

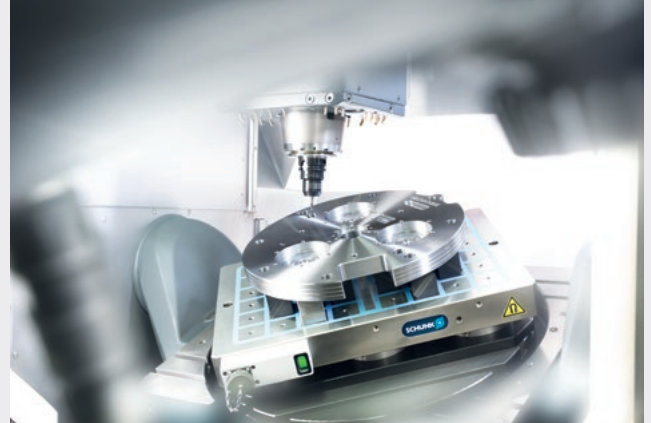


MAGNOS MFRS

Magnetic clamping technology for 5-sided rough and fine machining

Electropermanent magnetic chucks with deep and evenly penetrating magnetic clamping force for individual workpiece clamping

MAGNOS MFRS stands for powerful clamping of ferromagnetic workpieces and features a deeply penetrating magnetic field. In combination with pole extensions, large workpieces can be reliably clamped from five sides without interfering contours while maintaining high cutting parameters. A status display ensures that the clamping status of the magnetic chuck is visible at all times. The MFRS modular system also offers the option of combining and expanding several magnetic chucks depending on the application and machine tool.

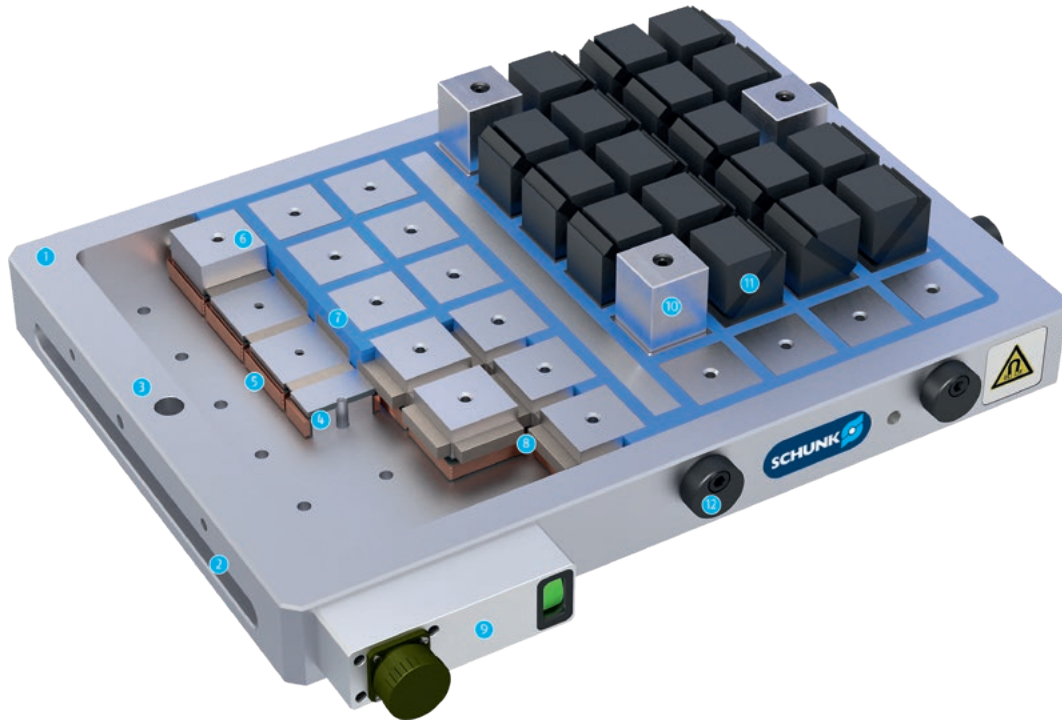


Advantages – Your benefits

- + 5-sided workpiece machining in one set-up**
Higher accuracy by setting up once and at best accessibility of the machine spindle
- + Even permanent magnetic clamping force across the entire workpiece**
Low deformation and vibration clamping of the workpieces
- + Low vibration clamping**
Improved surfaces and significantly increased precision
- + Deformation-free clamping**
No deformation and internal forces in the workpiece due to the clamping force
- + Visual status display**
Visual display of the clamping status for reliable clamping and maximum process reliability
- + Control unit compatible with machine control system**
Can also be used in automated applications
- + Mono-block design**
Compact and robust design with high rigidity
- + The modular principle**
Depending on the application or type of machine, the magnetic chucks can be combined or extended in accordance with the modular design principle
- + Clamping within a few seconds**
Shortest possible setup times and a resulting increase in productivity
- + State-of-the-art electropermanent technology for one-time energy supply for MAG/DEMAG process**
Energy-efficient and reliable clamping of the workpieces
- + Large selection of accessories**
Optimal adaptation possibilities in the respective clamping task

Function MFRS

MAGNOS MFRS magnetic chucks require only a short electrical pulse, which briefly applies power to the coils. This pulse reverses the polarity of the reversible AlNiCo magnets. Due to the special arrangement of the neodymium permanent magnets, the magnetic field is subsequently short-circuited in the magnetic chuck or guided outwards into the workpiece, and the magnetic field is amplified, depending on the state. Pole extensions on the magnetic chuck ensure that the workpiece can be accurately clamped according to its characteristics and can be later machined from five sides.



- 1 Stable base body**
For optimum clamping results with an additional coating against corrosion
- 2 Mounting groove**
For mounting the magnetic chuck via clamping claws
- 3 Mounting hole**
For direct mounting of the magnetic chuck to the machine table
- 4 Invertible AlNiCo-magnets**
Embedded in the coil – for activating or deactivating of the magnetic chuck
- 5 Coil body, insulated version**
For transmitting pulses for activation or deactivation of the magnetic chuck
- 6 Steel pole**
For transferring the magnetic field to the workpiece and for mounting the pole extensions
- 7 Synthetic resin casting**
For sealing the magnetic chuck and sealing cavities
- 8 Neodymium magnets**
Non-pole reversing permanent magnets
- 9 Connection housing with status display**
For displaying the clamping state and connection to the KEH plus control unit
- 10 Fixed pole extensions**
For fixed support of the workpieces via a 3-point support for OP10 machining or full-surface support for OP20 machining
- 11 Flexible pole extensions**
For contact to deformed or uneven workpieces, in particular during OP10 machining
- 12 Round workpiece stops**
For pre-positioning of workpieces

Stable base body

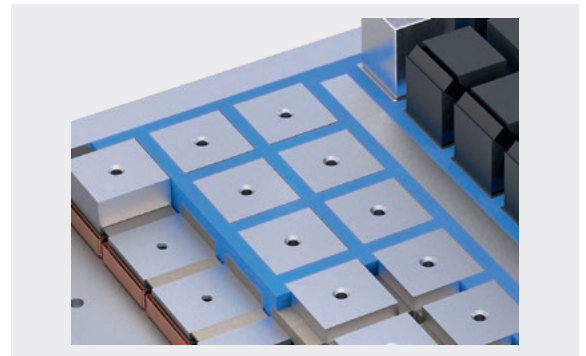
The stable base body is made in monoblock design in the latest machining centers. Its stability, rigidity and robustness prevent vibrations from forming in later operation, thus ensuring outstanding machining results, and a long service life for the magnetic chuck.

1 Monoblock design of the base body



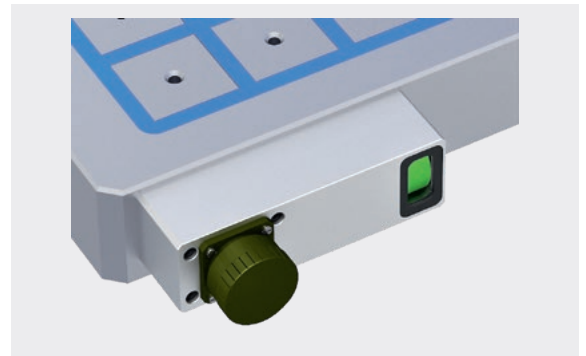
Synthetic resin filling

The synthetic resin filled under vacuum guarantees a unique insulation and magnetic life span of each plate. By means of this special high-end sealing process, the spaces between the poles are filled with high-strength synthetic resin. This resin protects the interior components of the magnetic chuck from corrosion.



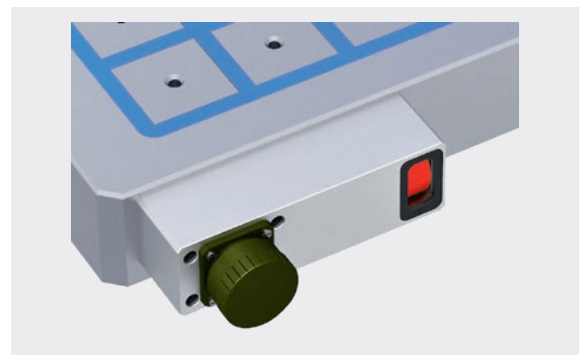
Visual display – MAG status

The magnetic chuck in the MAG-Mode is green on the status display. That means that the workpiece is clamped and the machining may be started.



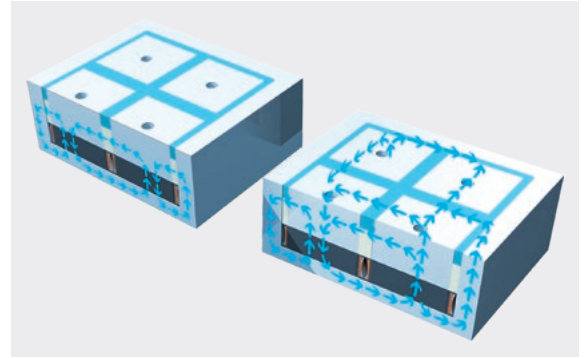
Visual display – DEMAG status

The magnetic chuck in the DEMAG-Mode is red on the status display. That means that the workpiece is not clamped and the machining may not be started.



Magnetic double cycle

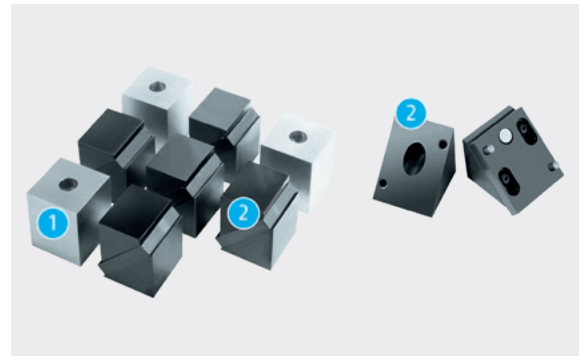
In order to allow the square pole plates magnetic field to be conducted outward towards the workpiece (clamping phase) or short-circuit it inside the plates (release phase), there are static, permanent magnets on the sides of the poles, and reversible-polarity magnets on the underside. Windings around the reversible-polarity magnets generate a temporary electromagnetic field that reverses the polarity of the magnets in a fraction of a second in order to magnetize or demagnetize them.



Perfect support for workpieces

MAGNOS pole extensions ensure that the magnetic chuck locating surfaces are adapted to the workpiece. They enable machining from five sides and facilitate the machining of through-holes.

- 1 **Fixed pole extensions**
Serve either as a 3-point support for OP10 or full-surface support for OP20 machining.
- 2 **Flexible EASYTURN pole extensions**
Adapt horizontally or vertically to the workpiece – depending on requirements.



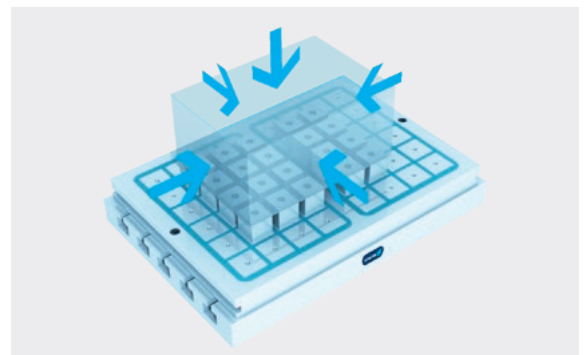
EASYTURN pole extensions – for vertical or horizontal use

EASYTURN pole extensions align themselves to the shape of the workpiece. Due to the unique modular construction of the EASYTURN pole extensions, the magnetic clamping force can be redirected along the horizontal or vertical axis, depending on the way the workpiece is to be clamped.



5-sided workpiece machining in one set-up

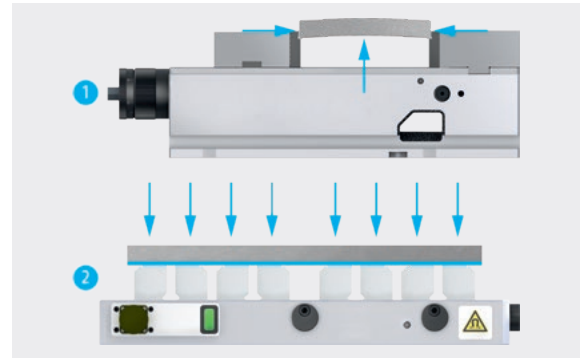
As the workpieces can be placed flat onto the MAGNOS magnetic chuck, all five sides of the workpiece can be easily accessed and machined in one single setup.



No deformation due to gentle clamping

Due to the magnetic force of MAGNOS thin-walled and sensitive workpieces can be clamped gently and securely. There is no crushing due to isolated points of stress, and none of the surface damage which can occur when using conventional clamping devices.

- ① Workpiece clamping with conventional clamping devices
- ② Workpiece clamping with MAGNOS



Adapts perfectly to the contours of the workpiece

Workpieces of any structure can be perfectly clamped with MAGNOS pole extensions. The pole extensions perfectly adapt to the workpiece contour – the workpiece has an underlay and is stably positioned on the extensions for 5-sided all-round machining.



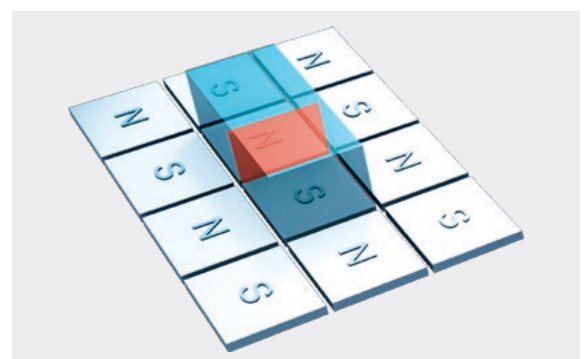
Shortest possible setup times and a resulting increase in productivity

With MAGNOS, the workpiece can be clamped within seconds. It is no longer necessary to spend time on the fine adjustment of the clamping elements or on changing the set-up of the workpiece while it is being processed – nor are time-intensive set-up periods and machine downtimes required.



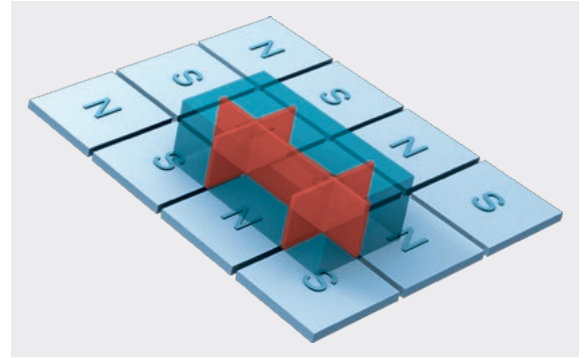
Increasing clamping force by covering poles – two poles

Simply covering one north pole and one south pole is the best way to maintain the holding force acting in the magnets' main force direction in order to prevent the workpiece from being pulled off. This allows for good force absorption against shifting



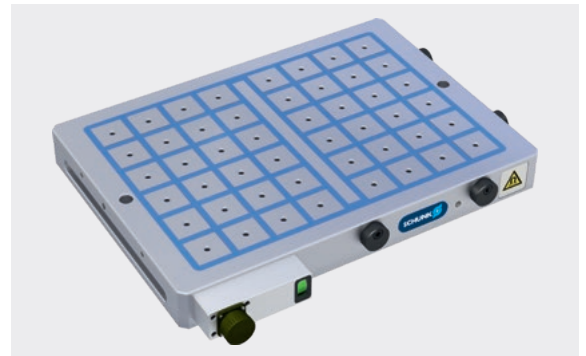
Increasing clamping force by covering poles – six poles

The multiple, maximum covering of the north and south poles generates an excellent holding force to prevent the workpiece from being pulled off. In this case and due to the concentration of the force field lines the best moving force absorption is achieved.



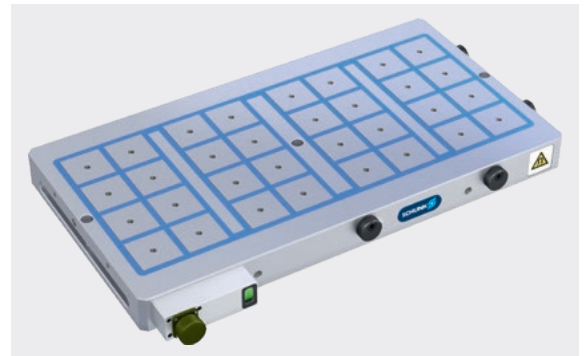
SCHUNK MAGNOS pole size 50

This type, with 50 x 50 mm square poles, is characterized by its extraordinary flexibility in the clamping range. The magnetic chuck is perfectly suitable for machining of thin-walled and smaller workpieces (minimum thickness 8 mm or more). Highly complex workpieces can be clamped more easily and more flexibly because the poles are smaller dimensioned.



SCHUNK MAGNOS pole size 70

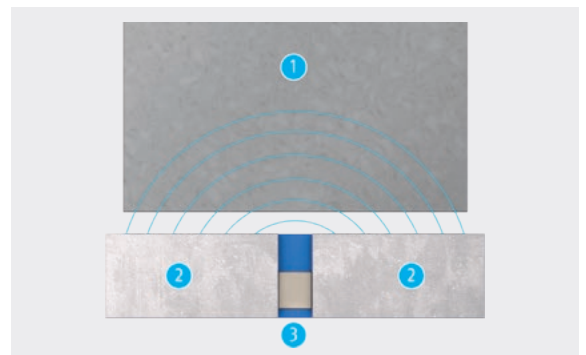
The working surface is fitted with 70 x 70 mm square poles. This type is suitable for machining of medium-sized to large workpieces (minimum thickness 16 mm or more) with rough or smooth surfaces.



Magnetic chuck type MFRS-A1

MFRS-A1 magnetic chucks with a high compact performance of acting magnetic force are generally sufficient for 80% of all applications.

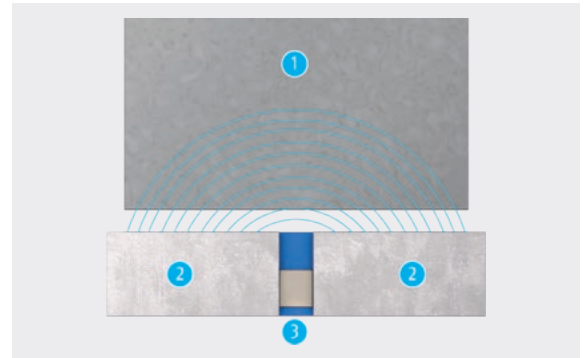
- ① Workpiece
- ② Poles MFRS-A1
- ③ MFRS-A1



Magnetic chuck type MFRS-A2

MFRS-A2 magnetic chucks have an even higher density of magnetic field penetrating into the workpiece. These are used primarily for workpieces with very uneven surfaces (die-cast and forged parts) and thus a larger air gap, as more magnetic field lines stay in contact with the workpiece.

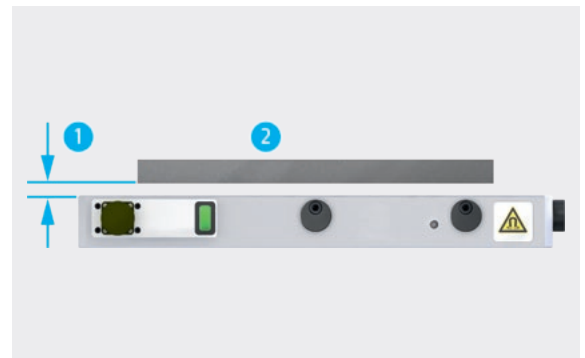
- 1 Workpiece
- 2 Poles MFRS-A2
- 3 MFRS-A2



Definition of air gap

The distance between the magnetic chuck or the pole extensions to the workpiece is called air gap. For a pre-machined workpiece with e.g. a milled surface, the air gap is considerably smaller than for a workpiece which is only sawn. The larger the air gap, the weaker is the magnetic clamping force between magnetic chuck and workpiece.

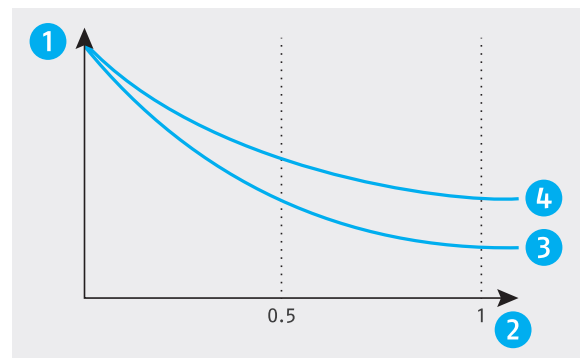
- 1 Air gap
- 2 Workpiece



Influence of the air gap on the magnetic clamping force

As the air gap increases, the resulting magnetic clamping force to the workpiece decreases. Due to the higher magnetic flow density, MFRS-A2 magnetic chucks with an increasing air gap have better clamping force characteristics than MFRS-A1 magnetic chucks.

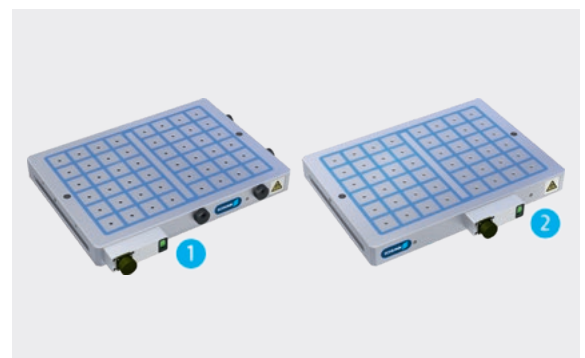
- 1 Magnetic clamping force [kN]
- 2 Air gap [mm]
- 3 MFRS-A1
- 4 MFRS-A2



Position of the connection (optional)

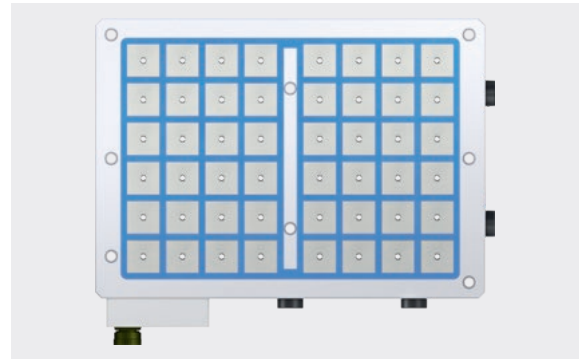
With the MAGNOS MFRS standard products, the connection of the magnetic chuck is always on the left side in the corner of the longer side. However, the position of the connection can be adjusted and shifted to meet customer-specific requirements.

- 1 Standard connection
- 2 Customized connection in the middle



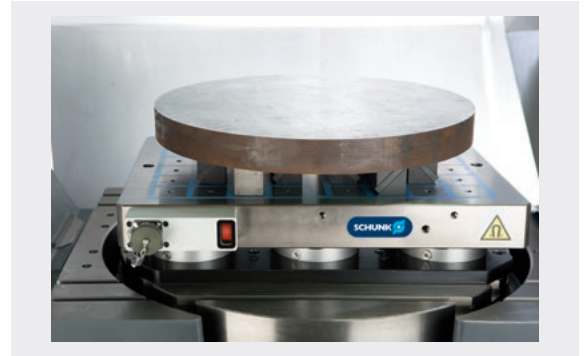
Additional mounting bores (optional)

On each magnetic chuck, as many additional bores as desired can be introduced. This can be for instance mounting holes suitable for the machine table or holes for stops. For each magnetic chuck, there is a drawing and a drilling plan. Using these drawings, bores can be subsequently introduced in the magnetic chuck as per the customer's specific requirements.



The operation in a few steps

The workpiece is positioned on the MAGNOS magnetic chuck. Using the pole extensions fully enables the workpiece to be machined from 5 sides in just one set-up.



Simplicity itself: The control unit and the magnetic chuck are connected to one another using the quick-release connector.



By pressing the green and blue buttons, the workpiece is permanently, evenly, and safely clamped in a few seconds.



Remove the quick-release connector. The magnetic chuck is self-sufficient: the magnetic clamping force holds the workpiece consistently and for an unlimited period of time.



Simplicity itself: The control unit and the magnetic chuck are connected to one another using the quick-release connector.

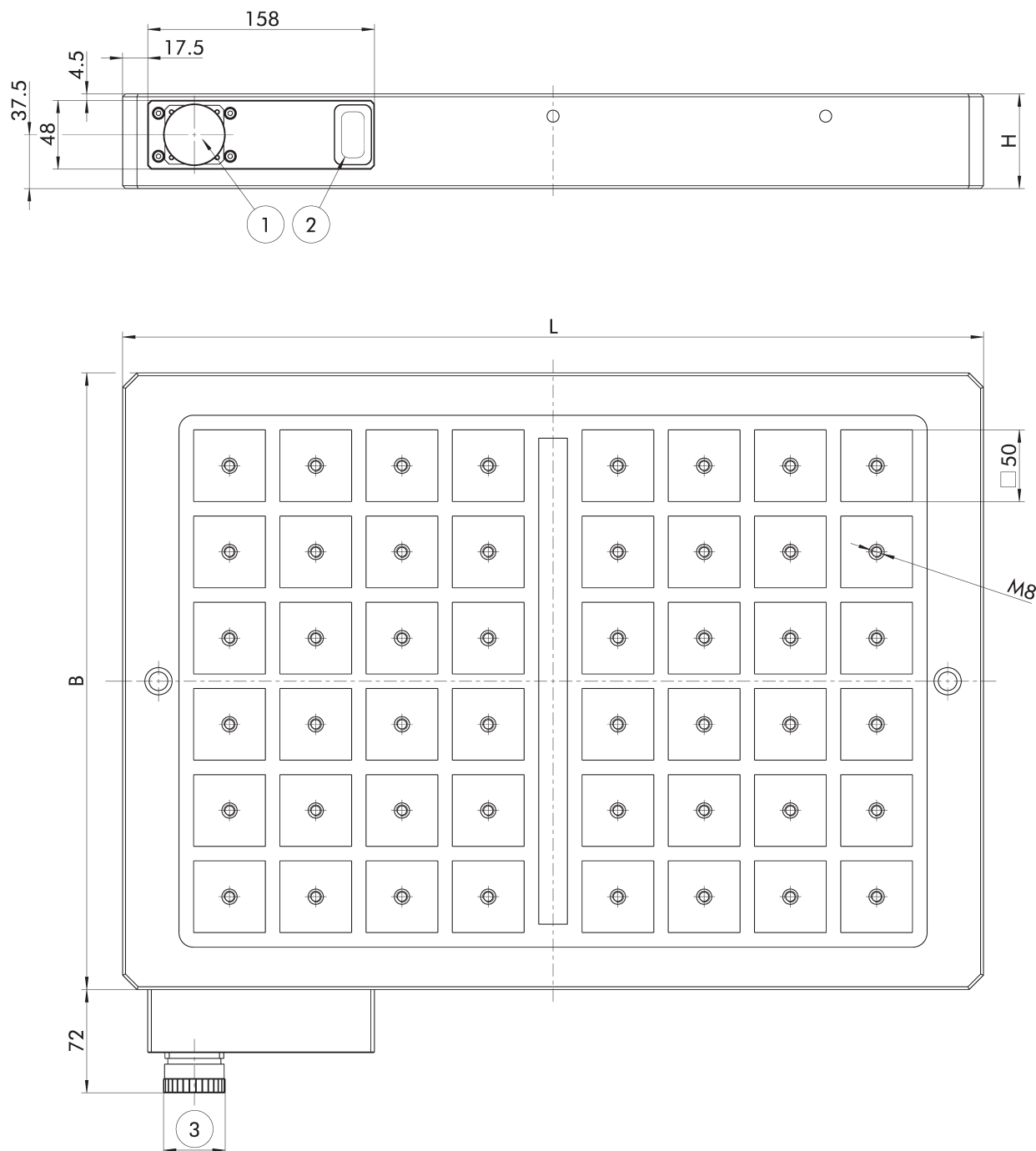


By pressing the red and blue buttons, the magnetic field is deactivated.



The magnetic field is deactivated and the workpiece can be removed from the magnetic chuck.





Subject to technical changes.

- ① Fast connection for connection cable
- ② Status display

- ③ Ø43 mm for 4-PIN connector

Technical data

Description	ID	Length L [mm]	Width B [mm]	Height H [mm]	Max. clamping force [kN]	Number of poles	Connection	Number of channels	Weight [kg]
MFRS-A1-050 315 x 315	0423410	315	315	66	63	16	4-PIN	1	50
MFRS-A1-050 430 x 315	0423411	430	315	66	94	24	4-PIN	1	65
MFRS-A1-050 500 x 315	0423412	500	315	66	94	24	4-PIN	1	75
MFRS-A1-050 600 x 315	0423413	600	315	66	126	32	4-PIN	1	95
MFRS-A1-050 430 x 430	0423414	430	430	66	141	36	4-PIN	1	85
MFRS-A1-050 600 x 430	0423415	600	430	66	188	48	4-PIN	1	120
MFRS-A1-050 800 x 430	0423416	800	430	66	236	60	4-PIN	1	160
MFRS-A1-050 500 x 500	0423417	500	500	66	165	42	4-PIN	1	115
MFRS-A1-050 600 x 500	0423418	600	500	66	220	56	4-PIN	1	145
MFRS-A1-050 800 x 500	0423419	800	500	66	275	70	4-PIN	1	180
MFRS-A1-050 1000 x 500	0423420	1000	500	66	330	84	4-PIN	1	230
MFRS-A1-050 600 x 600	0423421	600	600	66	251	64	4-PIN	1	165
MFRS-A1-050 800 x 600	0423422	800	600	66	314	80	4-PIN	1	220
MFRS-A1-050 1000 x 600	0423423	1000	600	66	377	96	4-PIN	1	270

Scope of delivery

Magnetic chuck, operating manual, CE declaration of conformity; without control unit, without pole extensions

Notes

Field of application

For machining medium-sized workpieces with medium thickness.

Maximum clamping force

The maximum clamping force is only available when all poles of the magnetic chuck are covered.

Status display

Visual display of the clamping status of the magnetic chuck for process-reliable clamping.

Green = magnetic chuck "clamped".

Red = magnetic chuck "not clamped".

Magnetic chucks of the same height

The magnetic chucks are height-adjustable ± 0.1 mm as standard.

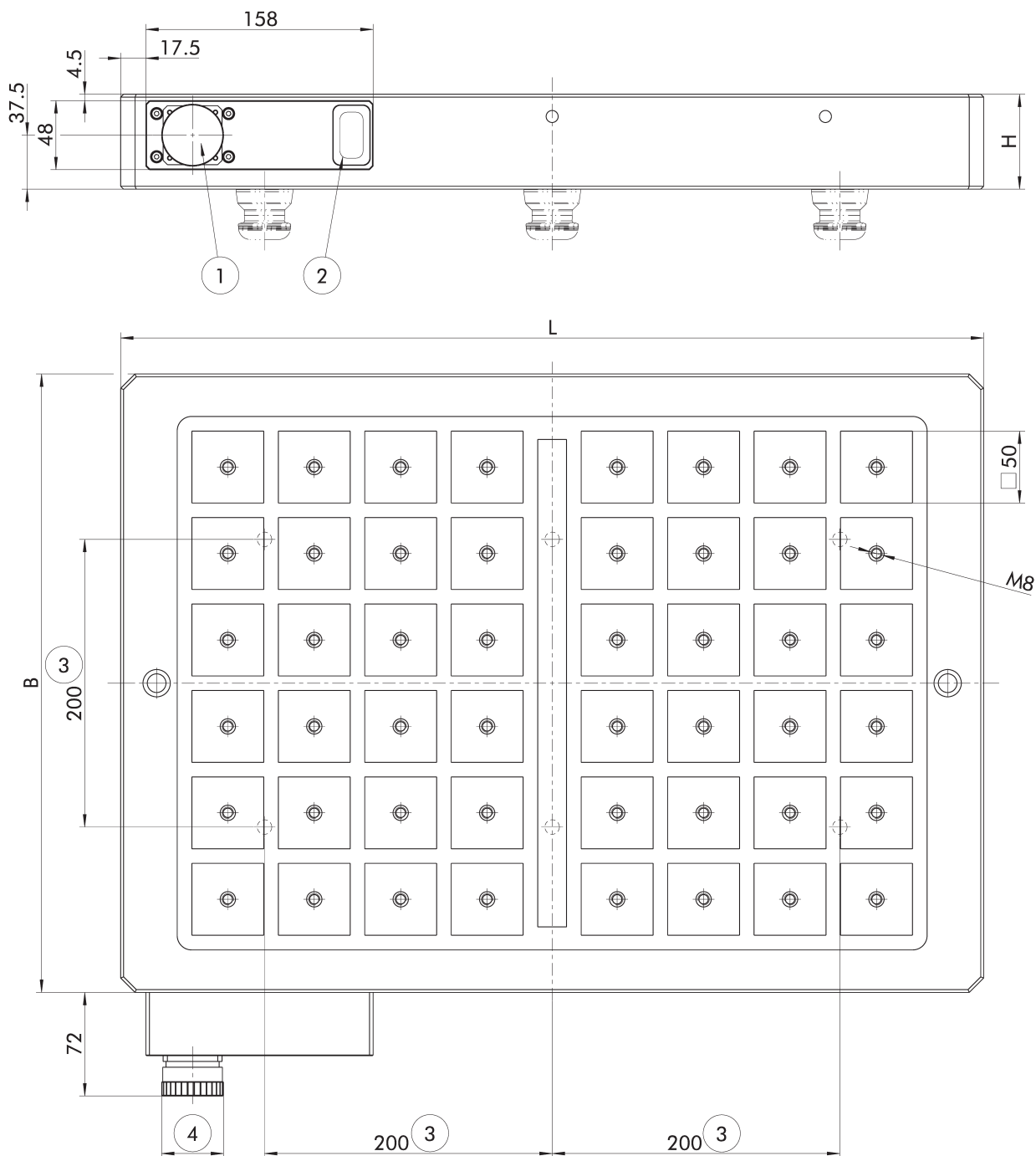
Magnetic chucks ground to an equal height (± 0.01 mm) are available on request.

Mains voltage 220 V/60 Hz

MFRS magnetic chucks with 220 V/60 Hz are available on request.

Further technical data

Pole size	Mains voltage	Min. material thickness	Min. workpiece size	IP protection class with closed cover plate	Max. working temperature
[mm]	[V]	[mm]	[mm]		[°C]
50 x 50	400/460	8	230 x 170	67	80



Subject to technical changes.

- ① Fast connection for connection cable
- ② Status display

- ③ Prepared for VERO-S quick-change pallet system
- ④ Ø43 mm for 4-PIN connector

Technical data

Description	ID	Length L	Width B	Height H	Max. clamping force	Number of poles	Connection	Number of channels	Suitable for	Weight
		[mm]	[mm]	[mm]	[kN]					[kg]
MFRS-V-A1-050 315 x 315	1301672	315	315	66	63	16	4-PIN	1	NSL3 200	50
MFRS-V-A1-050 430 x 315	1301673	430	315	66	94	24	4-PIN	1	NSL3 200	65
MFRS-V-A1-050 430 x 430	1301674	430	430	66	141	36	4-PIN	1	NSL3 400	85
MFRS-V-A1-050 600 x 430	1301675	600	430	66	188	48	4-PIN	1	NSL3 600	120
MFRS-V-A1-050 800 x 600	1301676	800	600	66	314	80	4-PIN	1	NSL3 600	220

Scope of delivery

Magnetic chuck with VERO-S interface, operating manual, CE declaration of conformity; without control unit, without pole extensions, without clamping pins

Notes

Field of application

For machining medium-sized workpieces with medium thickness.

Maximum clamping force

The maximum clamping force is only available when all poles of the magnetic chuck are covered.

Status display

Visual display of the clamping status of the magnetic chuck for process-reliable clamping.

Green = magnetic chuck "clamped".

Red = magnetic chuck "not clamped".

Magnetic chucks of the same height

The magnetic chucks are height-adjustable ± 0.1 mm as standard.

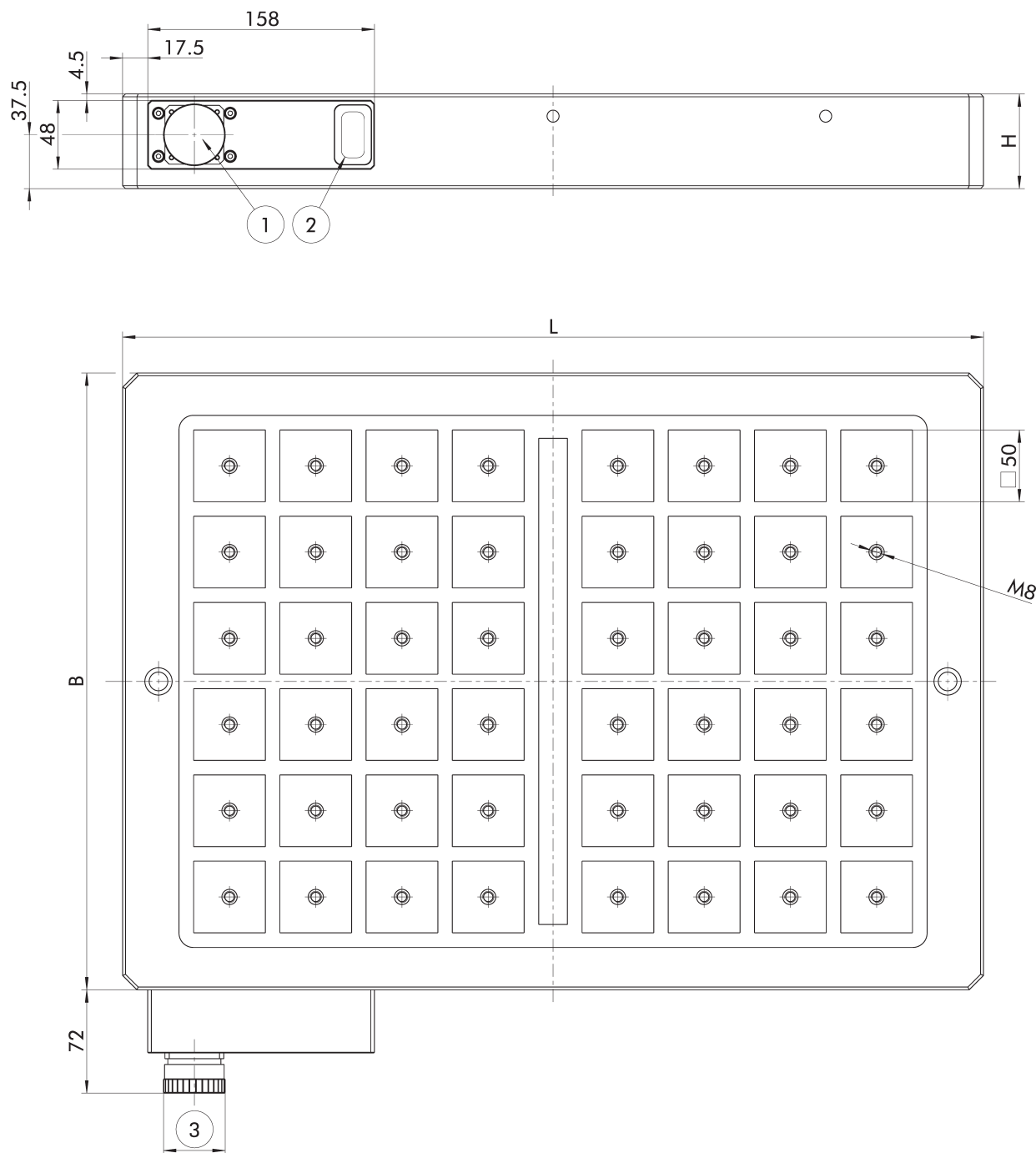
Magnetic chucks ground to an equal height (± 0.01 mm) are available on request.

Mains voltage 220 V/60 Hz

MFRS magnetic chucks with 220 V/60 Hz are available on request.

Further technical data

Pole size	Pitch for VERO-S	Mains voltage	Min. material thickness	Min. workpiece size	IP protection class with closed cover plate	Max. working temperature
[mm]	[mm]	[V]	[mm]	[mm]		[°C]
50 x 50	200 x 200	400/460	8	230 x 170	67	80



Subject to technical changes.

- ① Fast connection for connection cable
- ② Status display

- ③ Ø43 mm for 4-PIN connector, Ø46 mm for 7-PIN connector

Technical data

Description	ID	Length L [mm]	Width B [mm]	Height H [mm]	Max. clamping force [kN]	Number of poles	Connection	Number of channels	Weight [kg]
MFRS-A2-050 315 x 315	1303988	315	315	86	63	16	4-PIN	1	65
MFRS-A2-050 430 x 315	1303994	430	315	86	94	24	4-PIN	1	90
MFRS-A2-050 500 x 315	1303995	500	315	86	94	24	4-PIN	1	100
MFRS-A2-050 600 x 315	1303997	600	315	86	126	32	4-PIN	1	120
MFRS-A2-050 430 x 430	1303998	430	430	86	141	36	4-PIN	1	115
MFRS-A2-050 600 x 430	1303999	600	430	86	188	48	4-PIN	1	155
MFRS-A2-050 800 x 430	1304000	800	430	86	236	60	7-PIN	2	205
MFRS-A2-050 500 x 500	1304001	500	500	86	165	42	4-PIN	1	150
MFRS-A2-050 600 x 500	1304003	600	500	86	220	56	4-PIN	1	180
MFRS-A2-050 800 x 500	1304004	800	500	86	275	70	7-PIN	2	235
MFRS-A2-050 1000 x 500	1304007	1000	500	86	330	84	7-PIN	2	295
MFRS-A2-050 600 x 600	1304008	600	600	86	251	64	7-PIN	2	215
MFRS-A2-050 800 x 600	1304010	800	600	86	314	80	7-PIN	2	280
MFRS-A2-050 1000 x 600	1304012	1000	600	86	377	96	7-PIN	2	350

Scope of delivery

Magnetic chuck, operating manual, CE declaration of conformity; without control unit, without pole extensions

Notes

Field of application

For machining medium-sized workpieces with medium thickness.

Maximum clamping force

The maximum clamping force is only available when all poles of the magnetic chuck are covered.

Status display

Visual display of the clamping status of the magnetic chuck for process-reliable clamping.

Green = magnetic chuck "clamped".

Red = magnetic chuck "not clamped".

Magnetic chucks of the same height

The magnetic chucks are height-adjustable ± 0.1 mm as standard.

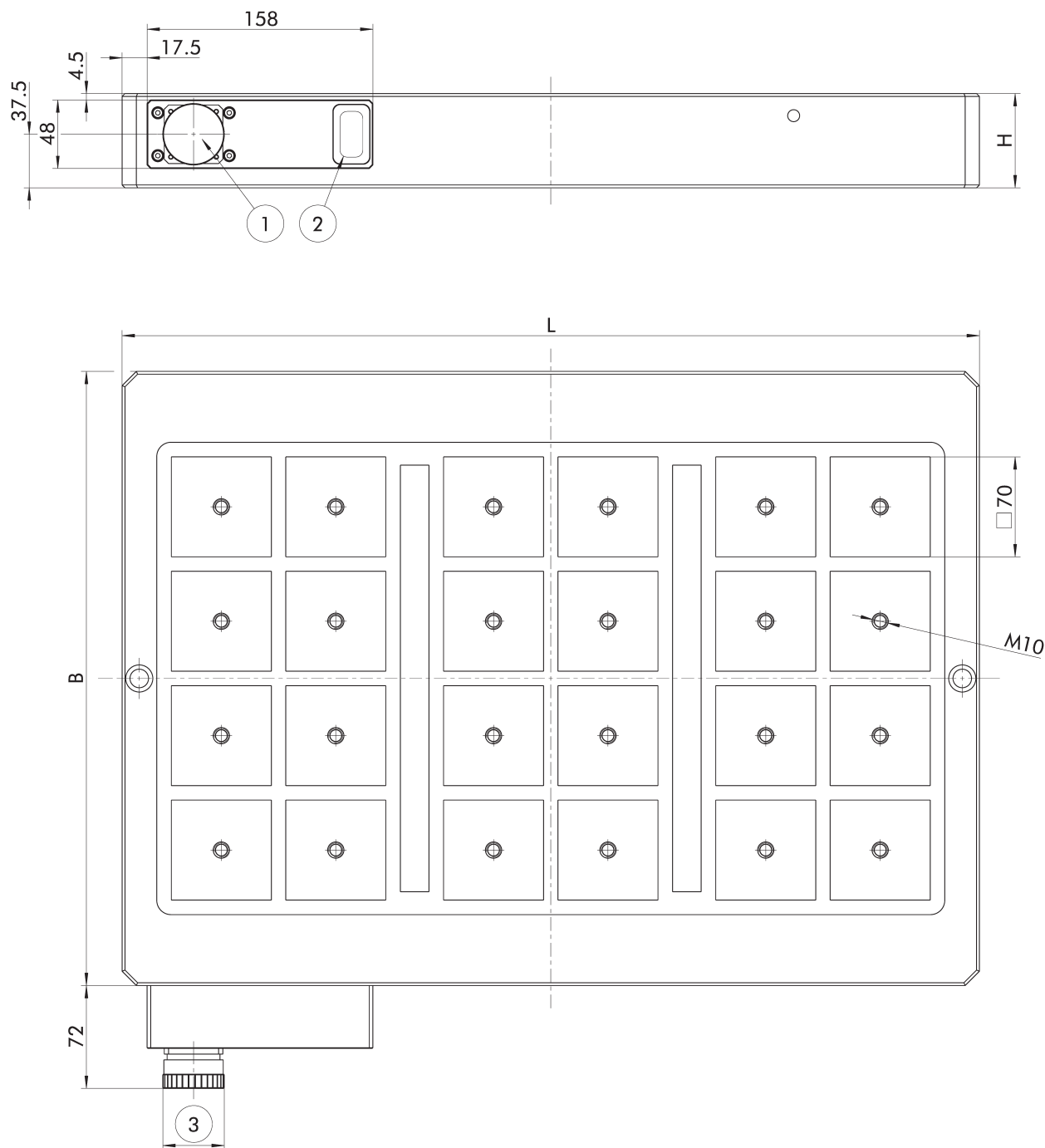
Magnetic chucks ground to an equal height (± 0.01 mm) are available on request.

Mains voltage 220 V/60 Hz

MFRS magnetic chucks with 220 V/60 Hz are available on request.

Further technical data

Pole size	Mains voltage	Min. material thickness	Min. workpiece size	IP protection class with closed cover plate	Max. working temperature
[mm]	[V]	[mm]	[mm]		[°C]
50 x 50	400/460	13	230 x 170	67	80



Subject to technical changes.

- ① Fast connection for connection cable
- ② Status display

- ③ Ø43 mm for 4-PIN connector

Technical data

Description	ID	Length L	Width B	Height H	Max. clamping force	Number of poles	Connection	Number of channels	Weight
		[mm]	[mm]	[mm]	[kN]				[kg]
MFRS-A1-070 600 x 315	0423424	600	315	66	139	18	4-PIN	1	86
MFRS-A1-070 800 x 315	0423425	800	315	66	185	24	4-PIN	1	120
MFRS-A1-070 430 x 430	0423426	430	430	66	123	16	4-PIN	1	85
MFRS-A1-070 600 x 430	0423427	600	430	66	185	24	4-PIN	1	120
MFRS-A1-070 800 x 430	0423428	800	430	66	246	32	4-PIN	1	160
MFRS-A1-070 500 x 500	0423429	500	500	66	193	25	4-PIN	1	115
MFRS-A1-070 800 x 500	0423430	800	500	66	308	40	4-PIN	1	180
MFRS-A1-070 1000 x 500	0423431	1000	500	66	385	50	4-PIN	1	230
MFRS-A1-070 600 x 600	0423432	600	600	66	277	36	4-PIN	1	165
MFRS-A1-070 800 x 600	0423433	800	600	66	370	48	4-PIN	1	220
MFRS-A1-070 1000 x 600	0423434	1000	600	66	462	60	4-PIN	1	277
MFRS-A1-070 1200 x 600	0423435	1200	600	66	554	72	4-PIN	1	330

Scope of delivery

Magnetic chuck, operating manual, CE declaration of conformity; without control unit, without pole extensions

Notes

Field of application

For machining large and thick workpieces.

Maximum clamping force

The maximum clamping force is only available when all poles of the magnetic chuck are covered.

Status display

Visual display of the clamping status of the magnetic chuck for process-reliable clamping.

Green = magnetic chuck "clamped".

Red = magnetic chuck "not clamped".

Magnetic chucks of the same height

The magnetic chucks are height-adjustable ± 0.1 mm as standard.

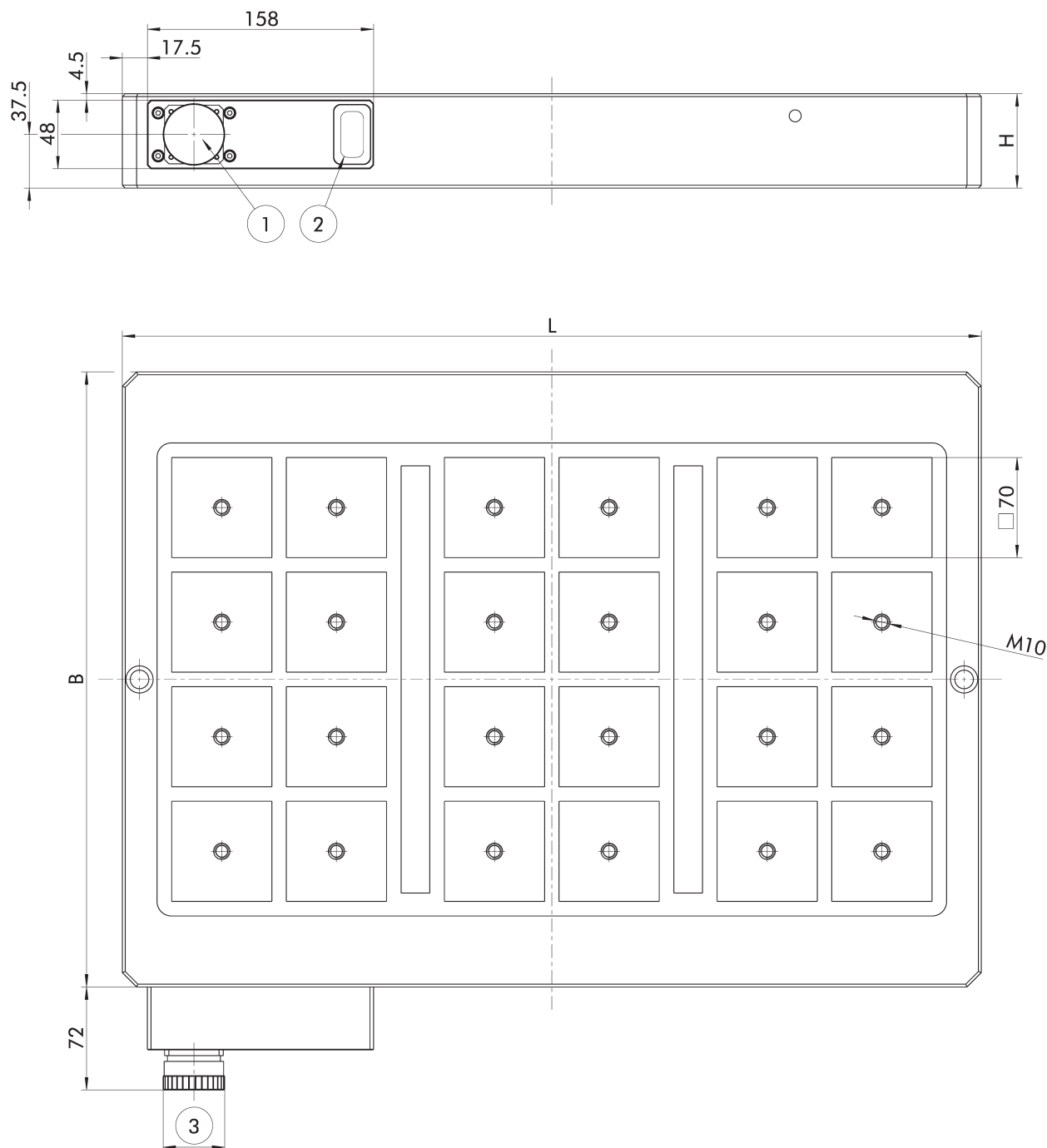
Magnetic chucks ground to an equal height (± 0.01 mm) are available on request.

Mains voltage 220 V/60 Hz

MFRS magnetic chucks with 220 V/60 Hz are available on request.

Further technical data

Pole size	Mains voltage	Min. material thickness	Min. workpiece size	IP protection class with closed cover plate	Max. working temperature
[mm]	[V]	[mm]	[mm]		[°C]
70 x 70	400/460	16	310 x 230	67	80



Subject to technical changes.

- ① Fast connection for connection cable
- ② Status display

- ③ Ø43 mm for 4-PIN connector, Ø46 mm for 7-PIN connector

Technical data

Description	ID	Length L [mm]	Width B [mm]	Height H [mm]	Max. clamping force [kN]	Number of poles	Connection	Number of channels	Weight [kg]
MFRS-A2-070 600 x 315	1304536	600	315	86	139	18	4-PIN	1	115
MFRS-A2-070 800 x 315	1304537	800	315	86	185	24	4-PIN	1	150
MFRS-A2-070 430 x 430	1304538	430	430	86	123	16	4-PIN	1	110
MFRS-A2-070 600 x 430	1304539	600	430	86	185	24	4-PIN	1	155
MFRS-A2-070 800 x 430	1304540	800	430	86	246	32	4-PIN	1	207
MFRS-A2-070 500 x 500	1304541	500	500	86	193	25	4-PIN	1	147
MFRS-A2-070 800 x 500	1304542	800	500	86	308	40	4-PIN	1	240
MFRS-A2-070 1000 x 500	1304543	1000	500	86	385	50	7-PIN	2	305
MFRS-A2-070 600 x 600	1304544	600	600	86	277	36	4-PIN	1	216
MFRS-A2-070 800 x 600	1304545	800	600	86	370	48	7-PIN	2	290

Scope of delivery

Magnetic chuck, operating manual, CE declaration of conformity; without control unit, without pole extensions

Notes

Field of application

For machining large and thick workpieces.

Maximum clamping force

The maximum clamping force is only available when all poles of the magnetic chuck are covered.

Status display

Visual display of the clamping status of the magnetic chuck for process-reliable clamping.

Green = magnetic chuck "clamped".

Red = magnetic chuck "not clamped".

Magnetic chucks of the same height

The magnetic chucks are height-adjustable ± 0.1 mm as standard.

Magnetic chucks ground to an equal height (± 0.01 mm) are available on request.

Mains voltage 220 V/60 Hz

MFRS magnetic chucks with 220 V/60 Hz are available on request.

Further technical data

Pole size [mm]	Mains voltage [V]	Min. material thickness [mm]	Min. workpiece size [mm]	IP protection class with closed cover plate	Max. working temperature [°C]
70 x 70	400/460	20	310 x 230	67	80

Accessories

Standard clamping pins

Clamping pin for positive connection with NSE3 clamping modules.
With shortened fastening screw.



Suitable for	Description	ID
MFRS-V-A1-050	SPA 40-K	0432369
MFRS-V-A1-050	SPB 40-K	0432370
MFRS-V-A1-050	SPC 40-K	1327450

Workpiece stop

For pre-positioning workpieces on magnetic chucks.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A2-050		
MFRS-A1-070		
MFRS-A2-070	WSA-MFRS 150	1315230

ASM 14 set of set-up screws

For fastening of MFRS magnetic chucks on the machine table.
Set consisting of 10 x screws M12 and 10 x T-nuts for T-slot 14 mm.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A1-070	ASM 14-66	1322774
MFRS-A2-050		
MFRS-A2-070	ASM 14-86	1322775

ASM 18 set of set-up screws

For fastening of MFRS magnetic chucks on the machine table.
Set consisting of 10 x screws M12 and 10 x T-nuts for T-slot 18 mm.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A1-070	ASM 18-66	1322781
MFRS-A2-050		
MFRS-A2-070	ASM 18-86	1322782

ASM 22 set of set-up screws

For fastening of MFRS magnetic chucks on the machine table.
Set consisting of 10 x screws M12 and 10 x T-nuts for T-slot 22 mm.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A1-070	ASM 22-66	1322787
MFRS-A2-050		
MFRS-A2-070	ASM 22-86	1322788

ASM 28 set of set-up screws

For fastening of MFRS magnetic chucks on the machine table.
Set consisting of 10 x screws M12 and 10 x T-nuts for T-slot 28 mm.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A1-070	ASM 28-66	1322793
MFRS-A2-050		
MFRS-A2-070	ASM 28-86	1322794

Clamping claw SPR MFRS type A

For fastening of MFRS magnetic chucks of pole sizes 50 and 70.



Suitable for	Description	ID
T-Nut 14 mm	SPR MFRS 14-50/70	1322645
T-Nut 18 mm	SPR MFRS 18-50/70	1322885
T-Nut 22 mm	SPR MFRS 22-50/70	1322886
T-Nut 28 mm	SPR MFRS 28-50/70	1322887

Cover

Protective plate to snap into the status display.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A2-050		
MFRS-A1-070		
MFRS-A2-070	SB-MFRS	1378315

Pole extensions

Fixed pole extensions PVF 50

With through-bore and M8 screw.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PVF 50-20	45	45	20	0420090
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PVF 50-32	45	45	32	0422391
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PVF 50-54	45	45	54	0420091

Flexible pole extensions PVB 50

With through-bore and M8 screw.
Compensation stroke 5 mm.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PVB 50-32	47.5	45	32	0422392

Flexible pole extension EASYTURN PVB 50

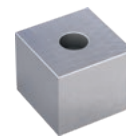
With through-bore and M8 screw.
Compensation stroke 7 mm.
For vertical or horizontal use.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PVB 50-54	47	45	54	0420092

Fixed pole extensions PVF 70

With through-bore and M10 screw.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-070					
MFRS-A2-070	PVF 70-30	70	70	30	0422993
MFRS-A1-070					
MFRS-A2-070	PVF 70-47	70	70	47	0422995
MFRS-A1-070					
MFRS-A2-070	PVF 70-70	70	70	70	0422997

Flexible pole extensions PVB 70

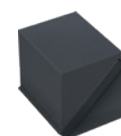
With through-bore and M10 screw.
Compensation stroke 7 mm.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-070					
MFRS-A2-070	PVB 70-47	75	70	47	0422994

Flexible pole extension EASYTURN PVB 70

With through-bore and M10 screw.
Compensation stroke 7 mm.
For vertical or horizontal use.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-070					
MFRS-A2-070	PVB 70-70	69	70	70	0422996

Pole extension quick change

Retrofit kit for pole extension quick change

For a one-time assembly and alignment on the magnetic chuck.
With M8 thread.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A2-050	QCS-NRS	1497908

Fixed pole extension PVF 50 QCS

Prepared for pole extension quick change
Without cover plate.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050	PVF 50-32				
MFRS-A2-050	QCS	45	45	32	1497903
MFRS-A1-050					
MFRS-V-A1-050	PVF 50-54				
MFRS-A2-050	QCS	45	45	54	1497902

Flexible pole extension PVB 50 QCS

Prepared for pole extension quick change
Compensation stroke 7 mm.
For vertical or horizontal use.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050	PVB 50-54				
MFRS-A2-050	QCS	47	45	54	1497899

Mounting aid for pole extension quick change

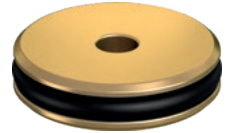
Assembly aid for one-off alignment of the clamping plates of the retrofit kit.



Suitable for	Description	ID
MFRS-A1-050		
MFRS-V-A1-050		
MFRS-A2-050	QCS-GMS	1497904

Cover plate

Used to close the through-hole in the fixed pole extensions.

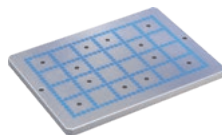


Suitable for	Description	ID
PVF 50-32 QCS		
PVF 50-54 QCS	QCS-VSD Ø16	40106738

Pole plates

24-way pole plate

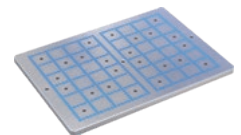
For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050	PVP 50-22 430 x				
MFRS-A2-050	315	430	315	22	0422490

48-way pole plate

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050	PVP 50-22 600 x				
MFRS-A2-050	430	600	430	22	0422491

Pole blocks

2-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-2	110	50	34	1311952
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-57-2	110	50	57	1311956

3-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-57-3	170	50	57	1315228

4-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-4	110	110	34	1311953
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-57-4	230	50	57	1311957

6-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-6	170	110	34	1311954
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-57-6	350	50	57	1315229

8-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-8	230	110	34	1311955

12-way pole block

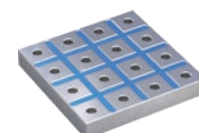
For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-12	350	110	34	1315226

16-way pole block

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFRS-A1-050					
MFRS-V-A1-050					
MFRS-A2-050	PEB 50-34-16	230	230	34	1315227



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