

MAGNETIC CLAMPING SYSTEMS

AMF 
CLAMPING. SCREWING. LOCKING.



WE GENERATE EXCITEMENT

Since its founding by Andreas Maier in 1890, our company has lived through many exciting times. Today we are the leading manufacturer in Europe, supplying over 5,000 different products from the fields of clamping, hand tools and locks. With this extensive product range we can meet all of our customers' needs and requirements. But providing optimal quality means meeting the challenges at all levels: Expert consultation, modern team organisation, individual solutions (including special developments), flexibility in response to changing conditions, etc. And we ourselves find this so exciting that we look forward every day to shaping the market together with our employees and our customers – both now and in the future. That is something you can count on.

COMPANY HISTORY

- 1890** Company founded as a lock manufacturer by Andreas Maier.
- 1920** Product range extended to include spanners.
- 1928** Production line assembly of „Fellbach locks“.
- 1951** AMF introduces clamping elements and diversifies into workpiece and tool clamping technology.
- 1965** Toggle clamps extend the AMF product range. AMF catalogues are now printed in ten languages.
- 1975** Further specialisation into hydraulic clamping technology.
- 1982** Clamping and fixture systems round off AMF's clamping expertise.
- 1996** AMF team organisation in all sectors of the business. Quality management with certification to ISO 9001.
- 2001** AMF Service Guarantee for all products.
- 2004** Introduction of the ZPS zero-point clamping system.
- 2007** The magnetic clamping technology extends the AMF product range.
- 2009** Development and marketing of AMF Vacuum clamping technology
- 2012** Marking and cleaning tools included in the AMF product range.



MANAGING DIRECTORS

> Johannes Maier
Volker Göbel



THE AMF SERVICE GUARANTEE

> Assuredly on the way to the top

5 Individual development

And if the product you need doesn't exist?
Just ask us: We will find the best solution for you – whether it is a special version or a completely new development.

4 Warranty

We stand by our high quality standards. We handle customer complaints very liberally and without red tape – whenever possible even after the end of the warranty period.

3 Guaranteed quality standard

AMF stands for manufacturing in-house with the utmost care. A tradition we have upheld since 1890 – and naturally for many years now with a modern quality management system to ISO 9001.

2 Short delivery times

AMF's finished goods inventory with over 5,000 items guarantees a delivery readiness of 98%. You can also count on each warehouse item you order being shipped to you on the same day.

1 Service from genuine experts

Different tasks, different solutions. In AMF's professional product range, you can find the right solution quickly and reliably: either from your local dealer or with help from the specialists in our teams. A phone call is all it takes.

E Made in Germany

It goes without saying that our range of products is developed and manufactured by our team of employees in Germany.

PRODUCTS ON THE COVER

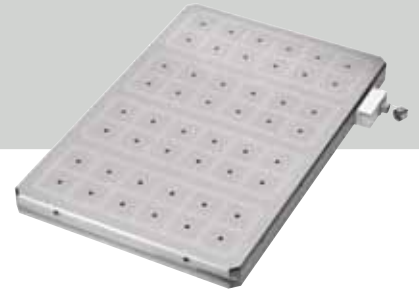
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FUNCTIONAL PRINCIPLE, ADVANTAGES AND PERFORMANCE FEATURES OF AMF MAGNETIC CLAMPING TECHNOLOGY

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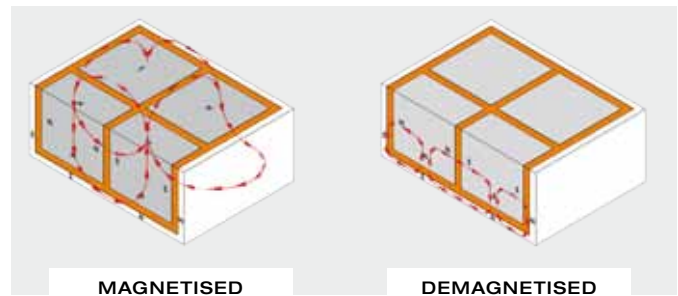


AMF MAGNETIC CLAMPING TECHNOLOGY - HIGH-PERFORMANCE AND SAFETY

Electromagnetic clamping systems were frequently connected with insecurity, unreliability, overheating or also a high need for maintenance. These disturbing characteristics are now a thing of the past. The innovative electro-permanent technology of the AMF magnetic clamping technology with its high-performance characteristics is permanently impressive. Behind it lie many years of experience, comprehensive know-how and the mission of offering customer-oriented solutions.

The result is convincing: High-quality square poles, arranged according to the chessboard principle, form the magnetic double cycle. An electromagnetic field is generated through the direct surrounding by pole-reversible permanent magnets on the sides and the magnets below the poles.

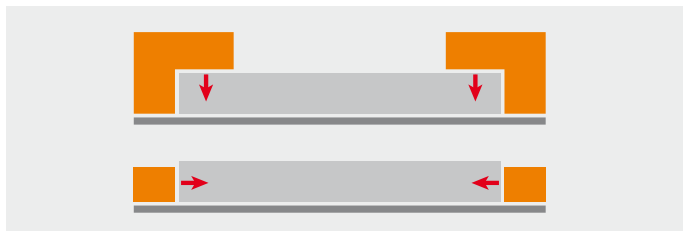
The square pole plates can be used in a targeted way – externally to magnetise workpieces or internally to separate the magnetic flow from the workpieces again. Activation or deactivation takes place in a fraction of a second. Moreover, a neutral crown allows complete magnetic insulation.



THE AMF MAGNETIC CLAMPING TECHNOLOGY COMPARED TO EXISTING SYSTEMS.

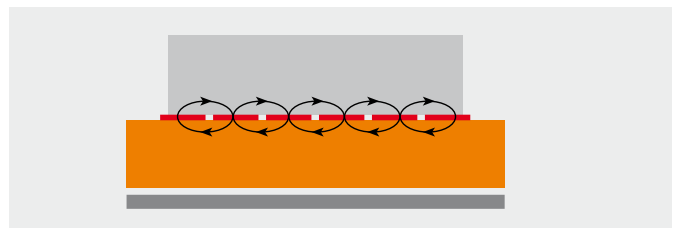
PERFECTION WITHOUT RESTRICTION.

With previous clamping systems, compromises frequently had to be accepted that, unfortunately, also had affects on the production process and productivity. The electro-permanent AMF magnetic clamping technology opens up completely new opportunities and completely eliminates multiple repositioning to carry out the work process as well as deformations or impairments due to clamps.



FREELY WORKABLE SURFACES AND UNIFORM CLAMPING.

The force of the magnetic field makes the decisive difference. For the magnetic surface on which the force is evenly distributed is used as a clamping area for the workpiece. And so all surfaces are completely accessible to be worked on without additional clamps and a simple 5-sided processing is possible without difficulty. A single procedure is sufficient for even clamping. The result is higher surface quality, higher precision and increased useful lives of the cutting materials.



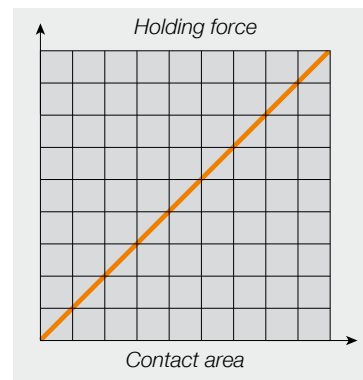
A GRIPPING SOLUTION - INNOVATIVE AND ECONOMICAL.

THE GRIPPING CONNECTION OF MULTIFACETED ADVANTAGES.

Based on the electro-permanent magnetism, the magnetic clamping plates from AMF impress with their high performance, safety, flexibility and efficiency.

Handling is convenient and fast; the range of uses for machine tools is unlimited. Even installation of the system is very simple, so that results show up very fast in application.

And they contribute accordingly to fast payback of the investment. For optimisation of processes, improvement of the quality of results and reduction of processing times increase efficiency considerably.



The high clamping strength and power of the magnetic clamping plates is developed uniformly, linearly and proportionally to the contact surface of the workpiece and remains constant over time, not tied to the processing phases.

THE BENEFITS AT A GLANCE!

PRODUCTIVITY

- > High clamping forces to 384 kN
- > Easy and quick positioning of the workpiece
- > Drastic reduction in set-up times
- > Facilitated interaction with CAD/CAM systems
- > Improved work sequence
- > Improved surface quality and tolerances
- > Material thickness of the magnetic clamping plates from 43 mm

SECURITY

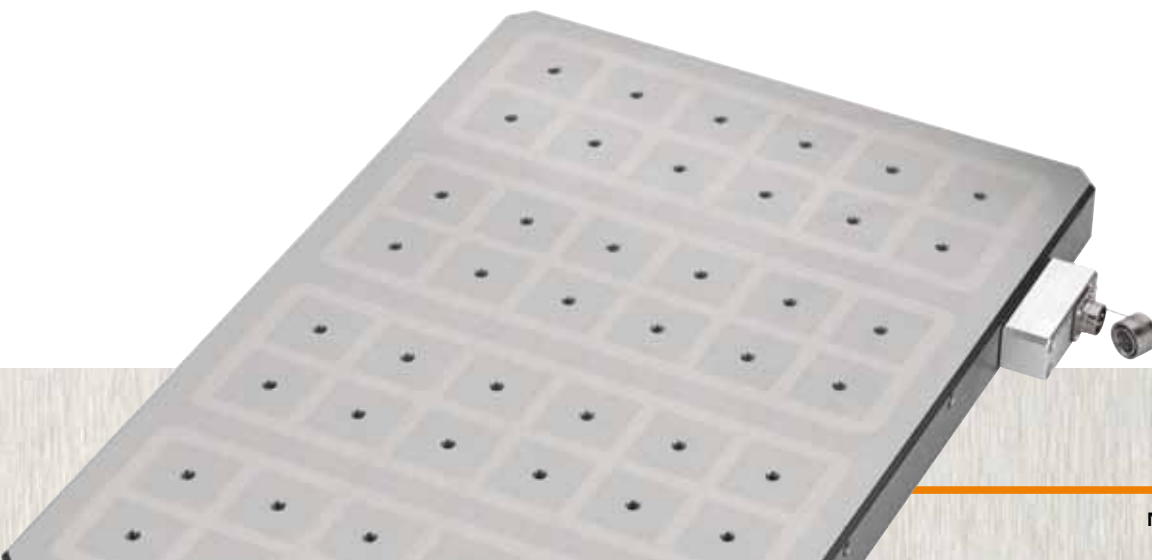
- > Constant and concentrated force
- > No power consumption during clamping
- > Ergonomic in operation
- > No dispersion of magnetic flux
- > No interference

FLEXIBILITY

- > Repeatability of 0.01 mm
- > 5-side processing possible
- > All useful strokes used
- > Workpieces larger than the table surface are machinable
- > Simultaneous machining of multiple workpieces side by side
- > Simplified CNC or FMS programming

COST-EFFECTIVE

- > Limited capital outlay
- > No maintenance
- > No modification to the machine
- > Energy-saving
- > Reduced wear on tools
- > High value over time



THE ABCS AND FAQs OF MAGNETIC CLAMPING TECHNOLOGY.

| | |
|---|--|
| > WORKING TEMPERATURE: | Up to this temperature, a magnet can be used without irreversible magnetisation losses. |
| > CURIE TEMPERATURE: | At this temperature, magnetic materials lose their magnetisation irreversibly. |
| > FERROMAGNETIC MATERIAL: | All materials that exhibit magnetisation after application of an external magnetic field. |
| > MAGNETIC FIELD STRENGTH (A/M): | Amperes per meter (1A/m = 0.01256 oersted) |
| > MAGNETIC FLUX DENSITY (INDUCTION): | The change in a material that is induced by an applied magnetic field. Symbol: B / unit: T |
| > TESLA (T): | Unit of magnetic induction 1 T = 10 ⁴ Gauß |
| > GAUSS (G): | Outdated unit of magnetic induction. |
| > SATURATION MAX.: | The workpiece no longer absorbs any magnetisation. |
| > POLE EXTENSIONS: | Allow 5-side machining without interference contours. |
| > NEODYMIUM: | Magnetic material (NdFeB = Neodymium-Iron-Boron). They acquire a magnetic orientation during manufacture. |
| > ALNICO: | Magnetic material (Aluminium-Nickel-Cobalt) |

WHAT HAPPENS IF THERE IS A POWER FAILURE?

The system is insensitive to possible power failures, and therefore „intrinsically safe“.

HOW CAN THE MAGNETIC CLAMPING PLATES BE FASTENED?

- a) laterally in the recesses with clamps (see catalogue „Mechanical clamping elements“)
- b) in combination with an adapter plate for the AMF zero-point clamping system

CAN I CLAMP ON ONE POLE?

At least two poles have to be covered in order for there to be a magnetic flux.
For optimal clamping, however, 4 poles should be covered.

WHAT HAPPENS IF I MILL INTO THE MAGNETIC CLAMPING PLATE?

The magnetic clamping plates can be reworked up to 4 mm by repeated re-grinding.
This also restores the plane parallelism.

WHAT PRECISION CAN I ACHIEVE WITH THIS SYSTEM?

Plane parallelism of up to 0.02 mm can be achieved by:

- 1) rough-milling the first surface
- 2) turning the plate over, rough-milling, stress-releasing and finishing the second plate
- 3) turning the plate over and finishing the first surface.

IS MECHANICAL DEFORMATION POSSIBLE DURING CLAMPING?

Quite the opposite. In the case of flame-cut parts, i.e. with very uneven workpiece surfaces, clamping is carried out with 3 fixed poles (3-point support) and with movable poles. The movable poles compensate for the unevenness, meaning that the workpiece is not deformed during clamping.

DO MAGNETIC FIELDS PRESENT ANY HAZARDS?

Magnetic field height 0 to 100 mm: In this area, cardiac pacemakers, wristwatches and bank cards may be damaged. At magnetic field height 100 mm and greater there is no longer any health risk.
 Caution! Do not put any workpieces on while the magnet is actively clamped. – risk of injury!

UP TO HOW MANY DEGREES CELSIUS CAN MAGNETIC TABLES BE USED?

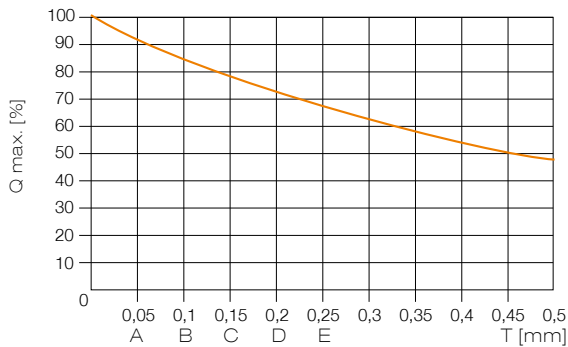
The magnetic tables can be used at operating temperatures up to 100°C. The neodymium magnet is guaranteed for a maximum temperature of 100°C (this refers to the temperature in contact with the surface of the magnetic table over a longer time period). As a result of large temperature fluctuations, in some cases „magnetic edges“ may occur, which disappear again when the temperature is again within the guaranteed parameters.

A TAILORED SOLUTION

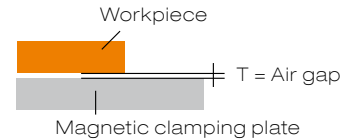
Each pair of N/S poles generates an autonomous and defined force which is not influenced by the operating conditions of the other adjacent poles. Therefore by counting the number of poles occupied by the clamped piece it is possible to predetermine the force generated and consequently to establish the usable machine power with the relative machining parameters.

1) STOCK REMOVAL CURVE / SURFACE CONDITION

(WORKPIECE ON MAGNETIC CLAMPING PLATE)

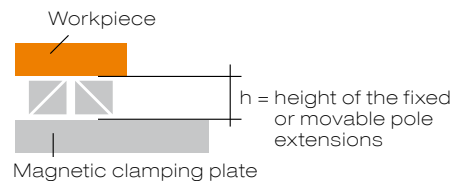
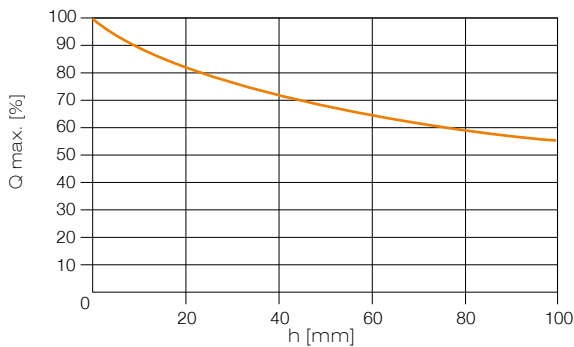


- A = milled
- B = rough-sized
- C = stamped / rolled
- D = shell casting
- E = sand casting



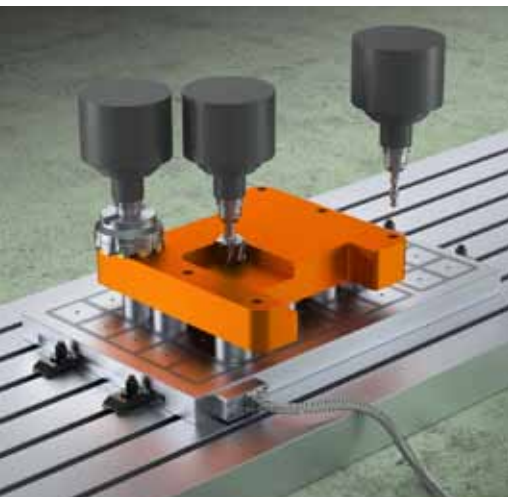
2) CURVE FOR STOCK REMOVAL / EXTENSIONS HEIGHT

(WORKPIECE ON POLE EXTENSIONS)



FREE SURFACES AND EVEN CLAMPING - IDEAL CONDITIONS FOR THE MOST VARIED OF APPLICATION AREAS.

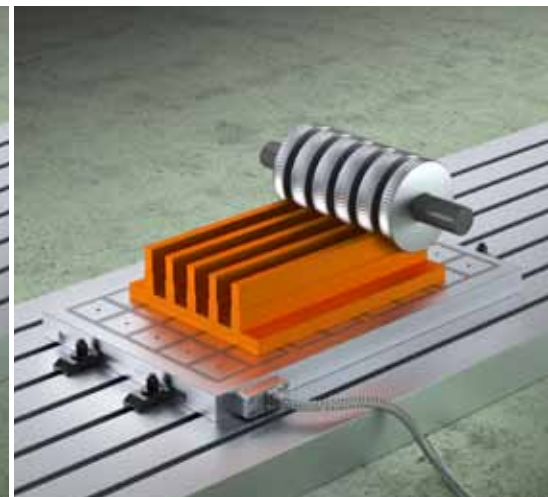
No matter how different the requirements are - AMF magnetic clamping plates distinguish themselves through constantly strong performance. Heavy-duty machining with vertical or horizontal positioning can be performed just as successfully as high-speed cutting (HSC). The versatility of the system shows itself in the wide array of application options: the system is outstandingly suitable for bench type, gantry or fixed table milling machines, on machining centres, on pallets and cube tooling. Moreover, the modular design permits expansion for complete machine tables or also for special individual solutions.



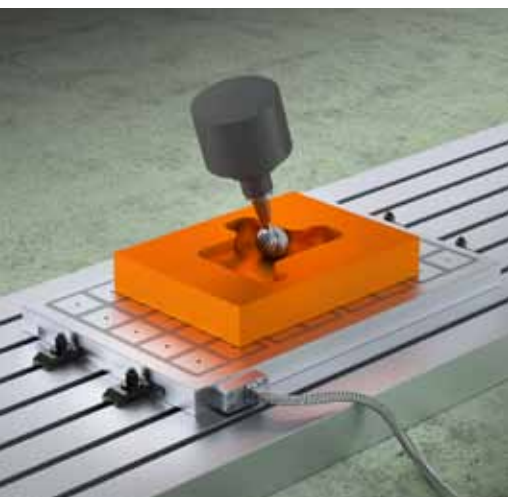
Face milling, drilling and pocket execution



Round bar facing and slots milling



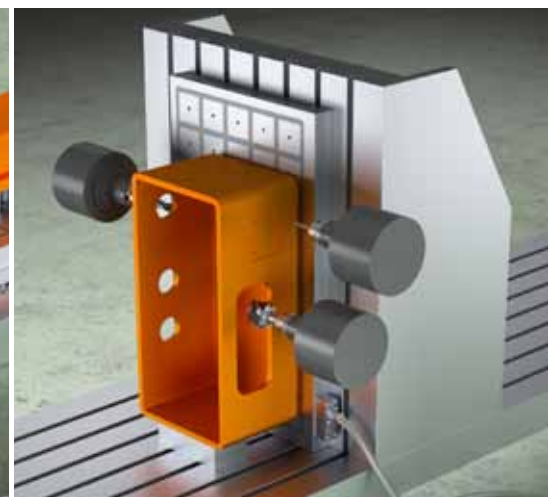
Milling multiple coupled parts



Shaping and contour cutting



Machining of profile and rod material



Cutting of metallic materials



No. 2950-50

Magnetic clamping plate for milling Premium Line

Force / pole = 4 kN



| Order no. | A [mm] | B [mm] | H ±0.02 [mm] | Pole size [mm] | Number of poles [St] | Holding force, max. [kN] | Weight [Kg] |
|-------------------------|--------|--------|--------------|----------------|----------------------|--------------------------|-------------|
| 550707 | 490 | 295 | 43 | 50 | 24 | 96 | 34 |
| <i>In stock!</i> 550708 | 490 | 420 | 43 | 50 | 36 | 144 | 49 |
| 550709 | 490 | 475 | 43 | 50 | 42 | 168 | 56 |
| 550710 | 490 | 575 | 43 | 50 | 48 | 192 | 67 |
| <i>In stock!</i> 550711 | 640 | 295 | 43 | 50 | 32 | 128 | 45 |
| 550712 | 640 | 420 | 43 | 50 | 48 | 192 | 64 |
| 550713 | 640 | 475 | 43 | 50 | 56 | 224 | 73 |
| 550714 | 640 | 575 | 43 | 50 | 64 | 256 | 88 |
| 550715 | 795 | 295 | 43 | 50 | 40 | 160 | 56 |
| <i>In stock!</i> 550716 | 795 | 420 | 43 | 50 | 60 | 240 | 80 |
| 550717 | 795 | 475 | 43 | 50 | 70 | 280 | 90 |
| 550718 | 795 | 575 | 43 | 50 | 80 | 320 | 110 |
| 550719 | 950 | 295 | 43 | 50 | 48 | 192 | 67 |
| 550720 | 950 | 420 | 43 | 50 | 72 | 288 | 96 |
| 550721 | 950 | 475 | 43 | 50 | 84 | 336 | 108 |
| 550722 | 950 | 575 | 43 | 50 | 96 | 384 | 131 |

Design:

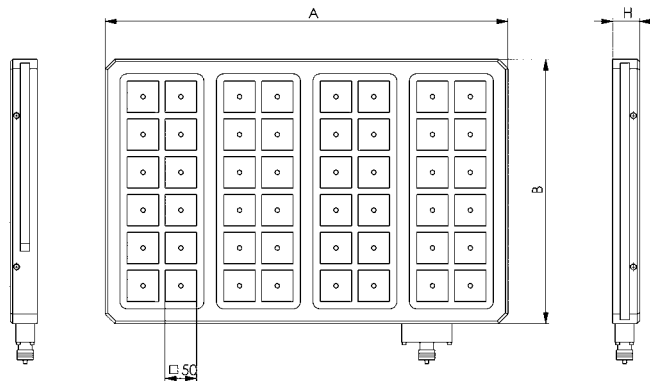
Magnetic chuck with square pole technology in monoblock design and very strong holding forces. For positioning, clamping and machining magnetisable materials. In conjunction with pole extensions also particularly suitable for the 5-sided machining of workpieces.

Features:

Magnetic chuck with metallic surface. This special and high-quality design enables the strongest holding forces to be reached in magnetic clamping technology with square pole technology. The maximum stated holding force is specified for the complete allocation of all poles. One particular advantage is the low design of 43 mm. This enables the dead weight to be very low and reduces the machine table load considerably. In the event of possible damage to the surface, this can be reworked up to 4 mm in order to restore the original surface quality. The magnetic chucks have a height tolerance of ± 0.02 mm in the delivered condition, but an even smaller height tolerance can be offered at any time on request. The plug contact for the control unit is a water-resistant push-pull plug incl. protective cover. The optimum holding forces are reached from a workpiece and material thickness greater than 12 mm. A clamping slot is also available on both sides of the faces for fastening to the machine table. Mounting holes can also be incorporated into the magnetic chuck. A drill plan at AMF is required for this. The M8 internal thread for fastening the pole extension is directly aligned centrally - without a threaded bush - in each pole.

Advantage:

- Magnetic chuck with metallic surface
- Environmentally friendly clamping technology: Energy is only needed for clamping and releasing
- Highest level of safety: Holding force is retained even in the event of a power failure
- Maximum holding force: by using the latest magnetic materials
- Very low installation height



Subject to technical alterations.

No. 2970SG-10

Control unit for a magnetic chuck

| Order no. | Length [mm] | Width [mm] | Height [mm] | Weight [Kg] |
|-----------|----------------|---------------|----------------|----------------|
| 550738 | 300 | 300 | 120 | 10 |



Application:

Control unit for a magnetic chuck.

The control device has three control buttons:

- 1 x magnetisation (MAG)
- 1 x demagnetisation (DEMAG)
- 1 x release

To start the magnetisation or demagnetisation cycle, the following button combinations must be pressed simultaneously:

- Magnetisation = MAG + Release
- Demagnetisation = DEMAG + Release

Features:

The connection cable and control lead have a length of 3 metres each.

The connection cable has a plug for 400V / 32A and is preassembled ready for connection. The high-quality control lead has a steel mesh sheath and push-pull plug for connecting to the magnetic chuck. DB-9 Plug available for:

- 1 x machine locking
- 1 x hand-held controller

Advantage:

- Compact and ready-to-connect control for a magnetic chuck
- Short cycle times of less than 1 second for magnetisation and demagnetisation
- No further installation of e.g. connecting plugs necessary
- Very strong and robust construction

No. 2970HBG-10

Hand-held controller for control units without channel selection

| Order no. | Length of connecting cable [m] | Weight [Kg] |
|-----------|-----------------------------------|----------------|
| 550744 | 3 | 1 |



Application:

The hand-held controller is used for controlling the magnetic chucks by means of the control device or control unit.

The hand-held controller has three function buttons:

- 1 x magnetisation (MAG)
- 1 x demagnetisation (DEMAG)
- 1 x release

To start the magnetisation or demagnetisation cycle, the following button combinations must be pressed simultaneously:

- Magnetisation = MAG + Release
- Demagnetisation = DEMAG + Release

Features:

The hand-held controller is suitable for all AMF control devices of the series 2970 without channel selection and is connected directly to the control device or control unit by means of the DB-9 plug. The connection cable is 3 metres long.

Advantage:

- Light and practical hand-held controller
- Ready-to-connect delivery
- Can be connected directly to the control device or control unit.

No. 2970SG-20

Control unit without channel selection
400V / 32A

| Order no. | Number of magnetic clamping plates to control | Weight |
|-----------|---|--------|
| | [St] | [Kg] |
| 550739 | 2 | 12 |
| 550740 | 3 | 13 |
| 550741 | 4 | 21 |



Application:

Control unit with hand-held controller for the simultaneous activation of 2, 3 or 4 magnetic chucks.

The hand-held controller has three function buttons:

- 1 x magnetisation (MAG)
- 1 x demagnetisation (DEMAG)
- 1 x release

To start the magnetisation or demagnetisation cycle, the following button combinations must be pressed simultaneously:

- Magnetisation = MAG + Release
- Demagnetisation = DEMAG + Release

Features:

The connection cable and control lead have a length of 3 metres each.

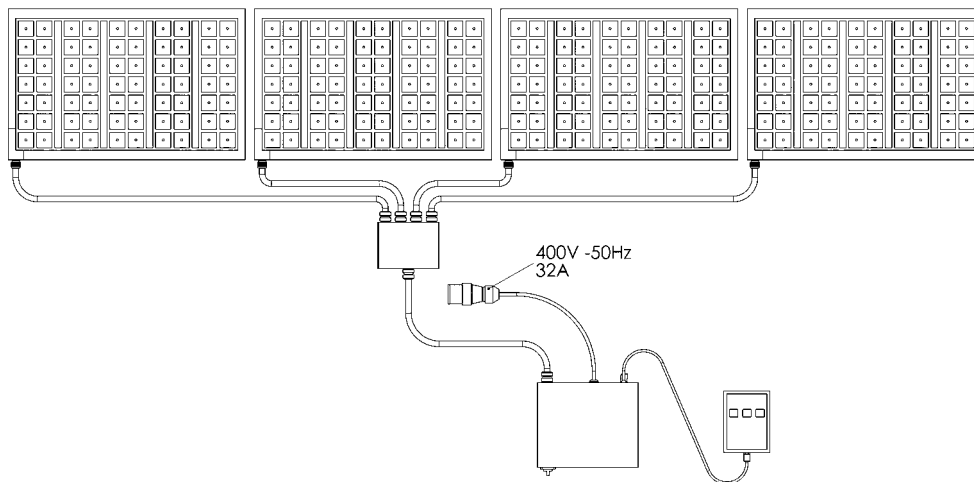
The connection cable has a plug for 400V / 32A and is preassembled ready for connection. The high-quality control leads have one steel mesh sheath and one push-pull plug each for connecting to the magnetic chucks.

The hand-held controller with the function buttons MAG, DEMAG and Release belongs to the standard delivery.

The control device has a prepared cable gland for the signal of the machine locking.

Advantage:

- Compact and ready-to-connect control for 2, 3 or 4 magnetic chucks
- Short cycle times of less than 1 second for magnetisation and demagnetisation
- Including hand-held controller as remote control for ease of handling
- No further installation of e.g. connecting plugs necessary
- Very strong and robust construction.



No. 2970SG-20

Control unit with channel selection
400V / 32A

| Order no. | Number of magnetic clamping plates to control | Weight |
|-----------|---|--------|
| | [St] | [Kg] |
| 550742 | 1 - 2 | 13 |
| 550743 | 1 - 4 | 22 |



Application:

Control unit with hand-held controller for the simultaneous activation of 1 - 2 or 1 - 4 magnetic chucks. The individual chucks can be selected and removed with the hand-held controller.

In addition to the selector switches for the magnetic chucks, the hand-held controller has three function buttons:

- 1 x magnetisation (MAG)
- 1 x demagnetisation (DEMAG)
- 1 x release

To start the magnetisation or demagnetisation cycle, the following button combinations must be pressed simultaneously:

- Magnetisation = MAG + Release
- Demagnetisation = DEMAG + Release

Features:

The connection cable and control lead have a length of 3 metres each.

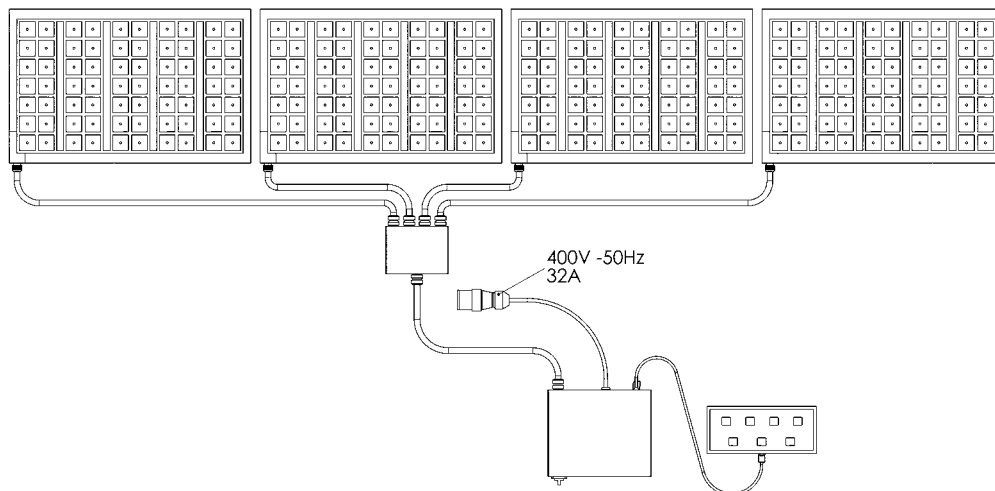
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Advantage:

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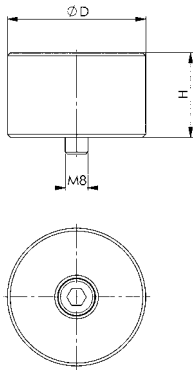


Optimal adaptation to the workpiece surface contour is guaranteed by the movable pole extensions. These pole extensions adapt themselves to the workpiece surface. The workpiece is supported and rests securely on the pole extensions. Optimal machining is possible from 5 sides without any interference contours.



No. 2975PVF-50

Pole extension, fixed



| Order no. | Size | dia. D [mm] | H [mm] | Weight [g] |
|-----------|------|----------------|-----------|---------------|
| 550745 | 50 | 49 | 30 | 438 |

Application:

Fixed pole extensions are attached directly to the poles of the magnetic chuck with an M8 screw. Pre-machined or flat workpieces can be mounted directly onto the fixed pole extensions and clamped. If the workpiece has uneven surfaces, it is normally mounted onto 3 fixed pole extensions and clamped (three-point mounting). Movable pole extensions are used on all other poles that adapt flexibly to the workpiece contour.

Features:

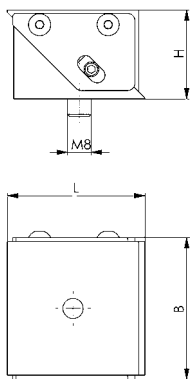
The pole extensions are designed for the optimum magnetic flux through the pole extension into the workpiece. The M8 fastening screw is supplied as standard.

Advantage:

- Easy and quick installation
- Optimum power flux of the magnetic field lines
- Strong holding forces

No. 2975PVB-50

Pole extension, movable



| Order no. | Size | L [mm] | B [mm] | H [mm] | Weight [g] |
|-----------|------|-----------|-----------|-----------|---------------|
| 550746 | 50 | 49 | 48 | 28 - 32 | 440 |

Application:

Movable pole extensions are attached directly to the poles of the magnetic chuck with an M8 screw. On uneven materials the movable pole extensions are used for height adjustment and adapt to the workpiece by means of spring force. Workpieces can be mounted and clamped warp-free.

Features:

The pole extensions are designed for the optimum magnetic flux through the pole extension into the workpiece. The M8 fastening screw is supplied as standard.

Advantage:

- Easy and quick installation
- Optimum power flux of the magnetic field lines
- Strong holding forces



- + Outstanding price-performance ratio
- + Drastically reduced tooling time
- + Immediate improvement of productivity
- + Repeat accuracy < 5µm
- + Stainless steel
- + Form fit



These conditions of sale apply to business conducted with companies, legal entities in the public sector, and legal entities with special budget in the public sector. Our deliveries and services are carried out exclusively on the basis of the conditions stated below. Deviating purchasing conditions of the buyer will not become part of the contract, not even through acceptance of the order, unless we have expressly accepted them.

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The basis of our delivery contracts is the latest edition of our catalogue. Orders are not considered as accepted until they have been confirmed by us in writing. When goods are supplied from stock and, for organisational reasons, you receive no separate confirmation, the invoice has the additional function of confirming the order. Details of dimensions and weights, and illustrations, drawings and data are not binding and may be changed by us at any time. Deviations cannot be excluded.

2. Prices

Prices are quoted in EUR ex-works excluding turnover tax, packing, freight, carriage, and insurance. Unless otherwise agreed, our list prices on the day of delivery apply. In order to cover our costs, orders under EUR 50.– net value are subject to a small order surcharge of EUR 10.–.

3. Delivery

Delivery delays are quoted to the best of our knowledge but without guarantee. Agreed delivery delays begin on the day we accept the order and refer to the completion of the goods in our works.

4. Transfer of risk

Risks are transferred to you when the goods are passed to a specific person, company, or organisation that is charged with the execution of carriage of the goods. This applies also to partial deliveries and when we have accepted the costs of carriage, delivery or erection. The risks are also transferred to you when you have defaulted on acceptance.

5. Dispatch

Goods are supplied ex-works. Dispatch is at your cost and risk. Scheduled, FOB, and CIF deliveries are also at your risk. In the absence of specific instructions concerning dispatch, we will arrange same as we think fit, but without accepting any responsibility for choosing the cheapest or most suitable method of dispatch. We make a handling charge of EUR 5.– if goods are sent at your request to a third party. You accept that your order can be supplied in partial deliveries insofar as this is reasonable.

6. Reservation of proprietary rights

Goods delivered remain our property until payment of all claims has been received in full or until redemption of cheques given in payment. The cancellation of individual positions in an open invoice and the drawing of a balance and its acceptance do not affect proprietary rights. You have the right to dispose of the goods as a normal commercial transaction, but you are forbidden to pawn, mortgage, or transfer ownership of them in settlement of a debt or debts. You surrender to us herewith your right to payment for goods for which we reserve our proprietary rights. You have the right to collect these payments as long as you meet your obligations to us. If we request it, you are obliged to name the third party and we have the right to publish this information and the transfer of rights.

7. Cancellation rights due to late payment or insolvency

If you do not pay for the goods by the time payment is due, and if you have not paid after expiry of a reasonable time limit set by us, we have the right to withdraw from the contract and demand the return of goods already supplied. Rights under § 323 BGB (BGB = German civil law code) remain otherwise unaffected. Application for the opening of insolvency proceedings gives us the right to withdraw from the contract and demand the immediate return of goods supplied before the bankruptcy court orders protective measures.

8. Packaging

Packages comply with the German packaging regulations (WO). Disposable packaging is charged at cost. The packaging is not returnable.

9. Tooling costs

In the absence of any agreement to the contrary, tooling made for the execution of an order remains our property in all cases. This applies even if we have made a charge for a proportion of the tooling costs.

10. Payment

Our invoices are payable net within 30 days of the date of the invoice, or with 2% discount if paid within 10 days. Invoices below EUR 50.– are payable immediately without discount. Our credit notes and your charges on us reduce the amount subject to discount. Late payment entitles us to interest at the rate the bank charges us for a current account overdraft but at least 8 percent above the current base rate of the European Central Bank. If payment is overdue, we are entitled, after giving you notice in writing, to cease fulfilling our obligations under the contract until payment is received.

11. Offsetting exclusion

You can only offset payments with legally-established or unopposed counter claims.

12. Guarantee

If you come to an agreement with us on properties of the goods, we include this agreement in our technical specifications. If we have to supply to your drawings, specifications, samples, etc., you accept the risk associated with suitability for the intended purpose. The point in time at which risk is transferred is decisive for the contractual condition of the goods. The deterioration of parts subject to wear in the course of normal use does not constitute a defect. If the goods supplied are defective, we will – at our choice and within a reasonable time limit set by you – supply a replacement or repair the goods. If such repair or replacement is not satisfactory, you have the right to reduce the price or withdraw from the contract. Any further guarantee claims are excluded. Recognisable defects must be notified at the latest within 10 days of receipt and defects that are not recognisable must be notified as soon as they are discovered. The guarantee period is 24 months and starts with dispatch of the goods from our works.

13. Hindered or impossible performance

If we are prevented from meeting our obligation by some unforeseeable event (e.g. disruption of our plant, or delay in the delivery of important raw materials), which, in spite of taking all reasonable care appropriate to the circumstances of the case, we have been unable to avert, and it has become impossible to execute the delivery or service punctually, the delivery delay will be extended to an appropriate extent.

14. Liability

Except in the case of injury to life or limb, or damage to health caused by our breach of duty, we are only liable in the event of intent or culpable negligence on our part.

15. Customer specials

Orders for customer specials must be in writing and include binding details of execution, quantities etc. For technical reasons we reserve the right to supply 10% more or less than the quantity specified. If technical changes or cancellation are required, the costs incurred will be charged to the customer.

16. Deliveries of samples and return of goods

Samples will be charged. When goods have been sent for testing or as samples, we will credit you with the additional price against subsequent orders, as long as the net contract value is at least EUR 125.–. The return of goods is only possible with prior agreement. Customer specials may not be returned. For goods returned for reasons outside our responsibility (e.g. wrongly ordered), we charge 10% of the value of the goods but at least EUR 7.50, to cover administration costs.

17. Place of fulfilment, court of jurisdiction

The place of fulfilment for all obligations arising from this contract is D-70707 Fellbach. The court of jurisdiction for any legal dispute arising from this contract is D-71332 Waiblingen. (All disputes that arise from this contract or about its validity will be decided by a court of arbitration according to the Arbitration Rules of the German Committee for Arbitration Courts/Settlement and Arbitration Procedure of the International Chamber of Commerce. Such decisions will be final and normal legal procedures are excluded.) German law applies (BGB and HGB = civil and commercial codes). The application of UN purchasing law (CISG) is excluded.

18. Validity clause

If individual conditions should be found to be not legally valid, the remaining conditions continue to apply. The invalid conditions will be replaced by conditions which fulfil as closely as possible the commercial intent of the contract with reasonable consideration of the interests of both parties. With the publication of these Conditions for Sales, Deliveries and Payment, all previous versions become invalid. This does not apply to contracts agreed before publication.

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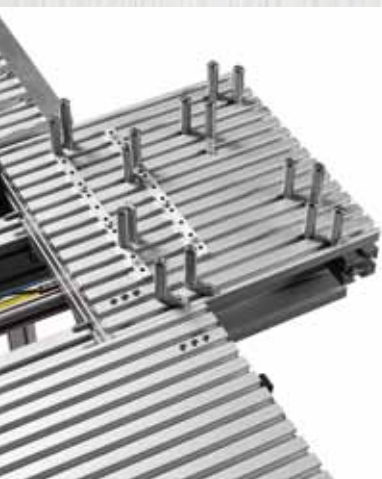
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