



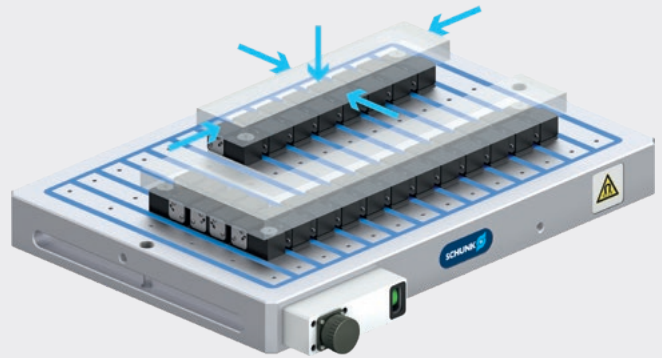
MAGNOS MFPS

**Powerful magnetic chucks
for thin and narrow
workpieces**

Hand in hand for tomorrow

Electropermanent magnetic chucks with high lateral holding forces for powerful machining processes of narrow and long workpieces

Due to the parallel pole technology, MAGNOS MFPS magnetic chucks are characterized by extremely strong lateral holding forces. The magnetic chucks are particularly suitable for milling thin and narrow workpieces. In these applications, square pole technology would not be sufficient due to the minimal width of the covering pole. A status display ensures that the clamping status of the magnetic chuck is visible at all times. The MFPS 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
- + High lateral holding forces**
For reliable clamping of narrow and bulky workpieces
- + Visual status display**
Visual display of the clamping status for reliable clamping and maximum process reliability
- + Mono-block design**
Compact and robust design with high rigidity
- + State-of-the-art electropermanent technology for one-time energy supply for MAG/DEMAG process**
Energy-efficient and reliable clamping of the workpieces
- + Clamping within a few seconds**
Shortest possible setup times and a resulting increase in productivity
- + Control unit compatible with machine control system**
Can also be used in automated applications

Technical data

Description	Status display	Pole orientation	Pole pitch [mm]	Min. material thickness [mm]	Min. workpiece size [mm]
MFPS-P-A1-L30	●	Longitudinal	30 + 10	7	230 x 170
MFPS-A1-L30	●	Transverse	30 + 10	7	230 x 170

Function MFPS

MAGNOS MFPS 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.

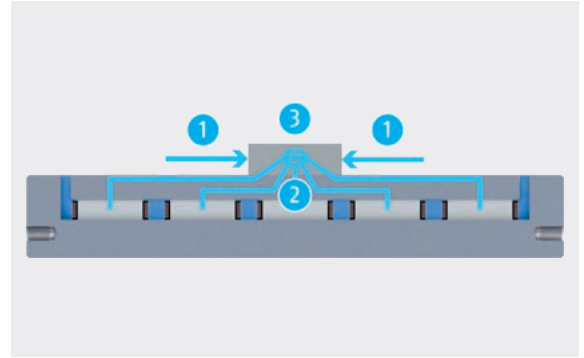


- 1 Stable base body**
For optimum clamping results with an additional coating against corrosion
- 2 Mounting groove**
For mounting the magnetic chuck via clamping claws
- 3 Mounting hole**
For direct mounting of the magnetic chuck to the machine table
- 4 Invertible AlNiCo-magnets**
Embedded in the 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**
For shorting or amplifying the magnetic field
- 9 Connection housing with status display**
For displaying the clamping state and connection to the KEH plus control unit
- 10 Fixed pairs of 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 pairs of pole extensions**
For contact to deformed or uneven workpieces, in particular during OP10 machining

Force field line concentration

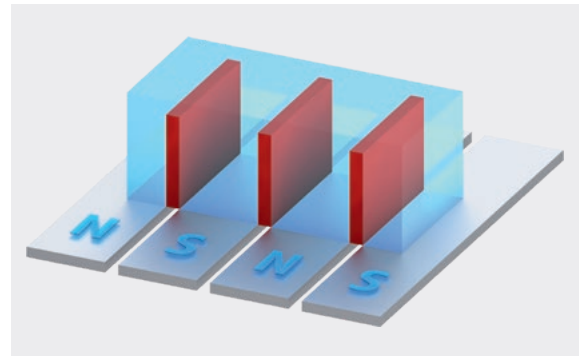
Due to the parallel pole technology, most force field lines of the magnetic field are passed through the workpiece to the other pole. This strong concentration results in very strong lateral holding forces on the workpiece, making the MFPS magnetic chucks particularly suitable for narrow and bulky workpieces.

- ❶ Resulting, high lateral holding force
- ❷ Magnetic field lines
- ❸ Magnetic flow direction



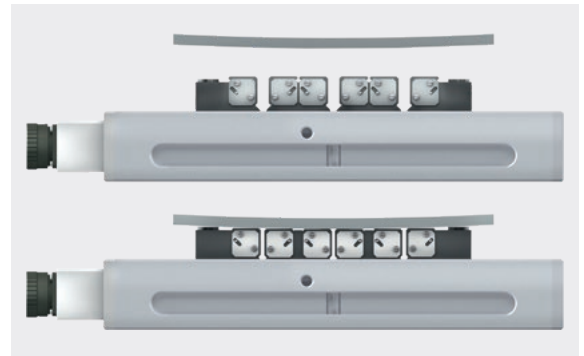
Pole overlap

In the lateral direction, the multiple, maximum covering for north and south poles generates a strong holding force to prevent the workpiece from being pulled off. In the cross direction, a strong holding force is generated due to the width of the entire pole.



Adapts perfectly to the contours of the workpiece

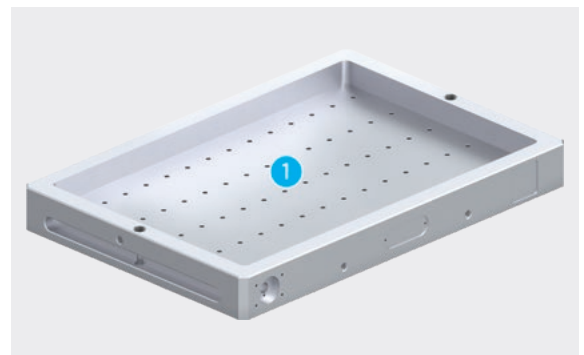
Workpieces of any structure can be perfectly clamped with MAGNOS pole extensions. The pole extensions perfectly adapt to the workpiece contour – the workpiece has an underlay and is stably positioned on the extensions for 5-sided all-round machining.



Stable base body

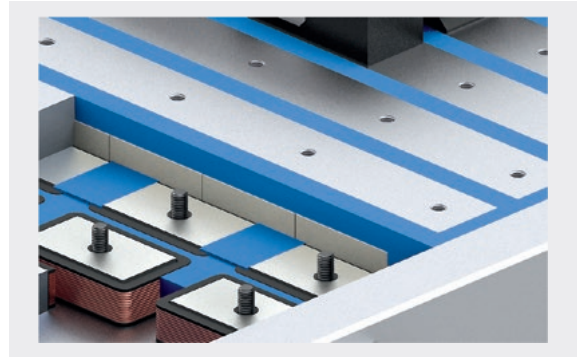
The stable base body is made in monoblock design in the latest machining centers. Its stability, rigidity and robustness prevent vibrations from forming in later operation, thus ensuring outstanding machining results, and a long service life for the magnetic chuck.

- ❶ Monoblock design of the base body



Synthetic resin filling

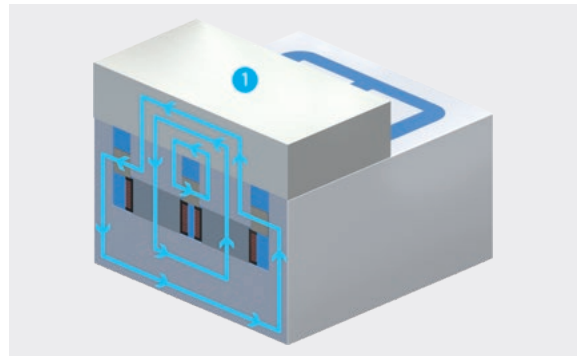
The synthetic resin filled under vacuum guarantees a unique insulation and magnetic life span of each plate. By means of this special high-end sealing process, the spaces between the poles are filled with high-strength synthetic resin. This resin protects the interior components of the magnetic chuck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



Magnetic double cycle – MAG status

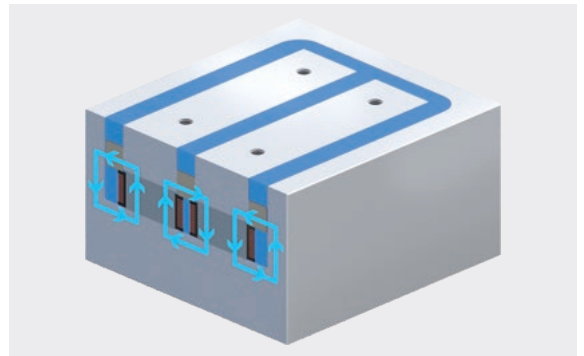
These are reversed by short-term generation of an electromechanical field resulting from the windings around the reversible-polarity magnet. As a result, the magnetic field is directed outward and the workpiece is clamped on the magnetic chuck.

1 Workpiece



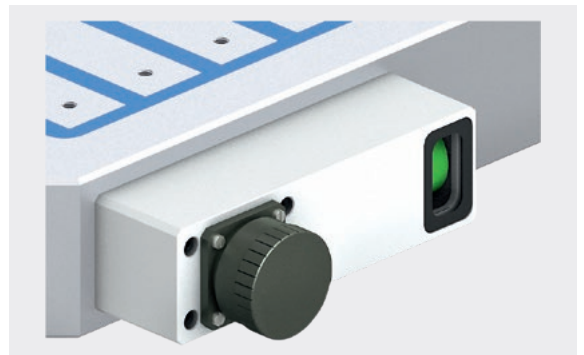
Magnetic double cycle – DEMAG status

The reversible-polarity magnets are reversed again by a further pulse. This "short-circuits" the magnetic field inside the magnetic chuck and releases the workpiece.



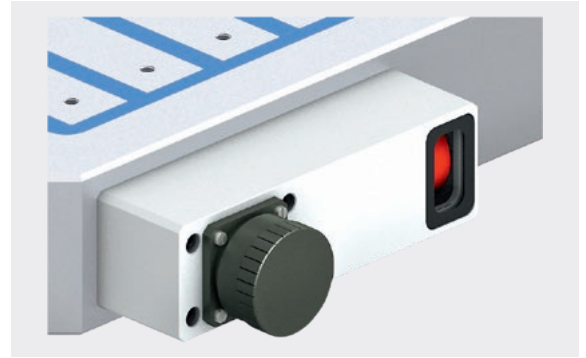
Visual display – MAG status

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.



Pole plates

Pole plates are used for ensuring that the customer can mill the contours and special shapes (workpiece negatives). This allows the magnetic chuck to be quickly and easily adjusted to new clamping tasks without causing any damage to the magnetic chuck itself.



Pole extensions – pole pairings

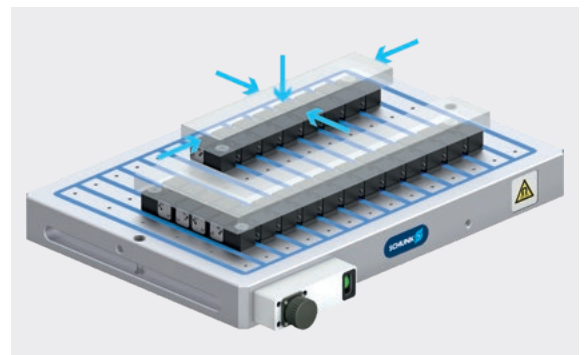
Pole extensions ensure that the magnetic chuck locating surfaces are adapted naturally to the workpiece. The pole extensions for MFPS magnetic chucks are always designed as pole pairs to ensure an even better contact surface.

- ❶ **Fixed pole extensions**
Consisting of a fixed and a flexible locating surface.
- ❷ **Flexible pole extensions**
Consisting of two flexible locating surfaces.



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.





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Technical data

Description	ID	Length L	Width B	Height H	Number of poles	Connection	Number of channels	Weight
		[mm]	[mm]	[mm]				[kg]
MFPS-A1-L30 630 x 315	1358578	630	315	66	14	4-PIN	1	90
MFPS-A1-L30 630 x 430	1358579	630	430	66	14	4-PIN	1	120
MFPS-A1-L30 820 x 430	1358580	820	430	66	18	4-PIN	1	160
MFPS-A1-L30 1000 x 500	1358581	1000	500	66	22	7-PIN	2	225

Scope of delivery

Magnetic chuck, operating manual, CE declaration of conformity

Notes

Field of application

For machining narrow and thin workpieces.

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

MFPS magnetic chucks with 220 V are available on request.

Further technical data

Pole pitch	Max. clamping force	Mains voltage	Min. material thickness	Min. workpiece size	IP protection class with closed cover plate	Max. working temperature
[mm]	[N/cm ²]	[V]	[mm]	[mm]		[°C]
30 + 10	160	400/460	7	230 x 170	67	80

Accessories

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
MFPS-A1-L30	ASM 14-66	1322774

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
MFPS-A1-L30	ASM 18-66	1322781

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
MFPS-A1-L30	ASM 22-66	1322787

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
MFPS-A1-L30	ASM 28-66	1322793

Clamping claw SPR MFRS type A

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



Suitable for	Description	T-slot	ID
MFPS-A1-L30	SPR MFRS 14-50/70	14 mm	1322645
MFPS-A1-L30	SPR MFRS 18-50/70	18 mm	1322885
MFPS-A1-L30	SPR MFRS 22-50/70	22 mm	1322886
MFPS-A1-L30	SPR MFRS 28-50/70	28 mm	1322887

Pole extensions

Versatile, sturdy double pole extension

With through-bore and M6 screw.
Compensation stroke 4 mm.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	PVF-2-L30-30 60x30	60	30	30	1358599

Versatile double pole extension

With through-bore and M6 screw.
Compensation stroke 4 mm.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	PVB-2-L30-30 60x30	60	30	30	1424093

Fixed pole extension

With through-bore and M6 screw.

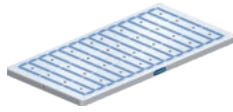


Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	PVF-L30-30 65x30	65	30	30	1393195
MFPS-A1-L30	PVF-L30-30 130x30	130	30	30	1393196

Pole plates

14-way pole plate

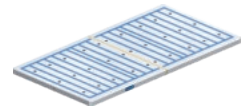
For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30 630 x 315	PVP-L30-22 630x315	630	315	22	1358590
MFPS-A1-L30 630 x 430	PVP-L30-22 630x430	630	430	22	1358596

18-way pole plate

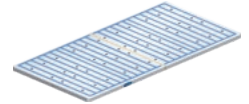
For milling contours and special forms.
Consisting of two individual pole plates.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30 820 x 430	PVP-L30-22 820x430	820	430	22	1358597

22-way pole plate

For milling contours and special forms.
Consisting of two individual pole plates.



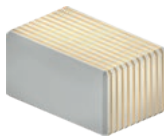
Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30 1000 x 500	PVP-L30-22 1000x500	1000	500	22	1358598

Laminated blocks/laminated plates

Laminated block

Short version.

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	MSC-BL10 80x50	80	50	40	0422098
MFPS-A1-L30	MSC-BL10 100x50	100	50	40	0422099

Laminated block

For round workpieces with milled
V-contour with a depth of 16 mm and a
90° angle

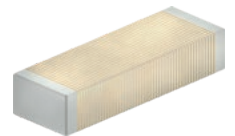


Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	MSC-BL20 80x50	80	50	40	0422100
MFPS-A1-L30	MSC-BL20 100x50	100	50	40	0422101

Laminated block

Long version.

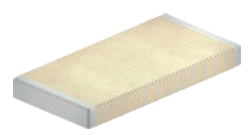
For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	MSC-BL30 250x85	250	85	50	0422090
MFPS-A1-L30	MSC-BL30 500x85	500	85	50	0422091

Laminated plate

For milling contours and special forms.



Suitable for	Description	Length mm	Width mm	Height mm	ID
MFPS-A1-L30	MSC-PS10 200x100	200	100	21	0422092
MFPS-A1-L30	MSC-PS10 250x130	250	130	21	0422093
MFPS-A1-L30	MSC-PS10 300x150	300	150	21	0422094
MFPS-A1-L30	MSC-PS10 350x150	350	150	21	0422095
MFPS-A1-L30	MSC-PS10 400x200	400	200	21	0422096
MFPS-A1-L30	MSC-PS10 500x200	500	200	21	0422097



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