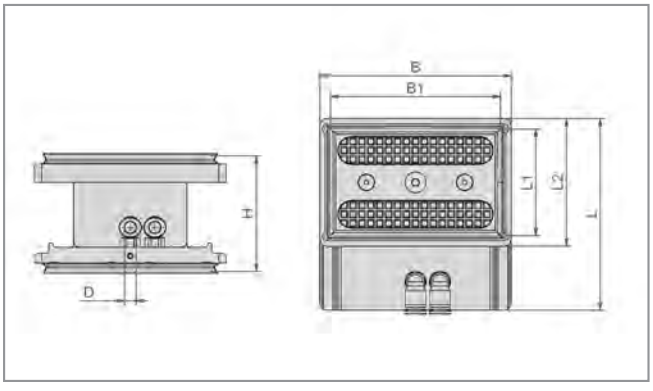
Ordering Data Vacuum Block			
Type	**Suction area L x B [mm]**	**Height H [mm]**	**Part no.**
VCBL-G 120x120x81.5	120 x 120	81.5	10.01.18.00072
VCBL-G 120x75x81.5	75 x 120	81.5	10.01.18.00099

Ordering Data Spare Parts			
Type	**For VCBL-G 120x120…**	**For VCBL-G 120x75…**	**Part no.**
Sealing frame 120x120	upper / lower	lower	10.01.18.00079
Sealing frame 120x75	-	upper	10.01.18.00110

Design Data Vacuum Block



VCBL-G 120x120x81.5



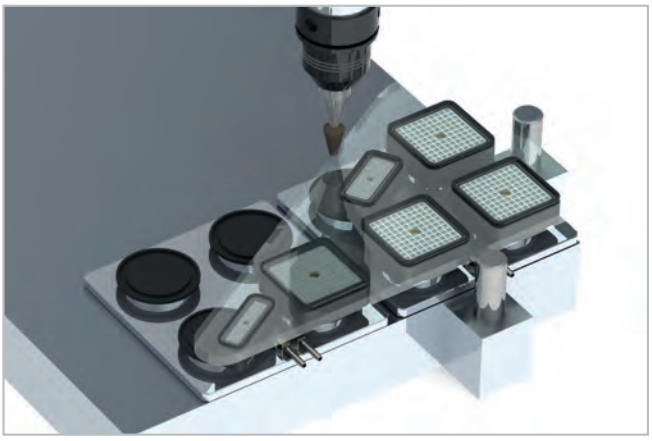
VCBL-G 120x75x81.5

Type	Dimensions in mm						
	L	**L1**	**L2**	**B**	**B1**	**H**	**D***
VCBL-G 120x120x81.5	135	120	135	135	120	81.5	8
VCBL-G 120x75x81.5	135	75	90	135	120	81.5	8

*D for vacuum hose 8–6 (8 mm outside diameter, 6 mm internal diameter)

Clamping Solutions for Glass Working

Innospann Flat Table Systems



Quad-Base ISQB-G, here shown grinding the edges of a glass sheet

Applications

Modular System for Quickly and Simply Creating Application-specific Suction Areas

- For flat table glass working centers
- Differently sized suction cups provide high flexibility
- Reduces need for hoses compared to single suction boxes
- Based on a two circuit hose system
- Circuit 1: Pre-fastening on the machine table
- Circuit 2: Clamping the workpiece
- The suction cup mounting is connected to the vacuum connection with the generator, and clamped directly on to the flat table
- Special friction pad for glass surfaces creating excellent holding force for longitudinal and lateral loads

Ordering Data Innospann Flat Table Systems

- A complete clamping system consists of suction cup mounting Quad-Base (step 1) and up to four suction cups (step 2)

Step 1: Select Suction Cup Mounting Quad-Base

Quad-Base ISQB-G (without covers)

Quad-Base ISQB-G

- Uncovered mountings are closed using covers (4 pieces included in Quad-Base delivery)
- Spacer ring for working height 81.5 mm
- Height accurate to ±0.05 mm

Ordering Data Quad-Base

Type	Dimensions L x B x H [mm]	No. of suction cup mountings	Part no.
ISQB-G 212x212x20 SC	212 x 212 x 20	4	10.01.15.00646

Ordering Data Spare Parts and Accessories

Type	Dimensions [mm]	Part no.
Cover (for uncovered mountings)	Ø 80 x 4	10.01.15.00083
Spacer ring ISZR-V 80x31.5	Ø 80 x 31.5	10.01.15.00807

Step 2: Select Suction Cup

Suction cups ISCUP

Suction Cup ISCUP

- Plastic suction cup for Innospann mountings
- Upper sealing frame replaceable
- High size accuracy of -0.1/0 mm

Ordering Data Suction Cup

Type	Suction area L x B [mm]	Height H [mm]	Part no.
ISCUP cup 1 80x80x30	80 x 80	30	10.01.15.00392
ISCUP cup 2 80x40x30	80 x 40	30	10.01.15.00393
ISCUP cup 3 80x28x30	80 x 28	30	10.01.15.00448

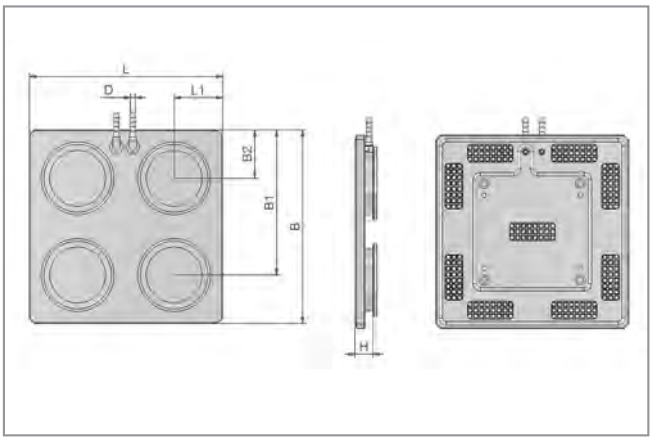
Ordering Data Spare Parts

Type	Part no.
Sealing frame 80x80	10.01.15.00158
Sealing frame 80x40	10.01.15.00418
Sealing frame 80x28	10.01.15.00419

Clamping Solutions for Glass Working

Innospann Flat Table Systems

Design Data Quad-Base

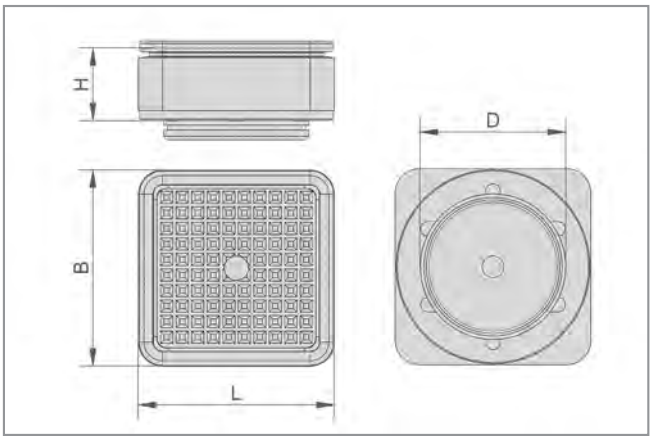


ISQB-G 212x212x20 SC

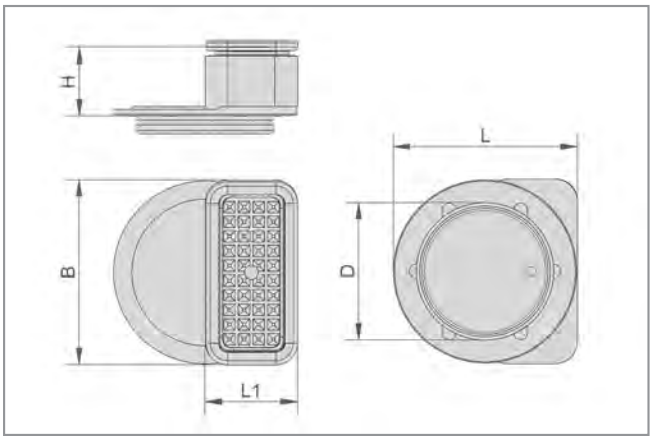
Type	Dimensions in mm						
	L	L1	B	B1	B2	H	D*
ISQB-G 212x212x20 SC	212	53	212	159	53	20	6

*D = internal diameter for vacuum hose

Design Data Suction Cups



ISCUP 80x80x30



ISCUP 80x40/28x30

Type	Dimensions in mm				
	L	L1	B	H	D
ISCUP 1 80x80x30	80	-	80	30	60
ISCUP 2 80x40x30	80	40	80	30	60
ISCUP 3 80x28x30	80	28	80	30	60

Clamping Solutions for Glass Working

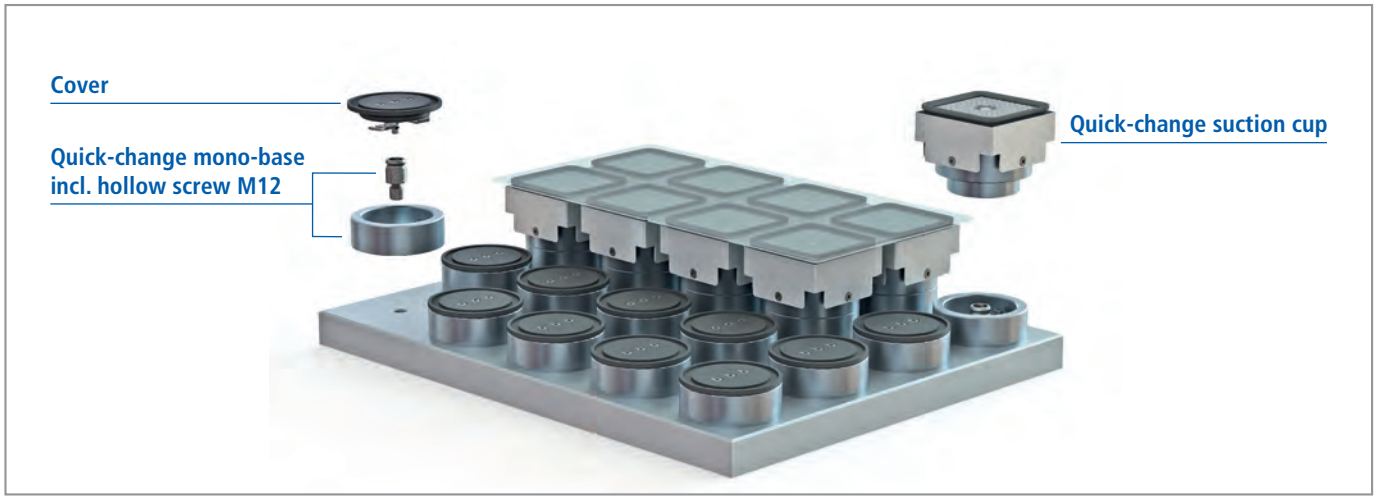
Schmalz Quick-Change System SQC for Bystronic* Machining Centers

Schmalz Quick-Change System SQC

Applications

Flexible Schmalz Vacuum Clamping System for Bystronic Glass Working Centers with 100 mm Grid

- The quick-change mono-bases are firmly connected to the machine table and the quick-change suction cups and covers are positioned according to the glass layout
- Tool-free cup changing reduces set-up times and downtimes along the hole procution line
- Simple retrofitting on existing machine tables
- High absorption of shear forces due to friction pads specifically optimized for use within the glass industry
- Machine protection as with original provided by hollow screw with safety function and crash-ring



Ordering Data Schmalz Quick-Change System SQC

- A complete clamping system consists of suction cup mountings quick-change mono-base (step 1), quick-change suction cups (step 2) and covers
- Overall height 80 mm (quick-change mono-base and quick-change suction cup), accurate to ±0.1 mm

Step 1: Select Suction Cup Mounting Quick-Change Mono-Base

SQC-MB 80x25.5

Quick-Change Mono-Base SQC-MB

- For mounting a single quick-change suction cup in 15° steps
- Unused mountings are closed using covers

Ordering Data Quick-change Mono-Base		
Type	**Dimensions L x B x H [mm]**	**Part no.**
SQC-MB 80x25.5	Ø 80 x 25.5	10.01.15.00696

Ordering Data Spare Parts and Accessories	
Type	**Part no.**
Hollow screw M12 x 35	10.01.15.00671
Cover for quick-change mono-base	10.01.15.00698

*Bystronic is a registered and protected brand name. The items listed here are products of J. Schmalz GmbH that have been designed to fit Bystronic machining centers.

Clamping Solutions for Glass Working

Schmalz Quick-Change System SQC for Bystronic* Machining Centers

Step 2: Select Quick-Change Suction Cup

SQC-C-VI-80x80x54.5-ST-VZ-PYR-85

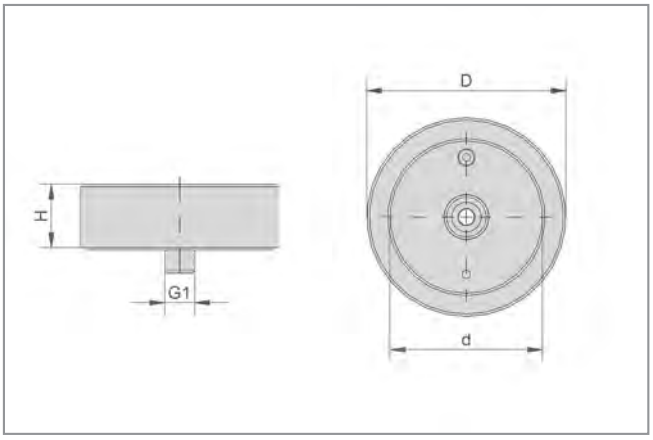
Quick-Change Suction Cup SQC-C

- Quick-change suction cup for quick-change mono-base with different designs

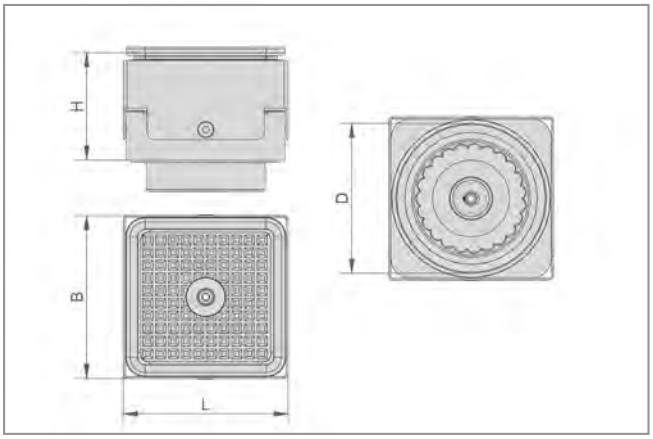
Ordering Data Quick-Change Suction Cup

Type	Design	Suction area L x B [mm]	Part no.
SQC-C-VI-80x80x54.5-ST-VZ-PYR-85	rectangular	80 x 80	10.01.15.00676
SQC-C-RU-80x54.5-AL-PYR-85	round	Ø 80	10.01.15.00774
SQC-C-VI-80x40x54.5-AL-PYR-85	rectangular	80 x 40	10.01.15.00765
SQC-C-TRI-90x90x90x54.5-AL-PYR-85	triangular	80 x 90	10.01.15.00771
SQC-C-VI-80x80x54.5-AL-PYR-85	rectangular	80 x 80	10.01.15.00790

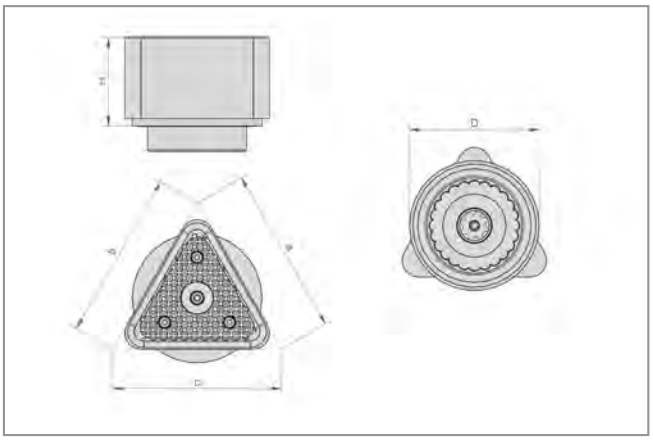
Design Data Quick-Change System SQC



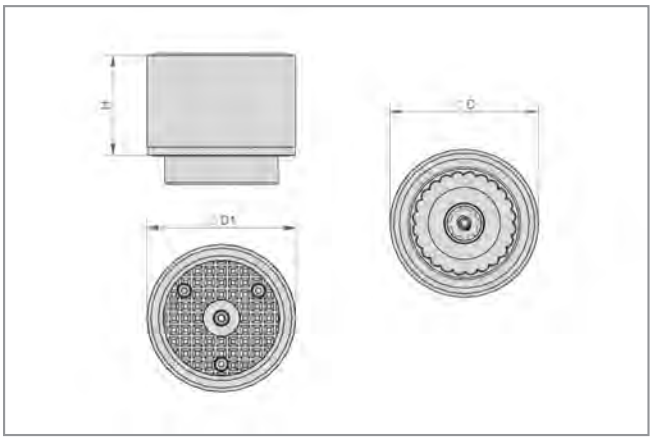
SQC-MB 80x25.5



SQC-C-VI-80x80x54.5…PYR-85



SQC-C-TRI-90x90x90x54.5-AL-PYR-85



SQC-C-RU-80x54.5-AL-PYR-85

Type	Dimensions in mm									
	L	B	H	D	D1	d	a	b	c	G1
SQC-MB 80x25.5	-	-	25,5	80	-	61	-	-	-	M12
SQC-C-VI-80x80x54.5-ST-VZ-PYR-85	80	80	54,5	80	-	-	-	-	-	-
SQC-C-RU-80x54.5-AL-PYR-85	-	-	54,5	80	80	-	-	-	-	-
SQC-C-VI-80x40x54.5-AL-PYR-85	80	80	54,5	80	-	-	-	-	-	-
SQC-C-TRI-90x90x90x54.5-AL-PYR-85	-	-	54,5	80	-	-	90	90	90	-
SQC-C-VI-80x80x54.5-AL-PYR-85	80	80	54,5	80	-	-	-	-	-	-

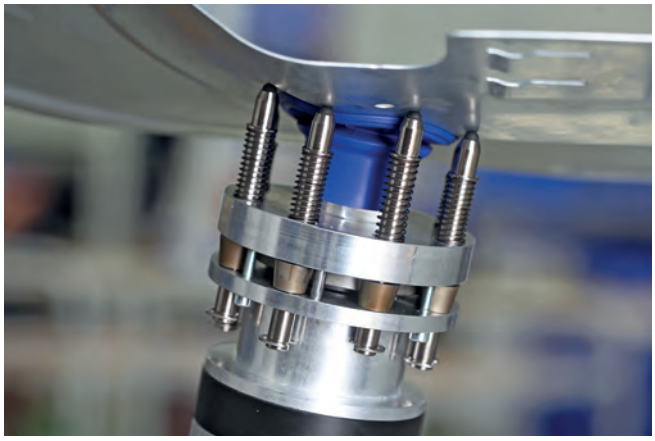
*Bystronic is a registered and protected brand name. The items listed here are products of J. Schmalz GmbH that have been designed to fit Bystronic machining centers.

3D Clamping Systems

Complex geometries under control

Workpieces with uneven, rounded or curved contours present a new challenge for clamping technology. With the Schmalz Basic Holding Fixture clamping system, complex components for CNC machining and measurement processes can be clamped without a problem. Mobile and height adjustable clamping elements as well as quick-change suction cups enable optimum adaptation of the clamping system for a wide variety of surfaces, contours and materials.

3D Clamping Systems
Basic Holding Fixture BHF



Basic Holding Fixture BHF shown here clamping a car body sheet

Applications

Universal Clamping of Complex Shaped, Rigid Workpieces in a Wide Variety of Materials

- For use with CNC laser and milling processes in the woodworking, metal, plastics and fiber composite industry
- Manual processing and finishing of components, for example during sawing, drilling or sanding processes
- Manufacturing master forms from Ureol when working with models
- For use on flat tables, T nut tables or other types of machine table in combination with Schmalz Steel-Plate (see page 10)
- Flexible manual adjustment of stroke and swivel angle
- High and easily adjustable degree of freedom in all axes

Design

Suction cup
Various geometries for optimal adaptability

Clamping lever
Quickly secures the angle set

Ball joint
Simple adjustment of angle of inclination

Clamping lever
Quick fixes the height set securely

Star grip
Precise height adjustment, securely fixed using clamping lever

Magnetic baseplate
Simple positioning and pre-fastening, even without activated operating vacuum

Compressed air connection

Video: Flexible Clamping in Just a Few Steps

1.
Position Uni-Base

2.
Set incline and height

3.
Position workpiece

4.
Activate vacuum – done!

Watch video:
www.schmalz.com/bhf-video

3D Clamping Systems
Basic Holding Fixture BHF

Ordering Data Basic Holding Fixture

• A complete clamping system consists of Uni-Base suction cup mounting (step 1) and suction cups (step 2)

Step 1: Select Suction Cup Mounting Uni-Base

Uni-Base for Innospann Steel-Plate

Uni-Base UB

• For smooth surfaces with hose connection (UB…G) or for Innospann Steel-Plate (UB…ISST)
• Pre-fastening on machine table using vacuum or magnetic force

Ordering Data Uni-Base

Type	Stroke [mm]	Swivel angle [degrees]	Dimensions L x B x H [mm]	Part no.
UB 135x135x156 29.5 15 G	30	max. 15°	135 x 135 x 155	10.01.15.00571
UB 135x135x156 29.5 15 ISST	30	max. 15°	135 x 135 x 155	10.01.15.00564

Step 2: Select Suction Cup

SCB 63x119 KG-60 NBR 10 IS BHF

Suction Cup Balance SCB

• Suction cup with angle compensation for 3D freeform surfaces
• Depressurized fixed workpiece support

Ordering Data Suction Cup

Type	Suction area Ø [mm]	Stroke [mm]	Workpiece angle [degrees]	Part no.
SCB 63x119 KG-60 NBR 10 IS BHF	63	10	max. 10°	10.01.15.00572
SCB 117x125 PYR-85 NBR 15 IS BHF	117	8	max. 15°	10.01.15.00719

Ordering Data Spare Parts

Type	Suitable for...	Part no.
Bellows suction pad SABT-C	SCB 63x119 KG-60 NBR 10 IS BHF	10.01.06.01878

SCB 117x125 PYR-85 NBR 15 IS BHF

RSC 85x120 VU1 40 IS BHF

Reference Suction Cup RSC

• Reference suction cup with angle compensation for 3D freeform surfaces
• Rounded surface for referencing

Ordering Data Reference Suction Cup

Type	Suction area Ø [mm]	Stroke [mm]	Workpiece angle [degrees]	Part no.
RSC 85x120 VU1 40 IS BHF	85	21	max. 40°	10.01.15.00587

3D Clamping Systems
Basic Holding Fixture BHF

Suction cups ISCUP

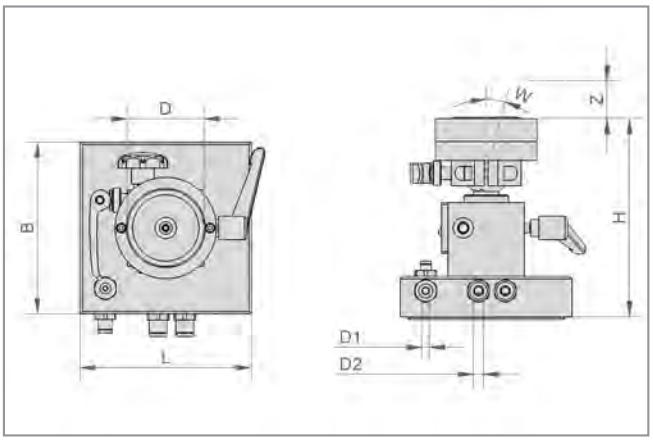
Innospann Suction Cup ISCUP

- Plastic suction cup with two dimensional suction area
- Angle compensation via Uni-Base if necessary

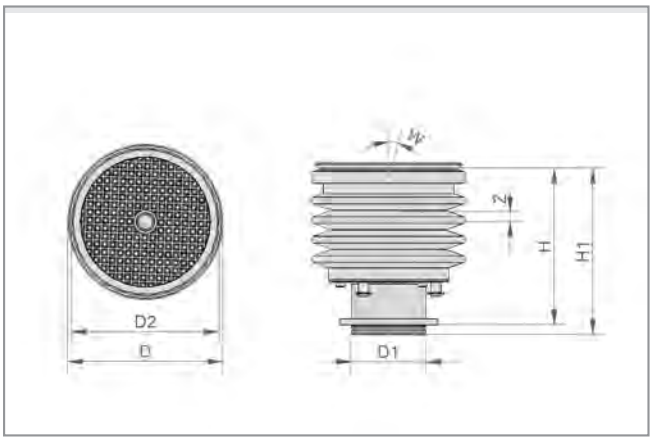
Ordering Data Suction Cup

Type	Suction area L X B [mm]	Height [mm]	Part no.
ISCUP Cup 1 80x80x30	80 x 80	30	10.01.15.00003
ISCUP Cup 2 80x40x30	80 x 40	30	10.01.15.00004
ISCUP Cup 3 80x28x30	80 x 28	30	10.01.15.00005

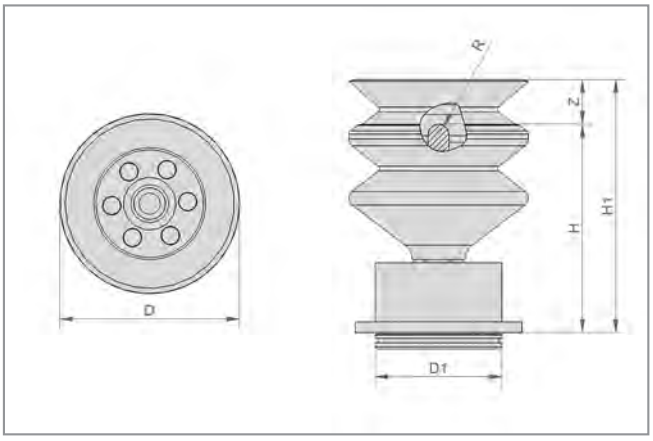
Design Data Basic Holding Fixture



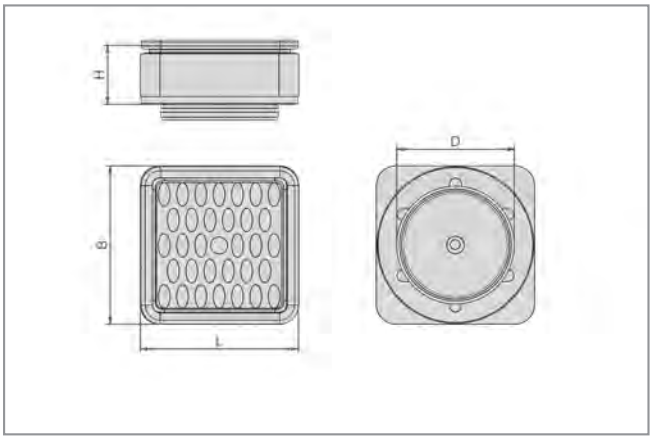
UB 135x135x156 29.5 15 G…ISST



SCB 117x125 PYR-85 NBR 15 IS BHF



RSC 85x120 VU1 40 IS BHF



ISCUP Cup 1…3

Type	Dimensions in mm									
	L	B	H	H1	D	D1	D2	R	Z	W
UB 135x135x156 29.5 15 G	135	135	155	-	60	6	8	-	30	15°
UB 135x135x156 29.5 15 ISST	135	135	155	-	60	6	-	-	30	15°
SCB 63x119 KG-60 NBR 10 IS BHF	-	-	110	119	89	60	63	-	20	10°
SCB 117x125 PYR-85 NBR 15 IS BHF	-	-	130	138	123	60	104	-	8	15°
RSC 85x120 VU1 40 IS BHF	-	-	98.5	119.5	85	60	-	5	21	40°
ISCUP Cup 1 80x80x30	80	80	30	-	60	-	-	-	-	-
ISCUP Cup 2 80x40x30	80	40	30	-	60	-	-	-	-	-
ISCUP Cup 3 80x28x30	80	28	30	-	60	-	-	-	-	-

Vacuum Generation for CNC Machining Centers

Powerful. Reliable.

Easy to integrate.

The vacuum generation contributes significantly to process reliability when clamping workpieces on CNC machining centers. Schmalz has developed vacuum generators specially to meet the demands in the metal and glass working industry. These systems not only prepare the material, but also monitor and separate liquids or chips that have been sucked in.

Vacuum Generation for CNC Machining Centers

Vacuum Unit VAGG

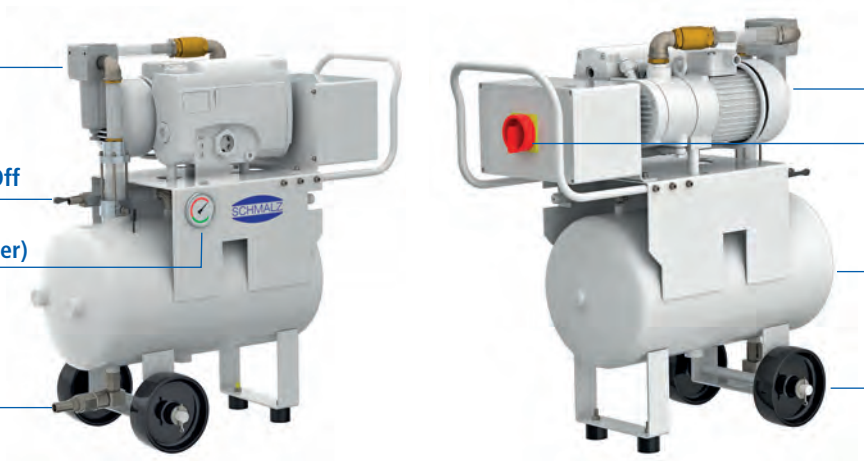
Vacuum unit VAGG

Applications

Mobile Vacuum Generation and Monitoring for Small and Medium-sized CNC Machining Centers

- Based on an oil-lubricated vacuum pump with vacuum and liquid reservoirs
- Simple and quick to install – ideal for end users who use vacuums as one of many clamping technologies
- Vacuum supply of several machines in rotation possible
- Visual and audible system monitoring
- Designed to be integrated in the machine control of the CNC machining center

Design



Ordering Data Vacuum Unit

Selection Aid Clamping area	Recommended suction capacity	Vacuum unit
< 1,200 cm²	6 m³/h	VAGG-6-L
< 5,000 cm²	18 m³/h	VAGG-18-L
< 1 m²	40 m³/h	VAGG-40-L
< 2 m²	63 m³/h	VAGG-63-L

Vacuum unit VAGG 6

Vacuum unit VAGG 6

- Reservoir volume 10 l
- Can be used in USA and Canada (VAGG…UC)

Ordering Data Vacuum Unit Type	Dimensions L x B x H [mm]	Part no.
VAGG 6 AC3 10	700 x 335 x 700	10.01.27.00120
VAGG 6 AC3 10 UC	700 x 335 x 700	10.01.27.00798

Vacuum Generation for CNC Machining Centers

Vacuum Unit VAGG

Ordering Data Vacuum Unit

Vacuum unit VAGG 18

Vacuum Unit VAGG 18

- Reservoir volume 30 l
- Can be used in USA and Canada (VAGG…UC)

Ordering Data Vacuum Unit Type	Dimensions L x B x H [mm]	Part no.
VAGG 18 AC3 30	742 x 360 x 767	10.01.27.00121
VAGG 18 AC3 30 UC	742 x 360 x 767	10.01.27.00799

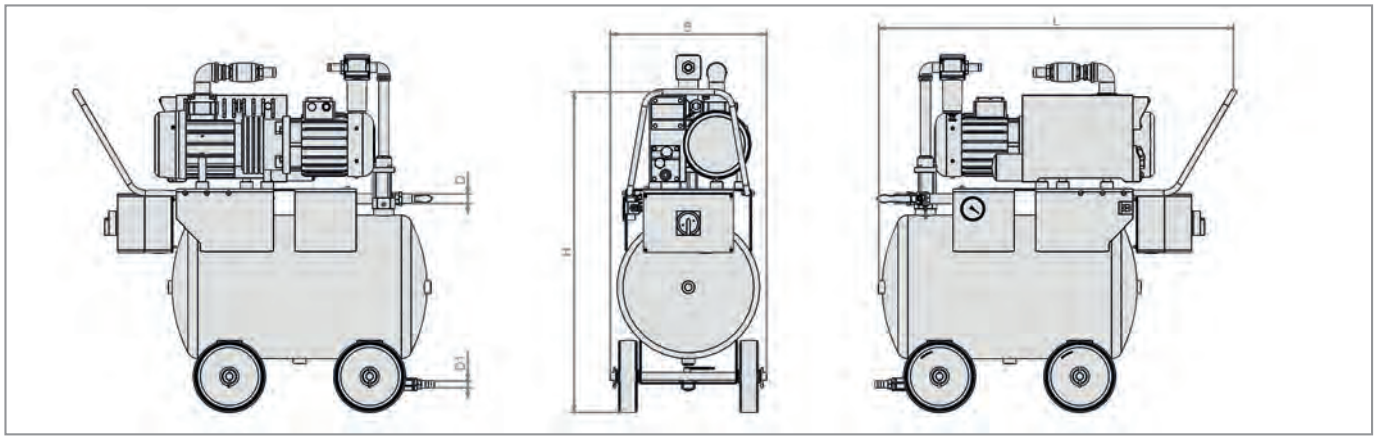
Vacuum unit VAGG 40/63

Vacuum Unit VAGG 40/63

- Reservoir volume 80 l
- Can be used in USA and Canada (VAGG…UC)

Ordering Data Vacuum Unit Type	Dimensions L x B x H [mm]	Part no.
VAGG 40 AC3 80	1,016 x 435 x 900	10.01.27.00122
VAGG 40 AC3 80 UC	1,016 x 435 x 900	10.01.27.00800
VAGG 63 AC3 80	1,016 x 435 x 900	10.01.27.00123
VAGG 63 AC3 80 UC	1,016 x 435 x 900	10.01.27.00801

Design and Technical Data Vacuum Unit



VAGG 6 to 63

Type	Dimensions in mm					Weight [kg]	Reservoir volume [l]	Max. suction rate 50/60 Hz [m³/h]	Voltage 50/60 Hz [V]	Current range 50/60 Hz [A]	Rated power 50/60 Hz [kW]	Protection class
	L	B	H	D	D1							
VAGG 6	700	335	700	12	12	44	10	6.5 / 7.5	300–450 / 350–520	1.1 / 1.15	0.25 / 0.3	IP 54
VAGG 18	742	360	767	12	12	60	30	18 / 21	330–450 / 390–520	1.95 / 1.95	0.55 / 0.66	IP 54
VAGG 40	1,016	435	900	25	25	100	80	40 / -	360–440 / -	2.8 / -	1.1 / -	IP 54
VAGG 63	1,016	435	900	25	12	105	80	63 / -	360–440 / -	3.6 / -	1.5 / -	IP 54
VAGG 6 UC	700	335	700	12	12	44	10	6.5 / 7.5	300–450 / 350–520	1.1 / 1.15	0.25 / 0.3	IP 54
VAGG 18 UC	742	360	767	12	12	60	30	18 / 21	330–450 / 390–520	1.95 / 1.95	0.55 / 0.66	IP 54
VAGG 40 UC	1,016	435	900	25	25	100	80	40 / 48	380–415 / 440–460	3.5 / 3.5	1.5 / 1.7	IP 54
VAGG 63 UC	1,016	435	900	25	25	105	80	63 / 76	380–415 / 440–460	4.7 / 4.7	2.0 / 2.4	IP 54

Vacuum Generation for CNC Machining Centers

Vacuum Operation Center VOC

Vacuum Operation Center VOC

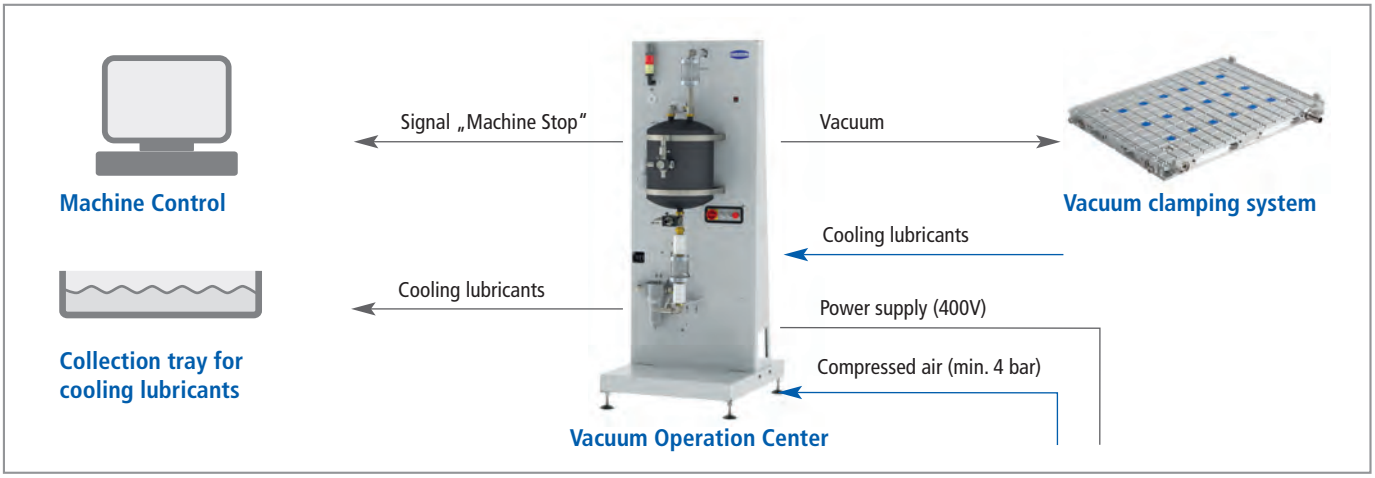
Applications

Central Vacuum Management for CNC Machining Centers with Vacuum Clamping Technology

- Machine manufacturers and OEMs receive a complete system ready to connect
- Specifically for evacuation of gaseous media containing liquids
- Liquid sucked in, such as cooling lubricants are separated and automatically returned to the machining cycle
- Audible, visual and electronic system monitoring for maximum security and control in standard machine operation

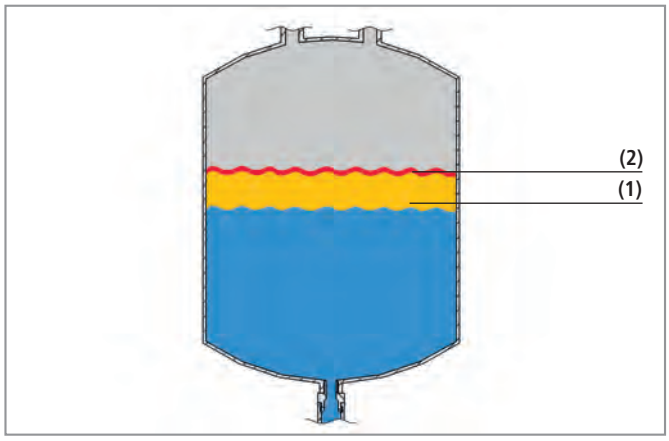
Design

Interfaces and function



Vacuum Generation for CNC Machining Centers

Vacuum Operation Center VOC



Switching zone in liquid reservoir

Automatic Fill Level Monitoring

- A fill level sensor monitors the liquid level in the reservoir
- Signal lamps and a signal horn provide visual and audible monitoring to warn of critical system states

Critical fill level reached (1)

- Yellow signal lamp flashes
- Signal horn sounds

Maximum fill level reached (2)

- Emergency shutdown activated
- Red signal lamp remains illuminated
- Signal horn stops

Automatic Liquid Recirculation

- The liquids sucked in (cooling lubricants) are separated, collected in the reservoir and constantly returned to the machining cycle
- The operating vacuum is maintained
- Machining process runs without interruption

Automatic Vacuum Monitoring and Emergency Stop

- The operating vacuum is constantly monitored
- If vacuum value falls below the preset value or the preset value is not achieved, the VOC notifies the machine control that the machining process should be interrupted
- The VOC emits audible and visual warning signals (permanent red light)

Ordering Data Vacuum Operation Center

Vacuum Operation Center VOC

Vacuum Operation Center VOC

- CEE plug and potential-free contact for integration in the machine monitoring process included in delivery
- Other suction capacities and customer specific configurations on request

Ordering Data Operation Center

Type	Suction rate [m³/h]	Dimensions L x B x H [mm]	Part no.
VOC-AD-S-40	40	1,000 x 842.6 x 2,200	10.01.27.00659
VOC-AD-S-63	63	1,000 x 842.6 x 2,200	10.01.27.00676
VOC-AD-S-100	100	1,000 x 842.6 x 2,200	10.01.27.00678

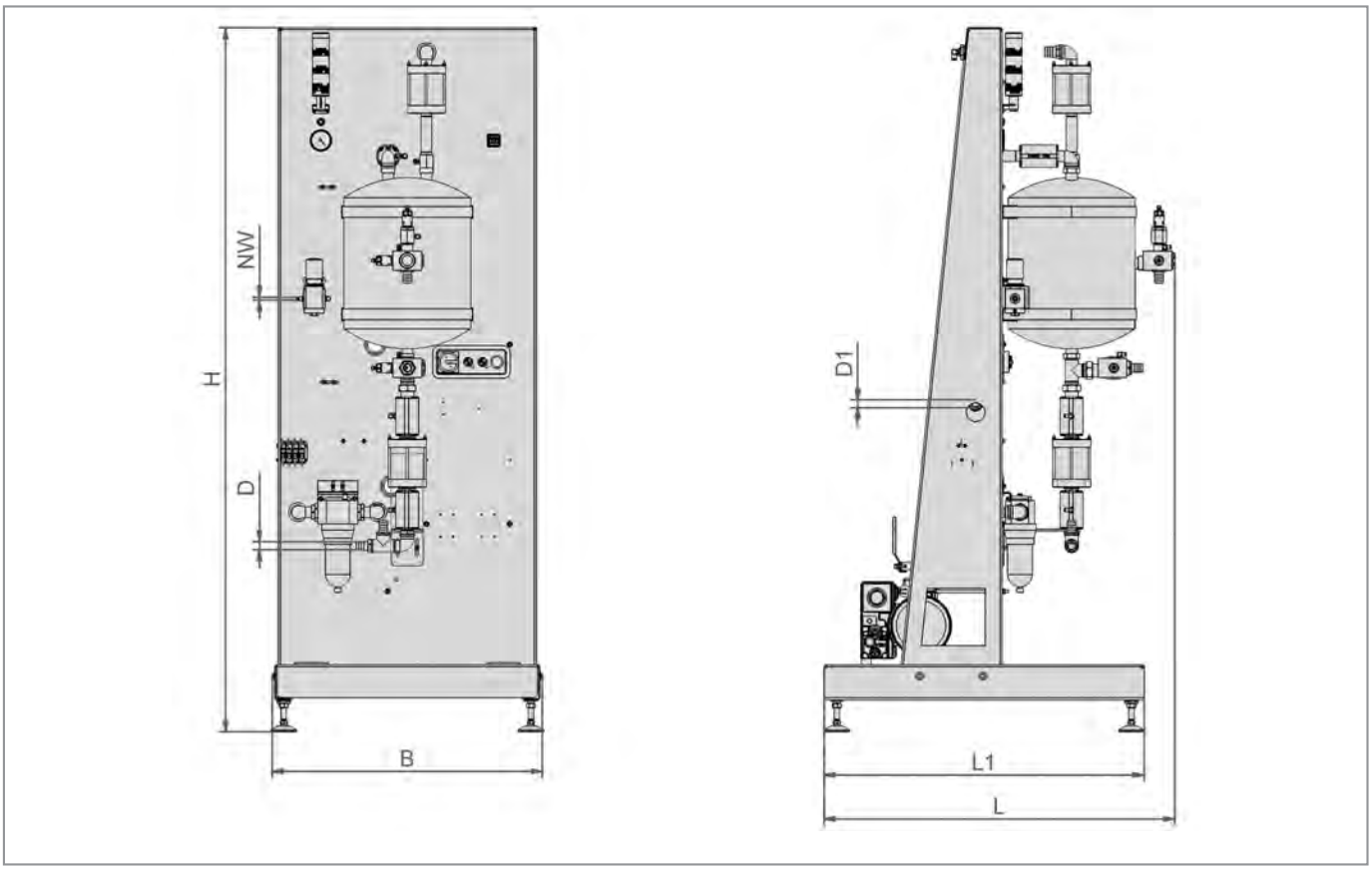
Vacuum Generation for CNC Machining Centers

Vacuum Operation Center VOC

Technical Data Vacuum Operation Center

Type	Reservoir [l]	Suction capacity pump [m³/h]	Liquid recirculation [l/min]	Voltage at 50/60 Hz [V]	Rated power at 50/60 Hz [kW]	Max. vacuum [bar]
VOC-AD-S-40	60	40 / 48	3.5	380–415 / 440–460	1.5 / 1.7	-980
VOC-AD-S-63	60	63 / 76	3.5	380–415 / 440–460	2.0 / 2.4	-980
VOC-AD-S-100	60	100 / 100	3.5	380–415 / 440–460	2.7 / 3.4	-980

Design Data Vacuum Operation Center



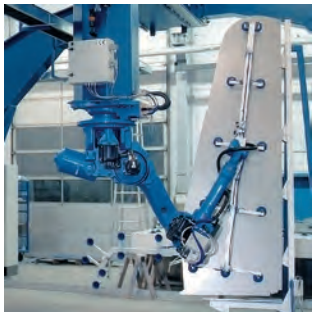
VOC … 40 to 100

Type	Dimensions in mm						
	L	L1	B	H	D	D1	NW
VOC-AD-S-40	1,095.25	1,000	842.6	2,200	25	25	7.2
VOC-AD-S-63	1,095.25	1,000	842.6	2,200	25	25	7.2
VOC-AD-S-100	1,095.25	1,000	842.6	2,200	25	25	7.2

The Full Range of Vacuum Technology

All from a Single Source

Vacuum Components



Vacuum Gripping Systems

Vacuum Technology for Automation

Schmalz vacuum components and gripping systems enable significant increases in productivity for automated processes. Whether in machine construction or in the robotics industry, Schmalz customers benefit from expert systems consulting and groundbreaking, innovative solutions in all areas of automation technology.

The variety of workpieces handled by vacuum extends from fragile small parts, such as electronic chip or solar wafers, to furniture parts or heavy steel sheets.

Our specialists' expertise guarantees efficient and economical solutions for the automation of your processes; from the individual components, via the complex gripping system, through to the customer-specific applications.

www.schmalz.com/**components**

www.schmalz.com/**gripping-systems**

Vacuum Lifters and Crane Systems

Schmalz vacuum lifting devices help to ensure an ergonomic and efficient workplace; whether it's handling light goods in high cycle frequency or heavy and unwieldy loads, vacuum tube lifters and lifting devices from Schmalz help to prevent health problems caused by lifting and carrying.

Schmalz offers complete handling solutions together with an aluminum crane system, perfectly adapted for the purpose. The overhead crane systems and jib cranes feature great ergonomics and perfect low-friction operation. This allows even heavy loads to be moved with ease.

www.schmalz.com/**handling-systems**

Vacuum tube lifter Jumbo with aluminum jib crane

Vacuum lifting devices VacuMaster

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On-site Expertise in Over 50 Countries

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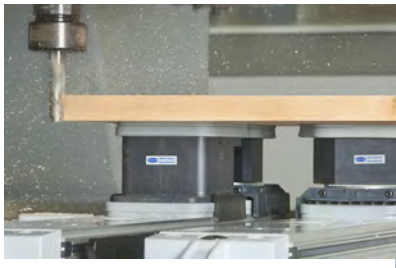

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