SMALL MAGNETS

A WIDE VARIETY – QUALITY AND PERFORMANCE

CONTENTS

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If not otherwise specified, standard tolerances shall apply:
Linear dimensions according to DIN ISO 2768-1-m
Geometric and positional tolerances according to DIN ISO 2768-2-K
Metric ISO-screw threads according to the tolerance class medium

V2014-09

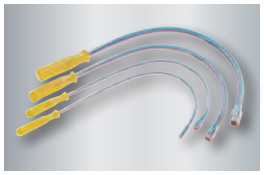
SAV GROUP

CATALOGUE VIII

SMALL MAGNETS

A WIDE VARIETY – QUALITY AND PERFORMANCE





30 YEARS OF PRODUCTION

THE PARTNER FOR:

- Workholding technologies magnetic-hydraulic-mechanical-vacuum
- Stationary and rotary workholding All technologies
- Heavy lifting systems
- Automation
- Standard parts
- Special applications

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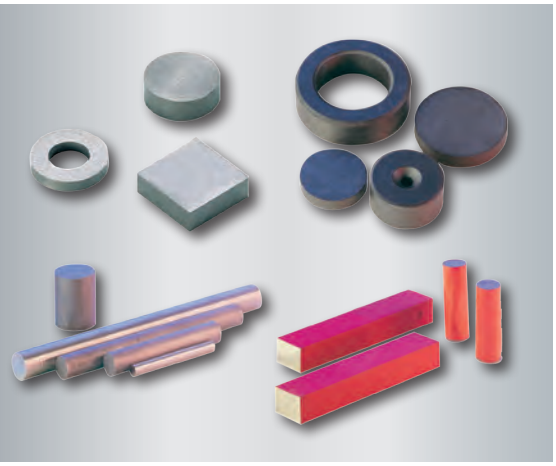
A WIDE RANGE OF SMALL MAGNETS

SAV PROVIDES

- Quality, performance and longevity
- Cost effectiveness
- A large warehouse
- Competence in problem solving
- Construction and production of magnet systems
- The option of ordering via the SAV-Shop

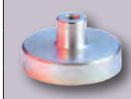
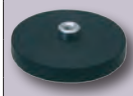


SAV OFFERS

A WIDE VARIETY OF SMALL MAGNETS FOR USE IN A WIDE RANGE OF APPLICATIONS

- Flat holding magnets
- Bar holding magnets
- Pot magnets
- Bar magnets
- Magnetic cores
- Magnetic strips
- Rubber coated magnets
- Magnetic tapes
- Organizer magnets

HARD FERRITE HOLDING MAGNETS				
	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.01	Flat holding magnet	With countersunk through-bore / cylinder bore	14
	240.02	Flat holding magnet	With internally threaded bush	15
	240.03	Flat holding magnet	Without threaded bush	15
	240.08	Flat holding magnet	With threaded stud	16
	240.23	Flat holding magnet	With internal thread	16

NEODYMIUM HOLDING MAGNETS (NdFeB)				
	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.14	Holding magnet	With internal thread, also in stainless steel RF	17
	240.16	Holding magnet	With smooth stud	17
	240.17	Holding magnet	High energy magnets, also in stainless steel RF	18
	240.18	Flat holding magnet	Smooth without bush	18
	240.19	Holding magnet	Also with fitting tolerance	19
	240.33	Flat holding magnet	With threaded stud	19
	240.36	Flat holding magnet	Internally threaded bush	20
	240.38	Flat holding magnet	With bore and recess	20
	240.41	Rubber coated holding magnet	Internally threaded bush on rear face	21
	240.41	Rubber coated holding magnet	With threaded stud	21
	240.41	Rubber coated holding magnet	Rectangular with threaded bush	22
	240.42	Rubber coated holding magnet	With internally threaded bore hole	22
	240.43	Rubber coated holding magnet	In flat execution or with bore hole	23
	240.44	Rubber coated holding magnet	With clip	23

SAMARIUM-COBALT HOLDING MAGNETS (SmCo5)				
	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.09	Holding magnet	Also with fitting tolerance	24
	240.10	Flat holding magnet	Smooth without bush	24
	240.34	Flat holding magnet	With bore and recess	25
	240.35	Flat holding magnet	Internally threaded bush	25

PRODUCT OVERVIEW

ALUMINIUM -NICKEL-COBALT HOLDING MAGNETS (AlNiCo)				
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	240.04	Holding magnet	With internal thread	26
	240.05	Holding magnet	With smooth stud without fitting tolerance	26
	240.06	Holding magnet	Smooth without bush with fitting tolerance	27
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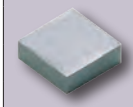
POT, BUTTON, HORSESHOE, BAR AND STRONG MAGNETS WITH A CRINKLE PAINT FINISH				
 	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.11	Pot magnets, crinkle paint	With internal thread	28
	240.12	Flat pot magnets, crinkle paint	With countersunk through-hole	28
	240.13	Button magnets, crinkle paint	With through-hole	29
	240.15	Pot magnets, crinkle paint	With release bolt	29
	241.06	Bar magnets, crinkle paint	Made from AlNiCo, rectangular and round	30
	241.14	Horseshoe magnets, crinkle paint	Made from AlNiCo with through-hole	30

MAGNETIC CORES				
	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.40	Magnetic cores, Hard ferrite	Made from Oxide	31
	240.45	Magnetic cores, AlNiCo	Machining only by grinding	32
	240.46	Magnetic cores, AlNiCo	In a free choice of lengths	32
	240.50	Magnetic cores, SmCo5	With high holding forces	33
	240.55	Magnetic cores, NdFeB	High energy magnets	34
	240.56	Magnetic cores, NdFeB	With extremely high holding forces	35

FLEXIBLE MAGNETS, MAGNETIC TAPES, PLACARDS, MAGNETIC FOILS				
	SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
	240.70	Flexible permanent magnets	Light machining possible	36
	240.72	Magnetic tapes	Self-adhesive	36
	240.71	Magnetic tapes	Can be cut with scissors	37
	240.73	Magnetic foils	In various colours	38
	240.74	Magnetic foils	Raw brown	38
	240.75	Magnetic placards	In various colours	39
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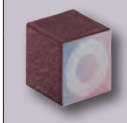
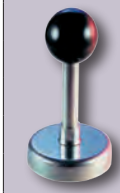
	240.77	Magnetic bags	In various sizes	40

ORGANIZER MAGNETS

SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
240.80	Organizer magnets	In a plastic housing	41
240.83	Organizer magnets	In a steel housing	41
240.84	Organizer magnets	In a steel cover	42
240.85	Organizer magnets	In a plastic cover	42
240.88	Organizer magnets	Printable	43
240.89	Organizer magnets	Printable	43
240.90	Organizer magnets	With personalised decorations	44

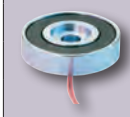
MAGNETIC TOOLS





SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
242.08	Permanent magnetic clamping blocks	With inlaid holding magnets	45
246.50	Permanent magnet mitred holders	Magnetic aid for welding and mounting tasks	45
246.51	Permanent magnet mitred holders	Magnetic aid for welding and mounting tasks	46
246.53	Permanent magnet mitred holders	Magnetic aid for welding and mounting tasks	46
240.66	Magnetic holding rack	For use as an organisational aid	47
482.70	Permanent magnetic base	Switchable	47
246.01	Blind bore swarf rod	To remove swarf from blind bores	48
246.02	Magnetheber	To lift parts in difficult to access areas	48
512.03	Magnetic pick-up wand	To collect small ferrite parts and swarf	49
532.10	Manual separator	For separating sheets. With handle.	49
532.11	Hand plate lifter with belt	For separating sheets. With belt.	50
581.03	Holding magnets	For efficient flushing in EDM operations	50

ELECTRO-HOLDING MAGNETS / PERMANENT ELECTRO- HOLDING MAGNETS

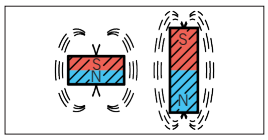


SAV-ART.-NO.	PRODUCTS	COMMENTS	PAGE
241.29	Electro-holding magnets	In flat design	52
241.31	Electro-holding magnets	With 2 connection options	53
241.32	Electro-holding beams	With high holding forces	54
241.40	Permanent electro-holding magnets	Electrically deactivated permanent magnets	55
241.41	Permanent electro-holding magnets	Electrically deactivated permanent magnets	56

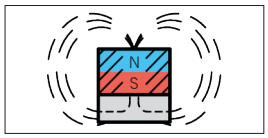
Influences by the type of installation and use on the magnetic holding forces

Magnetic effects of iron poles:

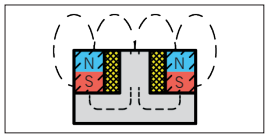
Iron poles can generate a higher density of lines of force in a magnetic circuit. This leads to a considerably improved adhesive effect as the magnetic flux flows around the corner and is concentrated at the holding surface. An approximate multiplying factor for the holding forces is given in the arrangements depicted below.

a) 

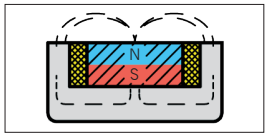
"Open" magnetic core as a disc or rod without influences from the iron poles:
Factor 1

b) 

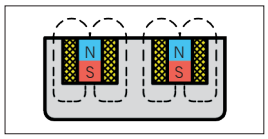
With iron back plate (yoke):
Factor 1,3

c) 

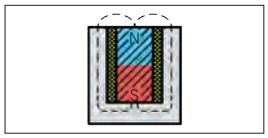
With iron back plate and centre pole:
Factor 4,5

d) 

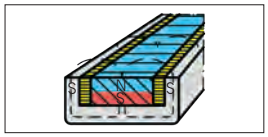
Magnetic disc in an iron pot (holding magnetic disc):
Factor 6

e) 

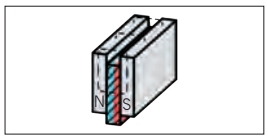
Magnetic ring in an iron pot with additional centre pole:
Factor 7

f) 

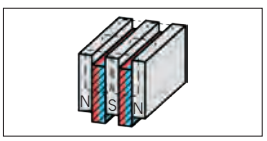
Bar magnet made of AlNiCo in an iron sleeve (pot magnets):
Factor 7,5

g) 

Magnetic plate in an iron U-profile:
Factor 5,5

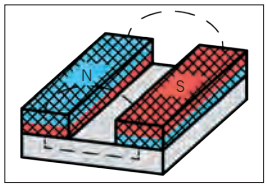
h) 

Sandwich-arrangement consisting of a magnetic plate between 2 flat iron poles:
Factor 18

i) 

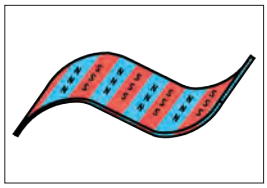
Parallel connection of several sandwich arrangements:
Factor 18 x number

Magnetic effect of an iron back plate:



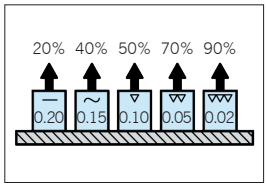
A far-reaching, concentric magnetic field is produced when there is an opposite pole arrangement of twoholding magnets on an iron back plate - just as is required for collecting magnets.

Four-pole magnetization:



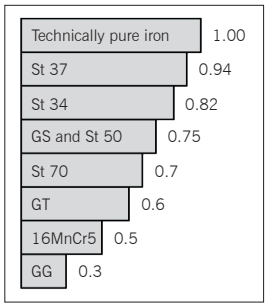
To ensure good adhesion when lifting thin iron sheets requires a high density of lines of force just above the holding surface of the magnet. This can be achieved by four-pole magnetization.

Holding force and surface quality:



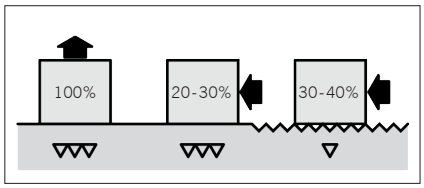
The percentage figure corresponds to the residual holding force for different surface qualities.

Holding force / material correlation:

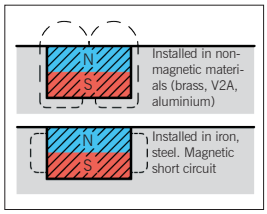


A low proportion of ferromagnetic material e.g. iron, leads to low holding forces.

Correlation between the surface quality and the sliding forces:



Installation of magnetic cores:



A "magnetic short circuit" occurs when both magnetic poles are linked using iron. Therefore connections should be made of non-magnetisable materials, such as brass or V2A.

HOLDING MAGNETS

Advice for use and influences upon magnetization

The following points should be observed when using holding magnets:

If magnets are used improperly, the strong attractive forces, especially with high-energy magnets, can lead to finger injuries.

It is imperative that persons with pace-makers should avoid strong magnetic fields!

When using electrical devices, electronic/magnetic storage media and even mechanical watches, the influential or destructive effects of the magnetic field should be considered. Keep a safe distance!

Sparks can arise during operation due to the strong attractive forces. If they occur in potentially explosive environments, they may cause an ignition.

Radioactive radiation and high temperatures reduce the magnetization over time.

Sudden impacts can cause the hard, brittle, sintered magnets to shatter into numerous sharp pieces.

In order to guarantee a continuous holding force over the whole period of the operation, care must be taken that AlNiCo-magnets are not subjected to hard impacts and that they do not have to bridge air gaps for extended periods without an anchor or workpiece.

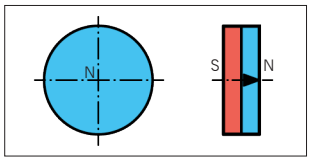
During the chip removal machining of all high-energy magnets made of rare earths and plastic-bonded magnets, attention should be paid to the danger of the self-ignition of the dry, abraded dust or the chips. Therefore wet-machining is advised.

Small hairline cracks or chips on sintered magnets are production-related and have no influence on the magnetic properties.

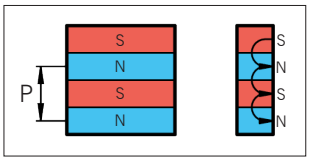
Magnetic fields, as produced by permanent magnets, are not known to have any damaging effects on the human body.

It is not possible to specify the holding force of an “open” permanent magnet.

Magnetization options for permanent magnets:

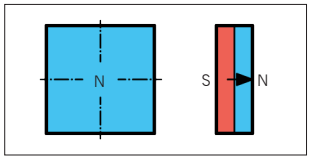


Axial

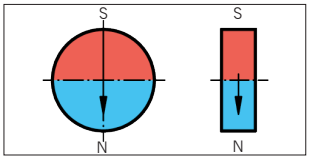


Lamellar arrangement, lateral orientation on one surface

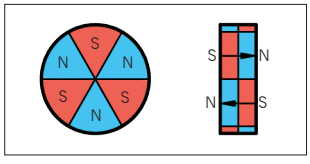
P = Pole pitch



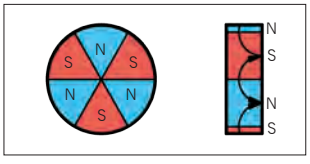
Completely magnetized in the vertical plane



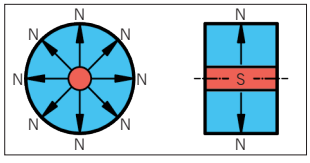
Diametric



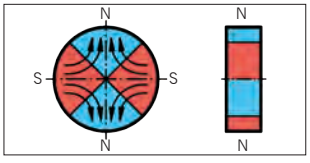
Axial, complete magnetization of the sectors e.g. 6-pole



Sector arrangement* Lateral orientation on one surface e.g. 6-pole



Radial*



Multi-pole lateral* at the circumference e.g. 4-pole

The types of magnetization marked with * are only possible with isotropic magnetic materials.

Technical terms and physical parameters of permanent magnetic materials

Magnetism - Technical explanations and terminology:

The **maximum energy product (B x H)$_{max}$** is the quality value. The larger the energy product, the more energy is stored in the magnetic material. It results from the largest possible flux density B and field strength H on the demagnetization characteristic curve.

The **remanence Br** is given in **Tesla (T)** or **milliTesla (mT)** or - in the CGS-system - in **Gauss (G)** . The remanence is the remaining magnetization in a magnet that bas been magnetized to saturation, or it is the flux density in a closed magnetic circuit.

The **coercive force** is the opposing field strength in **kA/m** or **Oersted (Oe)** required to demagnetize a magnet. The higher the value required, the better the resistance to demagnetization. One differentiates between $_BH_C$ and $_JH_C$. $_BH_C$ stands for the coercive force subjected to an applied opposing field (B) and $_JH_C$ stands for the coercive force in which the demagnetization of the magnet continues, even after the opposing field has been turned off (polarization J -> magnetization M). The coercive force $_JH_C$ is significant for magnets that have strong coercive forces relative to the remanence.

The **permeability μ** in **Vs/Am** is the "magnetic conductivity".For almost all magnetic materials, the permeability is only a slightly higher than air, whereas in iron it is a thousand-fold and more. The permeability is determined by two values, by the magnetic field strength and the magnetization of the material.

The **temperature coefficient TK$_{BR}$** of the remanence in 1/K gives the reversible decrease in the remanence – assuming a room temperature of 20°C - per 1K temperature increase.

The maximum operational **temperature t$_{max}$ (°C)** is only an approximate value, as it is dependent on the dimensions of the magnet (length / diameter-ratio L/D). The given value is only reached, when the product of B and H reaches a maximum (see magnet dimensioning).

If the **Curie temperature t$_{Curie}$ in °C** is reached, then every magnetic material loses its holding force irreversibly and must be newly magnetized.

The **density** p or the specific weight is given in **g/cm³**.

Physical parameters of permanent magnetic materials:

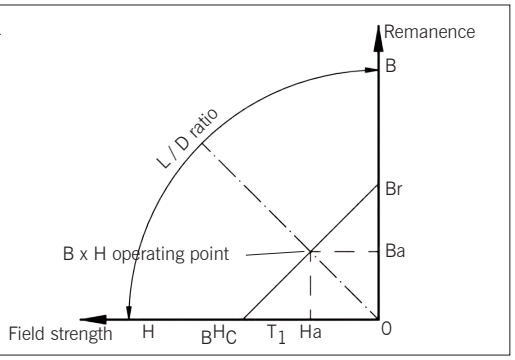
Magnetic material	Energy product (B x H) max		Remanence Br		Coercive force (T=20 °C) $_BH_C$		Coercive force (T=20 °C) $_JH_C$		Relative remanent permeability	Temperature coefficient of remanence	Max. Operational temperature	Density	Curie temperature
	kJ/m³	MGOe	mT	G	kA/m	Oe	kA/m	Oe	mT/kAm	pro °C	°C	g/cm³	°C
Betaflex (BaFe) Plastic-bonded Anisotropic	12	1.5	245	2450	175	2200	207	2600	1.40	- 0.20 %	- 40 + 85	3.7	450
Hard ferrite (SrFe)	27 - 32	3.4 - 4.0	380 - 400	3800 - 4000	230 - 275	2891 - 3457	235 - 290	2954 - 3645	1.45 - 1.65	- 0.20 %	ca. 200	5.0	450
AlNiCo 500 Precision cast	35	4.4	1120	11200	47	590	48	603	23.80	- 0.02 %	450	7.4	860
Samarium-Cobalt Plastic-bonded	56 - 64	7.0 - 8.0	550 - 590	5500 - 5900	360 - 416	4500 - 5900	600	7500	1.05 - 1.10	- 0.04 %	80	5.1	725
Neodymium-Iron-Boron, Plastic-bonded	80 - 96	10.0 - 12.0	700 - 800	7000 - 8000 -	416 - 480	5230 - 6033	640 - 880	8045 - 11060	~ 1.70	- 0.10 % (25-90°)	120	~ 6.0	310
Samarium-Cobalt $SmCo_5$	143 - 159	18.0 - 20.0	850	8500	620	7800	1193	15000	1.37	- 0.04 % (20-100°)	ca. 250	8.2	725
Samarium-Cobalt $SmCo_{17}$	159 - 175	20.0 - 22.0	900	9000	636	8000	1193	15000	1.42	0.03 % (20-100°)	ca. 300	8.2	750 - 800
Neodymium-Iron-Boron, NdFeB	223 - 239	28.0 - 30.0	1080 - 1120	10800 - 11200	780- 836	9800 - 10500	>1350	>1600	1.33 - 1.38	- 0.10 %	100 - 120	7.4	310

Design guidelines for permanent magnetic systems

Magnet dimensioning with the aid of the demagnetizing characteristic curve

Magnets can not be randomly constructed or determined like other design parts. The dimensioning of the pole surface to the length in the direction of the magnetization must correspond with their magnetic values.

Fig. 1



The highest magnetic energy is available when the product of the remanence B and the coercive field strength H reaches a maximum. That is the case, when the largest possible rectangle forms under the demagnetizing characteristic curve of B to H (see figure 1).

Figure 2 below contains a scale which shows the relationship between the length and the diameter of a magnet (L/D-ratio).

For a magnetic disc of ø10 mm diameter and 5 mm thickness the L/D-ratio is 5 : 10 = 0.5. If a line is drawn from the 0.5 mark to zero, the point of intersection on the characteristic curve for the corresponding magnetic material is the operating point (BxH) of this magnetic disc.

If a line is drawn horizontally from this operating point to the B-axis and another vertically to the H axis, the remanence and coercive force can be read .

If B and H have the largest possible values, the operating point lies at (B x H) maximum value.

For an "open" magnet, which is used without an iron back plate, the dimensioning should be chosen so that the operating point is near the (BxH) maximum value.

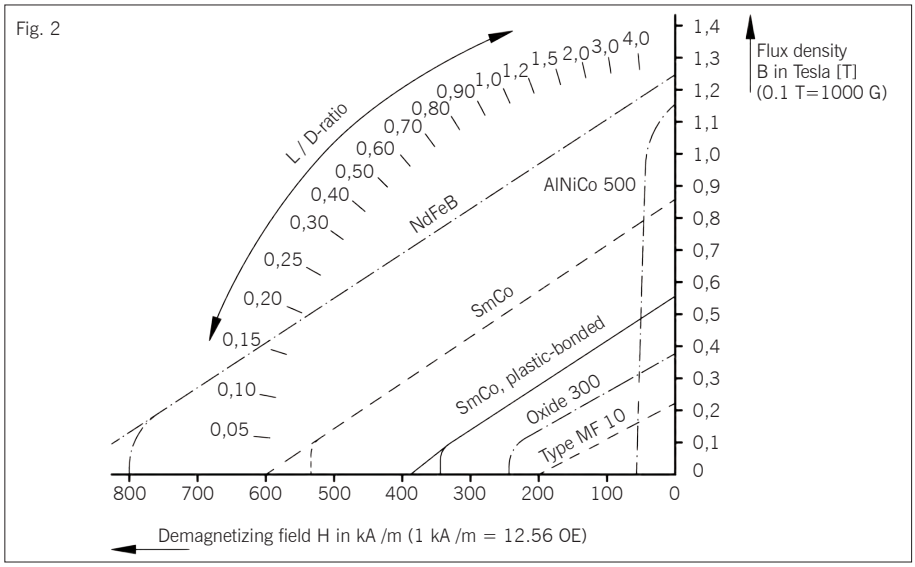
If there is an iron back plate situated behind the magnet, the length L in the L/D-ratio can be doubled to provide an approximate value estimation. This requires that the thickness of the iron back plate is so designed, that no magnetic saturation takes place.

For quadratic or almost quadratic magnetic pole surfaces, the pole surface can be calculated using the following formula:

$$D = \sqrt{\frac{A \times B \times 4}{\pi}}$$

The following curves for the various magnetic materials are simplified and shown without temperature characteristics. A temperature change causes a shift of the operating point on the characteristic curve. As long as the operating point stays in the linear area of the demagnetizing characteristic curve, the induction change is reversible. This means that it returns to its original value after cooling. Otherwise, the change in the induction is irreversible and can only be rectified by re-magnetizing.
See temperature line T1 in figure 1.

Fig. 2



HOLDING MAGNETS

SAV 240.01

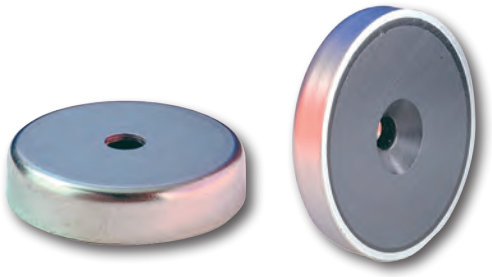
With countersunk through-bore (flat holding magnet)

Execution:

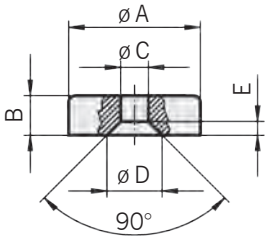
Shielded system, galvanized surface.
Max. application temperature: 200 °C

Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Screw fixing inserted from the holding surface side. The screws must be of a non-magnetic material.



Type	Dimensions in mm					Counter-sink	Nom. Holding force in N	Weight in kg	RF Nom. Holding force in N	RF Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**	**E**					
MH 1 - 16	16	4.5	3.3	7.0	1.6	90°	14	0.004	-	-
MH 1 - 20	20	6.0	4.2	9.0	2.1	90°	27	0.009	-	-
MH 1 - 25	25	7.0	5.5	11.0	2.5	90°	36	0.016	29	0.0165
MH 1 - 32	32	7.0	5.5	11.0	2.5	90°	72	0.027	58	0.0270
MH 1 - 40	40	8.0	5.5	11.0	2.5	90°	90	0.052	72	0.0530



Ordering example:

Holding magnet SAV 240.01 - MH 1 - 40 - RF
Ordering key SAV - No. - Type - Stainless steel execution

HOLDING MAGNETS

SAV 240.01

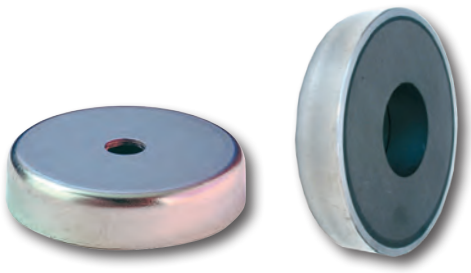
Through-bore with cylinder bore

Execution:

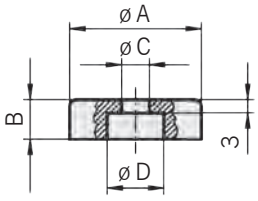
Shielded system, galvanized surface.
Max. application temperature: 200 °C

Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Screw fixing inserted from the holding surface side. The screws must be of a non-magnetic material.



Type	Dimensions in mm					Counter-sink	Nom. Holding force in N	Weight in kg	RF Nom. Holding force in N	RF Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**	**E**					
MH 1 - 50	50	10.0	8.5	22.0	-	-	180	0.085	145	0.0850
MH 1 - 63	63	14.0	6.5	24.0	-	-	290	0.195	230	0.1950
MH 1 - 80	80	18.0	6.5	11.5	-	-	540	0.458	-	-
MH 1 - 83	83	18.0	10.5	32.0	-	-	600	0.444	-	-
MH 1 - 100	100	22.0	10.5	34.0	-	-	680	0.815	-	-



Ordering example:

Holding magnet SAV 240.01 - MH 1 - 50 - RF
Ordering key SAV - No. - Type - Stainless steel execution

HOLDING MAGNETS

SAV 240.02

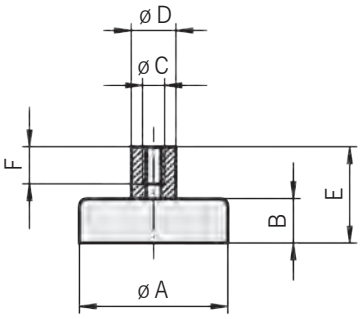
Bush with internal thread (flat holding magnet)

Execution:
Flat holding magnet with threaded bush.
Shielded system, galvanized surface.
Also available in stainless steel execution.
Please supply size(s) required.
Max. application temperature: 200 °C

Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Screw fixing

Type	Dimensions in mm						Nom. Holding force in N	Weight in kg	RF Nom. Holding force in N	RF C
	A ± 0.2	**B** ± 0.2	**C**	**D** ± 0.2	**E** ± 0.2	**F** ± 0.2				
MH 2 - 01	10	4.5	M 3	6	11.5	7	4	0.003	-	-
MH 2 - 02	13	4.5	M 3	6	11.5	7	10	0.004	-	-
MH 2 - 03	16	4.5	M 3	6	11.5	7	18	0.006	-	-
MH 2 - 04	20	6.0	M 3	6	13.0	7	30	0.011	-	-
MH 2 - 05	25	7.0	M 4	8	15.0	8	40	0.020	32	M 5
MH 2 - 06	32	7.0	M 4	8	15.0	8	80	0.031	64	M 5
MH 2 - 36	36	7.7	M 4	8	16.0	8	100	0.042	-	-
MH 2 - 07	40	8.0	M 5	10	18.0	10	125	0.059	100	M 5
MH 2 - 47	47	9.0	M 6	12	21.0	12	180	0.091	-	-
MH 2 - 08	50	10.0	M 6	12	22.0	12	220	0.110	175	M 5
MH 2 - 57	57	10.5	M 6	12	22.5	12	280	0.153	-	-
MH 2 - 09	63	14.0	M 8	15	30.0	16	350	0.245	280	M 5
MH 2 - 10	80	18.0	M 10	20	34.0	16	600	0.499	-	-
MH 2 - 11	100	22.0	M 12	22	43.0	21	900	0.956	-	-
MH 2 - 12	125	26.0	M 14	25	50.0	20	1300	1.720	-	-



Ordering example:

Holding magnet	SAV 240.02 - MH 2 - 12 - RF			
Ordering key	SAV - No.	-	Type	- Stainless steel execution

HOLDING MAGNETS

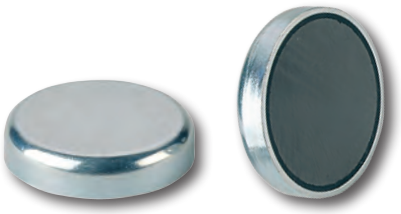
SAV 240.03

Flat holding magnet without threaded bush

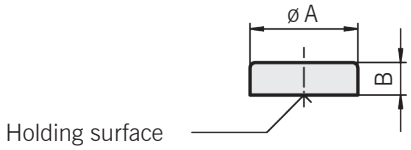
Execution:
Flat holding magnet without threaded bush
Shielded system, galvanized surface.
Max. application temperature: 200 °C

Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Press-fitting, gluing



Type	Dimensions in mm		Nom. Holding force in N	Weight in kg
	A ± 0.2	**B** ± 0.2		
MH 3 - 01	10	4.5	4	0.002
MH 3 - 02	13	4.5	10	0.003
MH 3 - 03	16	4.5	20	0.005
MH 3 - 04	20	6.0	30	0.010
MH 3 - 05	25	7.0	40	0.018
MH 3 - 06	32	7.0	80	0.029
MH 3 - 36	36	7.7	100	0.040
MH 3 - 07	40	8.0	110	0.055
MH 3 - 47	47	9.0	180	0.084
MH 3 - 08	50	10.0	200	0.100
MH 3 - 57	57	10.5	280	0.140
MH 3 - 09	63	14.0	320	0.230
MH 3 - 10	80	18.0	600	0.468
MH 3 - 11	100	22.0	900	0.915
MH 3 - 12	125	26.0	1300	1.680



Note:
The following applies to all flat holding magnets, including Type MH 3: Hairline cracks on the holding surface of the inserted magnetic material and a centre offset are technically unavoidable. These have no influence on the functionality.

Ordering example:

Holding magnet	SAV 240.03 - MH 3 - 36			
Ordering key	SAV - No.	-	Type	

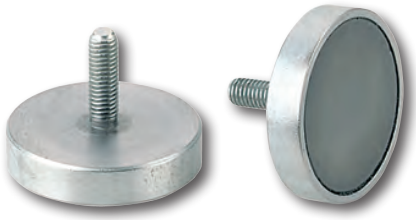
HOLDING MAGNETS

SAV 240.08

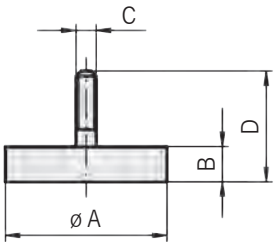
With threaded stud

Execution:
Flat holding magnet with threaded stud.
Shielded system, galvanized surface.
Max. application temperature: 200 °C

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D		
MH 8 - 10	10	4.5	M 3	11.5	4	0.002
MH 8 - 13	13	4.5	M 3	11.5	10	0.003
MH 8 - 16 - 1	16	4.5	M 3	11.5	18	0.005
MH 8 - 16 - 2	16	4.5	M 4	11.5	18	0.005
MH 8 - 20 - 1	20	6.0	M 3	12.0	30	0.010
MH 8 - 20 - 2	20	6.0	M 6	36.0	30	0.015
MH 8 - 25 - 1	25	7.0	M 4	15.0	40	0.019
MH 8 - 22						
MH 8 - 25 - 2	25	7.0	M 5	22.0	40	0.020
MH 8 - 25 - 3	25	7.0	M 6	27.0	40	0.022
MH 8 - 32 - 1	32	7.0	M 4	15.0	80	0.030
MH 8 - 32 - 2						
MH 8 - 32 - 3	32	7.0	M 6	19.0	80	0.031
MH 8 - 32 - 4	32	7.0	M 8	17.0	80	0.032
MH 8 - 47	47	9.0	M 6	17.0	180	0.085
MH 8 - 57 - 2	57	10.5	M 6	18.5	280	0.146
MH 8 - 63	63	14.0	M 6	29.0	350	0.233



Note:
For holding magnets with threaded studs
With a strengthened execution, please see
SAV 240.33 - MH 33.



Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Screw fixing

Ordering example:
Holding magnet SAV 240.08 - MH 8 - 32 - 1
Ordering key SAV - No. - Type

HOLDING MAGNETS

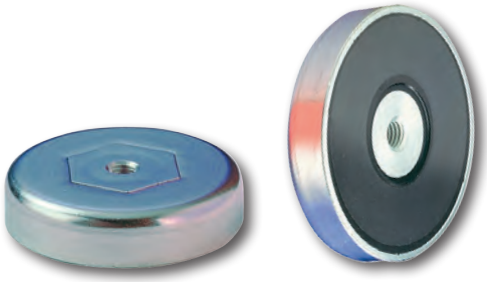
SAV 240.23

With internal thread

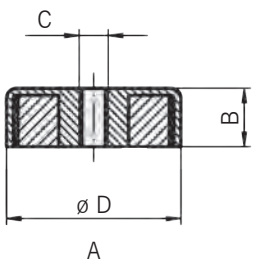
Execution:
Shielded system, galvanized surface.
Max. application temperature: 200 °C

Magnetic material:
Hard ferrite (Oxide 380)

Fixing options:
Screw fixing



Type	Dimensions in mm				Weight in kg	holding force in N
	A ± 0.2	B ± 0.2	C	D		
MH 23 - 25 - 07	25	7	M 4	5.2	0.018	36
MH 23 - 32 - 07	32	7	M 4	5.2	0.029	75
MH 23 - 40 - 08	40	8	M 4	5.2	0.053	90
MH 23 - 50 - 10	50	10	M 6	12.0	0.094	170
MH 23 - 50 - 10	50	10	M 8	12.0	0.094	170
MH 23 - 63 - 14	63	14	M 8	13.0	0.206	290
MH 23 - 80 - 08	80	18	M 8	14.5	0.472	550
MH 23 - 80 - 10	80	18	M 10	14.5	0.466	550



Ordering example:
Holding magnet SAV 240.23 - MH 23 - 40 - 08
Ordering key SAV - No. - Type

HOLDING MAGNETS

SAV 240.14

With internal thread

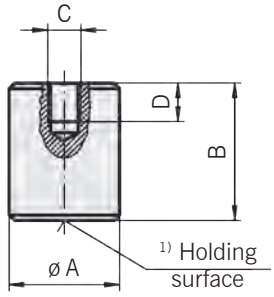
Execution:
Cylindrical holding magnet, smooth without fitting tolerance. NdFeB magnets have an up to 50% higher holding force compared to SmCo magnets. Shielded system. Stainless steel (RF) sea water resistant execution also available.

Max. application temperature: 80 °C

Magnetic material:

NdFeB

Fixing options:
Screw fixing



Type	Dimensions in mm				Nom. Holding force in N	Nom. Holding force RF in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D			
MH 14 - 06	6	20	M 3	5	6	1	0.003
MH 14 - 08	8	20	M 3	5	12	4	0.006
MH 14 - 10	10	20	M 4	7	24	8	0.010
MH 14 - 13	13	20	M 4	7	60	16	0.016
MH 14 - 16	16	20	M 4	7	90	18	0.025
MH 14 - 20	20	25	M 6	9	135	32	0.055
MH 14 - 25	25	35	M 6	9	190	73	0.135
MH 14 - 32	32	40	M 8*	12	340	115	0.230

Note:
1) When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.

Ordering example:

Holding magnet SAV 240.14 - MH 14 - 32 - RF
Ordering key SAV - No. - Type - Stainless steel execution

HOLDING MAGNETS

SAV 240.16

With smooth stud

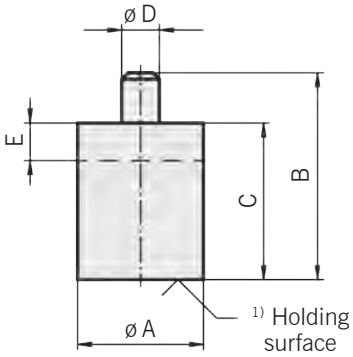
Execution:
Cylindrical holding magnet with smooth stud.

Shielded system.

Max. application temperature: 80 °C

Magnetic material:
NdFeB

Fixing options:
Riveting of the stud or screwing after tapping a thread onto the stud.



Type	Dimensions in mm					Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D	E 2)		
MH 16 - 01	6	28	20	3	2	6	0.004
MH 16 - 02	8	28	20	3	3	12	0.007
MH 16 - 03	10	28	20	4	6	24	0.013
MH 16 - 04	13	28	20	4	7	60	0.021
MH 16 - 05	16	28	20	5	5	90	0.032
MH 16 - 06	20	33	25	6	6	135	0.062
MH 16 - 07	25	45	35	8	5	190	0.137
MH 16 - 08	32	50	40	10	3	340	0.245

Note:
1) When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.
2) The stud can be extended to dimension E without a reduction in the holding force.

Ordering example:

Holding magnet SAV 240.16 - MH 16 - 08
Ordering key SAV - No. - Type

HOLDING MAGNETS

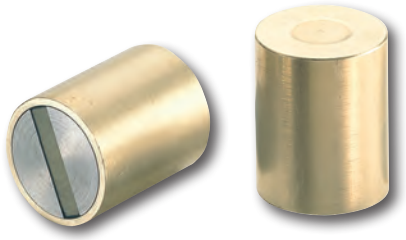
SAV 240.17

With h6 tolerance

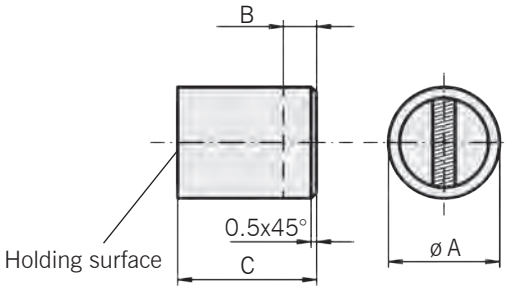
Execution:
Brass magnet housing with integrated sandwich magnet system.
Max. application temperature: 80 °C

Magnetic material:
NdFeB

Fixing options:
Press-fitting, gluing



Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A_{h6}	B[1]	C	D[2]		
MH 17 - 01	6	10	20	1.5	10	0.004
MH 17 - 02	8	10	20	1.5	22	0.008
MH 17 - 03	10	8	20	2.0	45	0.012
MH 17 - 04	13	6	20	2.5	70	0.020
MH 17 - 05	16	2	20	3.0	150	0.032
MH 17 - 06	20	5	25	4.0	300	0.060
MH 17 - 07	25	7	35	5.0	500	0.140
MH 17 - 08	32	5	40	6.0	720	0.265



[1] The rear side of the cylinder magnet can be reduced up to dimension B without a reduction in the holding force.
[2] When machining the holding surface, the maximum machining depth is dimension D, otherwise the holding force will decrease significantly.

Ordering example:
Holding magnet SAV 240.17 - MH 17 - 04
Ordering key SAV - No. - Type

HOLDING MAGNETS

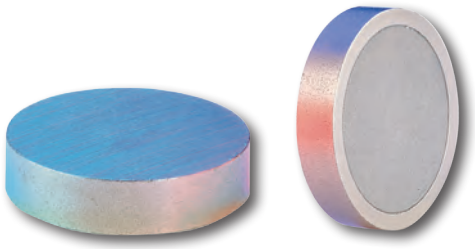
SAV 240.18

High energy magnets

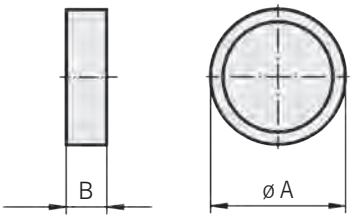
Max. application temperature: 80 °C

Magnetic material:
Neodymium-Iron-Boron, NdFeB

Fixing options:
Press-fitting, gluing, fill-fitting



Type	Dimensions in mm		Nom. Holding force in N	Weight in kg
	A ± 0.15	B ± 0.15		
MH 18 - 01	6	4.5	5	0.001
MH 18 - 02	8	4.5	13	0.002
MH 18 - 03	10	4.5	25	0.003
MH 18 - 04	13	4.5	60	0.005
MH 18 - 05	16	4.5	95	0.007
MH 18 - 06	20	6.0	140	0.015
MH 18 - 07	25	7.0	200	0.022
MH 18 - 08	32	7.0	350	0.040



Ordering example:
Holding magnet SAV 240.18 - MH 18 - 05
Ordering key SAV - No. - Type

HOLDING MAGNETS

SAV 240.19

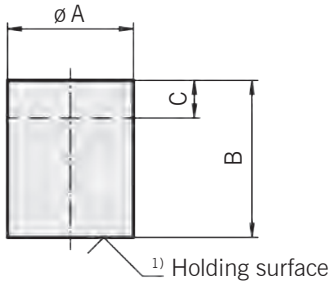
High energy magnets also with fitting tolerances

Execution:
Cylindrical holding magnet, smooth without fitting tolerance. Shielded system.
Also available with h6 (P) fitting tolerance – add P to the type no. when ordering.

Max. application temperature: 80 °C

Magnetic material:
NdFeB

Type	Dimensions in mm			Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C [2]		
MH 19 - 001	4	10	5	2.5	0.001
MH 19 - 002	5	10	5	4.5	0.003
MH 19 - 01	6	10	5	6	0.004
MH 19 - 02	8	12	7	12	0.007
MH 19 - 03	10	16	11	24	0.011
MH 19 - 04	13	18	13	60	0.019
MH 19 - 05	16	20	15	90	0.029
MH 19 - 06	20	25	18	135	0.061
MH 19 - 07	25	30	22	190	0.140
MH 19 - 08	32	35	27	340	0.240



Note:
[1] When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.
[2] The rear side of the cylinder magnet can be reduced up to dimension C without a reduction in the holding force.

Ordering example:
Holding magnet SAV 240.19 - MH 19 - 08 - P
Ordering key SAV - No. - Type - Execution

HOLDING MAGNETS

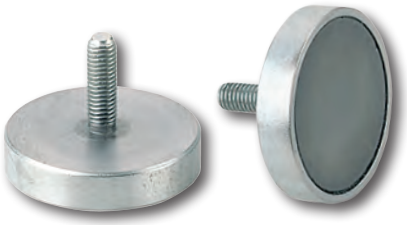
SAV 240.33

High energy magnets with threaded stud

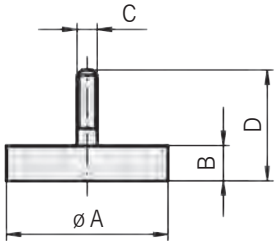
Execution:
Flat holding magnet with threaded stud.
Shielded system, galvanized surface.
Max. application temperature: 80 °C

Magnetic material:
NdFeB

Fixing options:
Screw fixing



Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A	B	C	D		
MH 33 - 10	10	4.5	M 4	12.5	25	0.003
MH 33 - 13	13	4.5	M 5	12.5	60	0.005
MH 33 - 16	16	4.5	M 6	12.5	95	0.008
MH 33 - 20	20	6	M 6	16	140	0.016
MH 33 - 25	25	7	M 6	17	200	0.025
MH 33 - 32	32	7	M 6	17	350	0.048



Ordering example:
Holding magnet SAV 240.33 - MH 33 - 32
Ordering key SAV - No. - Type

HOLDING MAGNETS

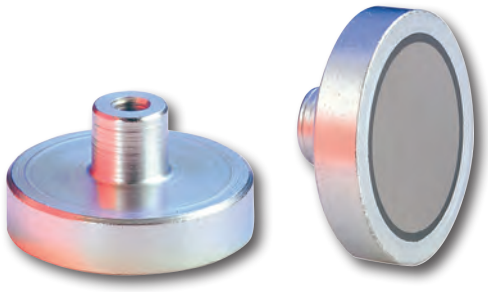
SAV 240.36

High energy magnets with internally threaded bush (flat holding magnet)

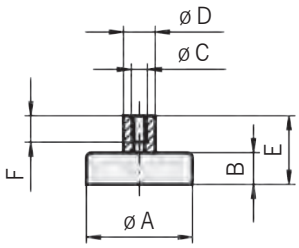
Execution:
Shielded system, galvanized surface.
Max. application temperature: 80 °C

Magnetic material:
NdFeB

Fixing options:
Screw fixing



Type	Dimensions in mm						Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D	E	F		
MH 36 - 06	6	4.5	M 3	6	11.5	7.0	5	0.002
MH 36 - 08	8	4.5	M 3	6	11.5	7.0	13	0.003
MH 36 - 10	10	4.5	M 3	6	11.5	7.0	25	0.004
MH 36 - 13	13	4.5	M 3	6	11.5	7.0	60	0.005
MH 36 - 16	16	4.5	M 4	6	11.5	7.0	95	0.007
MH 36 - 20	20	6.0	M 4	8	13.0	7.0	140	0.016
MH 36 - 25	25	7.0	M 4	8	14.0	7.0	200	0.027
MH 36 - 32	32	7.0	M 5	10	15.5	8.5	350	0.045



Ordering example:
Holding magnet SAV 240.36 - MH 36 - 32
Ordering key SAV - No. - Type

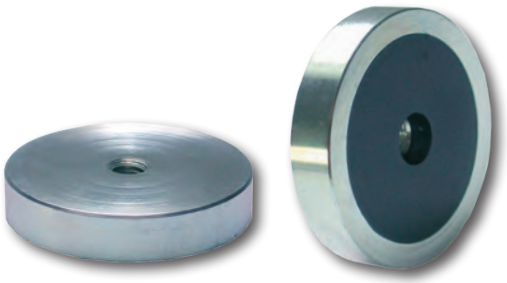
HOLDING MAGNETS

SAV 240.38

High energy magnets; NdFeB flat holding magnets with h6 tolerance, anisotropic, with internally threaded recessed bore

Execution:
Shielded system, galvanized surface.
Anisotropic magnetization
Max. application temperature: 80 °C

Magnetic material: NdFeB

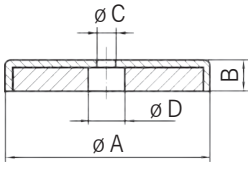


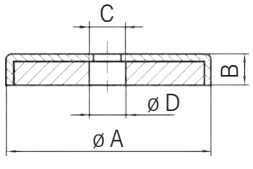
With bore and recess:

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D		
MH 38 - 216	16	4.5	3.5	6.6	75	0.006
MH 38 - 220	20	6	4.5	9.0	105	0.013
MH 38 - 225	25	7	4.5	9.0	160	0.024
MH 38 - 232	32	7	5.5	11.0	310	0.039
MH 38 - 240	40	8	5.5	10.6	500	0.073

With internal thread:

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A ± 0.2	B ± 0.2	C	D		
MH 38 - 332	32	7	5	5.5	330	0.040
MH 38 - 340	40	8	5	10.5	500	0.074
MH 38 - 350	50	10	8	9.5	800	0.140
MH 38 - 363	63	14	10	11.7	1100	0.315
MH 38 - 375	75	15	10	13	1750	0.479





Ordering example:
Holding magnet SAV 240.38 - MH 38 - 332
Ordering key SAV - No. - Type

These holding magnets are made with high-energy Neo-Delta (NdFeB) magnets. They do not just have a high holding force, but are also completely resistant to demagnetization. Even after many years of usage there is no reduction in the holding force.

Due to the multi-pole assembly, a dense magnetic field is created on the holding surface. This even provides a strong holding force on thin and painted car bodies. Due to the 'suction effect' of the soft rubber surface, the lateral sliding force is extremely good.

The rubber covers from Santoprene© have a very long working life and provide adequate resistance to all weather conditions and UV radiation.

These rubber covered holding magnets are especially suitable for magnetic mounting of parts such as advertising displays, safety lights on car roofs, but also for the scratch-free mounting of signs or samples on highly polished, chromed or painted surfaces.

RUBBER COATED HOLDING MAGNET

SAV 240.41

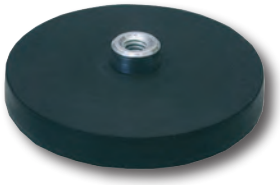
With rubber coating

Execution:
Holding magnet discs, rubber coated with internally threaded bush on the rear.

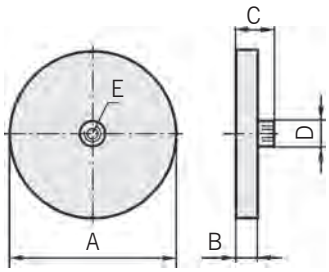
Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: Screw fixing



Type	Dimensions in mm					Nom. Holding force in N	Weight in kg
	A	B	C	D	E		
MG 12	12	7	14.8	8	M 4	10	0.006
MG 22	22	6	11.5	8	M 4	50	0.013
MG 31	31	6	11.5	8	M 4	75	0.022
MG 43	43	6	10.5	8	M 4	85	0.030
MG 66	66	8.5	15	10	M 5	180	0.105
MG 88	88	8.5	17	12	M 8	420	0.192



Ordering example:

Holding magnet SAV 240.41 - MG 12
Ordering key SAV - No. - Type

RUBBER COATED HOLDING MAGNET

SAV 240.41

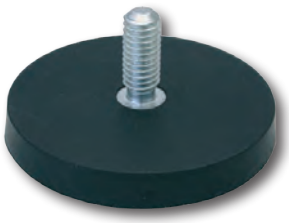
With threaded stud

Execution:
Holding magnet discs, rubber coated with threaded stud on the rear.

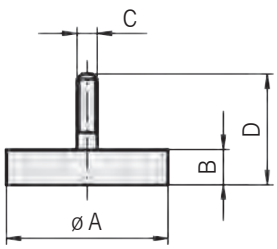
Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: Screw fixing



Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A	B	C	D		
MG22-M4x6	22	6	M 4x6	8	50	0.011
MG43-M6x15	22	6	M 6x15	8	85	0.032
MG66-M8x15	66	8.5	M 8x15	10	180	0.107
MG88-M8x15	88	8.5	M 8x15	12	420	0.193



Ordering example:

Holding magnet SAV 240.42 - MG 22-M4x6
Ordering key SAV - No. - Type

RUBBER COATED HOLDING MAGNET

SAV 240.41

Rectangular form with threaded bush

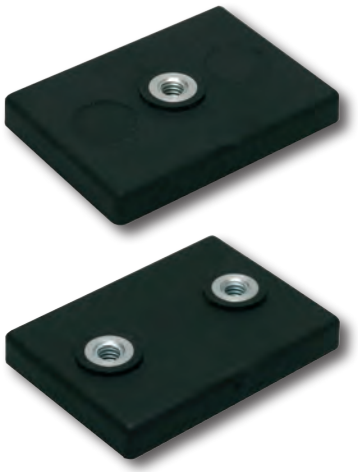
Execution:
Holding magnet discs, rubber coated. Rectangular form with 1 or 2 threaded bushes.

(Also see the general description on page 21)

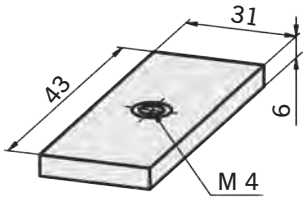
Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: Screw fixing



Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	Length	Width	Height	Thread		
MG 10	43	31	6.9	M 4	90	0.027
MG 20	43	31	6.9	2x M 4	115	0.028



Ordering example:
Holding magnet SAV 240.41 - MG 10
Ordering key SAV - No. - Type

RUBBER COATED HOLDING MAGNET

SAV 240.42

With internally threaded bush

Execution:
Holding magnet discs, rubber coated with threaded cylindrical bore hole.

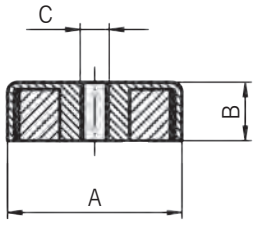
(Also see the general description on page 21)

Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: Screw fixing

Type	Dimensions in mm			Nom. Holding force in N	Weight in kg
	A	B	C		
MG 22	22	6	M 4	35	0.009
MG 31	31	6	M 5	75	0.021
MG 43	43	6	M 4	85	0.029
MG 66	66	8.5	M 6	180	0.100
MG 88	88	8.5	M 6	420	0.186



Ordering example:
Holding magnet SAV 240.42 - MG 22
Ordering key SAV - No. - Type

RUBBER COATED HOLDING MAGNET

SAV 240.43

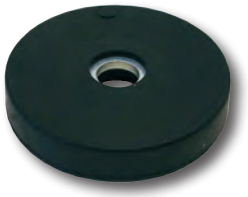
In flat execution or with bore hole

Execution:
Holding magnet discs, rubber coated.
Flat or with cylindrical bore hole.
(Also see the general description on page 21)

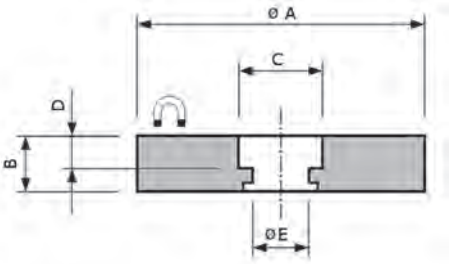
Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: Screw fixing or gluing



Type	Dimensions in mm					Nom. Holding force in N	Weight in kg
	A	B	C	D	E		
MG 22-F	22	6	-	-		50	0.0095
MG 31-F	31	6	-	-		75	0.025
MG 43-F	43	6	-	-		85	0.028
MG 31-B	31	6	6	9	3.5	75	0.020
MG 57-B	57	7.6	8	25.3	3.3	175	0.077
MG 66-B	66	8.5	5.5	22	3.2	210	0.100



Ordering example:
Holding magnet SAV 240.43 - MG 22-F
Ordering key SAV - No. - Type

RUBBER COATED HOLDING MAGNET

SAV 240.44

With clip

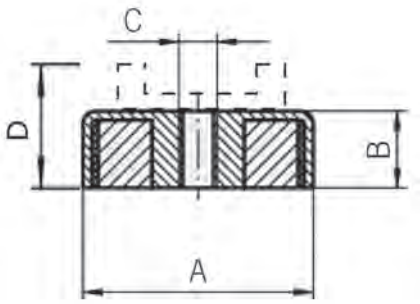
Execution:
Holding magnet discs, rubber coated.
With a clip fixed to the magnet.
(Also see the general description on page 21)

Max. application temperature: 60 °C

Magnetic material: Neodelta (NdFeB)

Fixing options: For cable and pipe mounting

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A	B	C	D		
MG 22-S	22	6	M 4	16	35	0.012
MG 31-S	31	6	M 5	16	75	0.026
MG 43-S	43	6	M 4	16	85	0.030



Ordering example:
Holding magnet SAV 240.44 - MG 22-S
Ordering key SAV - No. - Type

HOLDING MAGNETS

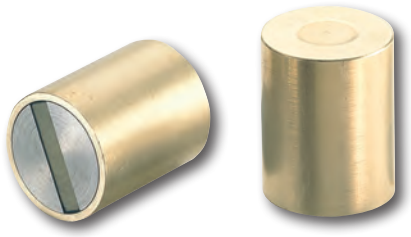
SAV 240.09

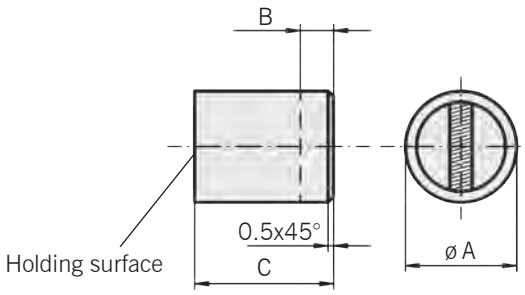
With h6 tolerance

Execution:
Brass magnet housing with integrated sandwich magnet system.
Max. application temperature: 200 °C

Magnetic material: $SmCo_5$

Fixing options:
Press-fitting, gluing





Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A_{h6}	B[1]	C	D[2]		
MH 9 - 01	6	10	20	1.5	8	0.004
MH 9 - 02	8	10	20	1.5	22	0.008
MH 9 - 03	10	8	20	2.0	40	0.012
MH 9 - 04	13	6	20	2.5	60	0.020
MH 9 - 05	16	2	20	3.0	125	0.032
MH 9 - 06	20	5	25	4.0	230	0.060
MH 9 - 07	25	7	35	5.0	400	0.140
MH 9 - 08	32	5	40	6.0	600	0.265

[1] The rear side of the cylinder magnet can be reduced up to dimension B without a reduction in the holding force.
[2] When machining the holding surface, the maximum machining depth is dimension D, otherwise the holding force will decrease significantly.

Ordering example:
Holding magnet SAV 240.09 - MH 9 - 04
Ordering key SAV - No. - Type

HOLDING MAGNETS

SAV 240.10

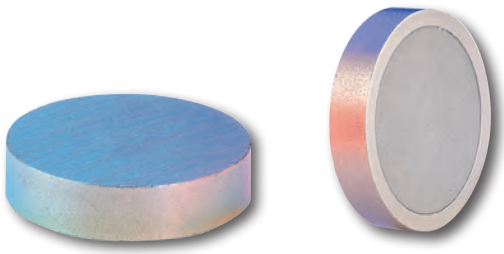
High energy magnets

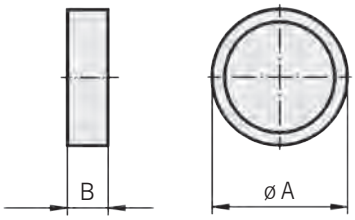
Execution:
SmCo5 magnets have a 3- to 5-fold holding force compared to standard holding magnets. The magnets are enclosed in a steel housing (shielded).

Max. application temperature: 200 °C

Magnetic material:
Samarium-Cobalt, $SmCo_5$

Fixing options:
Press-fitting, gluing, fill fitting





Type	Dimensions in mm		Nom. Holding force in N	Weight in kg
	A±0.15	B±0.15		
MH 10 - 01	6	4.5	5	0.001
MH 10 - 02	8	4.5	11	0.002
MH 10 - 03	10	4.5	20	0.003
MH 10 - 04	13	4.5	40	0.005
MH 10 - 05	16	4.5	60	0.007
MH 10 - 06	20	6.0	90	0.015
MH 10 - 07	25	7.0	150	0.027
MH 10 - 08	32	7.0	220	0.044

Ordering example:
Holding magnet SAV 240.10 - MH 10 - 08
Ordering key SAV - No. - Type

HOLDING MAGNETS

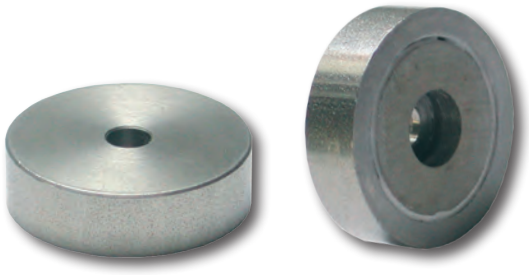
SAV 240.34

High energy magnets, SmCo flat holding magnets, anisotropic, with cylinder bore

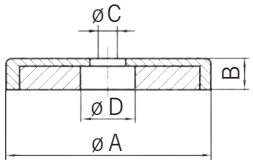
Execution:
Shielded system, galvanized surface.
Anisotropic magnetization

Max. application temperature: 350 °C

Magnetic material:
SmCo



Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**		
MH 34 - 120	20	6	4.5	8	60	0.013
MH 34 - 125	25	7	4.5	8	80	0.024
MH 34 - 132	32	7	5.5	11	200	0.039
MH 34 - 140	40	8	5.5	10	420	0.075



Ordering example:
Holding magnet SAV 240.34 - MH 34 - 120
Ordering key SAV - No. - Type

HOLDING MAGNETS

SAV 240.35

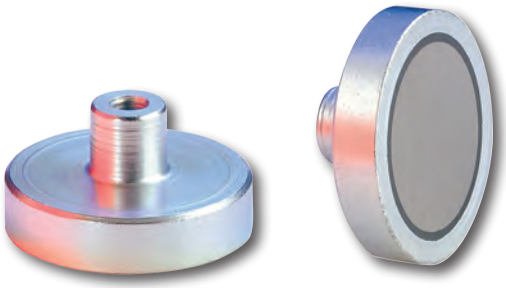
Bush with internal thread (flat holding magnet), extremely high nominal holding force

Execution:
Shielded system, galvanized surface.

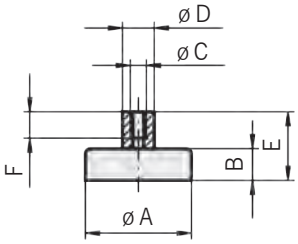
Max. application temperature: 200 °C

Magnetic material:
High energy material
Samarium-Cobalt, $SmCo_5$

Fixing options:
Screw fixing



Type	Dimensions in mm						Nom. Holding force in N	Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**	**E**	**F**		
MH 35 - 06	6	4.5	M 3	6	11.5	7.0	5	0.002
MH 35 - 08	8	4.5	M 3	6	11.5	7.0	11	0.002
MH 35 - 10	10	4.5	M 3	6	11.5	7.0	20	0.003
MH 35 - 13	13	4.5	M 3	6	11.5	7.0	40	0.005
MH 35 - 16	16	4.5	M 4	8	11.5	7.0	60	0.008
MH 35 - 20	20	6.0	M 4	8	13.0	7.0	90	0.016
MH 35 - 25	25	7.0	M 4	8	14.0	7.0	150	0.022
MH 35 - 32	32	7.0	M 5	10	15.5	8.5	220	0.040



Ordering example:
Holding magnet SAV 240.35 - MH 35 - 20
Ordering key SAV - No. - Type

HOLDING MAGNETS

SAV 240.04

With internal thread

Execution:
Cylindrical holding magnet, smooth without fitting tolerance. Shielded system.
Max. application temperature: 450 °C

Magnetic material:
AlNiCo 500

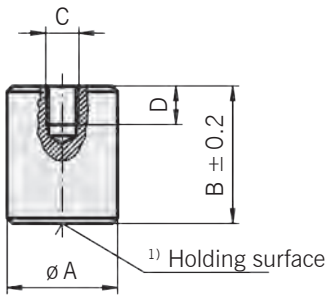
Fixing options:
Screw fixing

Note:
For enhanced executions see SAV 240.14 NdFeB.

Please specify for usage in injection moulds with high pressures.

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**		
MH 11 - 06	6	20	M 3	5	1.7	0.003
MH 11 - 08	8	20	M 3	5	4.0	0.006
MH 11 - 10	10	20	M 4	7	8.5	0.010
MH 11 - 13	13	20	M 4	7	12.0	0.016
MH 11 - 16	16	20	M 4	5	20.0	0.025
MH 11 - 20	20	25	M 6	7	45.0	0.055
MH 11 - 25	25	35	M 6	9	100.0	0.135
MH 11 - 32	32	40	M 8	9	190.0	0.230

Ordering example:
Holding magnet SAV 240.04 - MH 11 - 32
Ordering key SAV - No. - Type



1) When machining the holding surface, the maximum machining depth is 2 mm, other wise the holding force will decrease significantly.

HOLDING MAGNETS

SAV 240.05

With smooth stud

Execution:
Cylindrical holding magnet with smooth stud.
Shielded system.
Max. application temperature: 450 °C

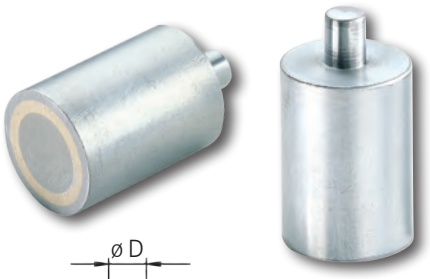
Magnetic material: AlNiCo 500

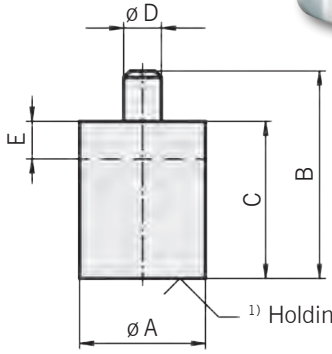
Fixing options:
Riveting of the stud or screwing after tapping a thread onto the stud.

Please specify for usage in injection moulds with high pressures.

Type	Dimensions in mm					Nom. Holding force in N	Weight in kg
	A ± 0.2	**B** ± 0.2	**C**	**D**	**E**[2]		
MH 5 - 01	6	28	20	3	2	1.7	0.004
MH 5 - 02	8	28	20	3	3	4.0	0.007
MH 5 - 03	10	28	20	4	6	8.5	0.013
MH 5 - 04	13	28	20	4	7	12.0	0.021
MH 5 - 05	16	28	20	5	5	20.0	0.032
MH 5 - 06	20	33	25	6	6	45.0	0.062
MH 5 - 07	25	45	35	8	5	100.0	0.137
MH 5 - 08	32	50	40	10	3	190.0	0.245
MH 5 - 09	40	70	50	15	5	240.0	0.520
MH 5 - 10	50	85	60	18	2	420.0	0.961
MH 5 - 11	63	95	65	20	5	660.0	1.580

Ordering example:
Holding magnet SAV 240.05 - MH 5 - 10
Ordering key SAV - No. - Type





Note:
1) When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.
2) The stud can be extended to dimension E without a reduction in the holding force.

HOLDING MAGNETS

SAV 240.06

Holding magnet without fitting tolerance

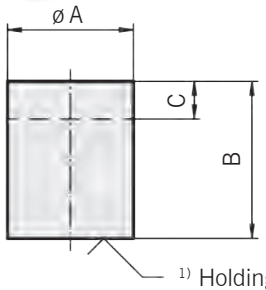
Execution:
Cylindrical holding magnet, smooth without fitting tolerance. Shielded system.

Max. application temperature: 450 °C

Magnetic material:
AlNiCo 500

Fixing options:
Press-fitting, shrink-fitting, gluing

Please specify for usage in injection moulds with high pressures.



Type	Dimensions in mm A ± 0.2	B ± 0.2	C 2)	Nom. Holding force in N	Weight in kg
MH 6 - 01	6	20	12	1.7	0.004
MH 6 - 02	8	20	11	4.0	0.007
MH 6 - 03	10	20	10	8.5	0.011
MH 6 - 04	13	20	8	12.0	0.019
MH 6 - 05	16	20	6	20.0	0.029
MH 6 - 06	20	25	5	45.0	0.061
MH 6 - 07	25	35	13	100.0	0.140
MH 6 - 08	32	40	9	190.0	0.240
MH 6 - 09	40	50	10	240.0	0.500
MH 6 - 10	50	60	10	420.0	0.900
MH 6 - 11	63	65	10	660.0	1.500

Note:
1) When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.
2) The rear side of the cylinder magnet can be reduced up to dimension C without a reduction in the holding force.

Ordering example:

Holding magnet	SAV 240.06 - MH 6 - 08		
Ordering key	SAV - No.	-	Type

HOLDING MAGNETS

SAV 240.07

Holding magnet with fitting tolerance

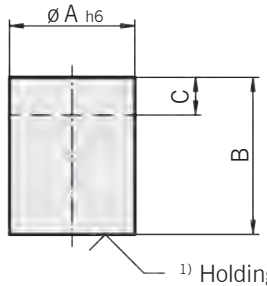
Execution:
Cylindrical holding magnet, smooth with h6 fitting tolerance in the diameter. Shielded system.

Max. application temperature: 450 °C

Magnetic material: AlNiCo 500

Fixing options:
Press-fitting, shrink-fitting, gluing

Please specify for usage in injection moulds with high pressures.



Type	Dimensions in mm A h6	B ±0.2	C 2)	Nom. Holding force in N	Weight in kg
MH 7 - 01	6	10	2	1.5	0.002
MH 7 - 02	8	12	3	3.5	0.004
MH 7 - 03	10	16	6	7.0	0.009
MH 7 - 04	13	18	7	10.0	0.017
MH 7 - 05	16	20	5	18.0	0.029
MH 7 - 06	20	25	6	42.0	0.057
MH 7 - 07	25	30	5	96.0	0.110
MH 7 - 08	32	35	3	180.0	0.200
MH 7 - 09	40	45	5	240.0	0.420
MH 7 - 10	50	50	2	420.0	0.720
MH 7 - 11	63	60	5	660.0	1.340

Note:
1) When machining the holding surface, the maximum machining depth is 2 mm, otherwise the holding force will decrease significantly.
2) The rear side of the cylinder magnet can be reduced up to dimension C without a reduction in the holding force.

Ordering example:

Holding magnet	SAV 240.07 - MH 7 - 08		
Ordering key	SAV - No.	-	Type

POT MAGNETS

SAV 240.11

With internal thread

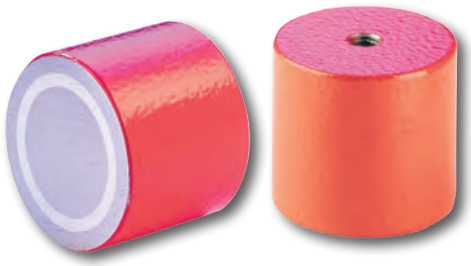
Execution:
Strong magnet with steel housing and threaded blind hole.
Red, crinkle paint finish.

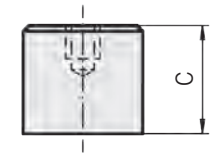
Max. application temperature:
100 °C for the paint
400 °C for the magnetic material

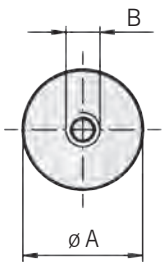
Magnetic material:
AlNiCo

Fixing options:
Screw fixing

Type	Dimensions in mm			Nom. Holding force in N	Weight in kg
	A	B	C		
MH 11 - 12	12.7	M 4	16	20	0.016
MH 11 - 17	17	M 6	16.0	20	0.025
MH 11 - 21	21	M 6	19.0	28	0.050
MH 11 - 27	27	M 6	25.4	68	0.110
MH 11 - 35	35	M 6	30.0	150	0.220
MH 11 - 35-2	35	M 6	20	100	0.160
MH 11 - 45	45	M 8	30	280	0.380
MH 11 - 50	50	M 8	40	350	0.630
MH 11 - 65	65	M 12	43.0	400	1.080







Ordering example:
Pot magnet SAV 240.11 - MH 11 - 65
Ordering key SAV - No. - Type

FLAT POT MAGNETS

SAV 240.12

With countersunk through bore

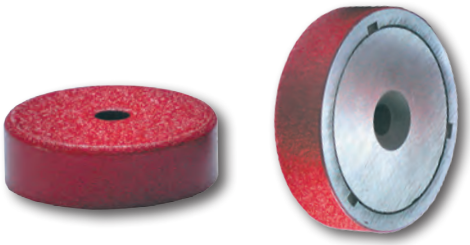
Execution:
Strong magnet with countersunk through bore.
Red, crinkle paint finish.

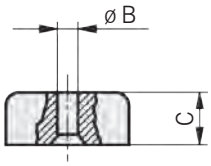
Max. application temperature:
100 °C for the paint
400 °C for the magnetic material

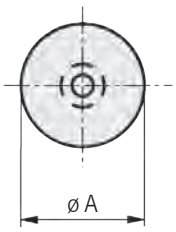
Magnetic material:
AlNiCo

Fixing options:
Screw fixing

Type	Dimensions in mm			Nom. Holding force in N	Weight in kg
	A	B	C		
MH 12 - 19	19	3.5	8.0	25	0.017
MH 12 - 29	29	4.7	9.0	50	0.044
MH 12 - 38	38	4.7	11.1	80	0.105







Ordering example:
Flat pot magnet SAV 240.12 - MH 12 - 38
Ordering key SAV - No. - Type

BUTTON MAGNETS

SAV 240.13

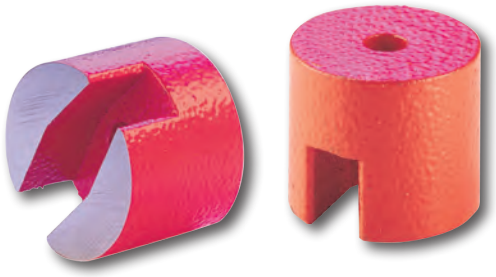
Cleaved holding surface, with through-hole

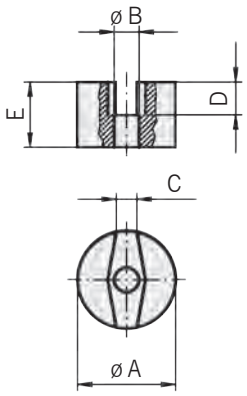
Execution:
Cleaved holding surface with through-hole.
Red, crinkle paint finish.

Max. application temperature:
100 °C for the paint
400 °C for the magnetic material

Magnetic material:
AlNiCo

Fixing options:
Screw fixing from the holding surface side





Type	Dimensions in mm					Nom. Holding force in N	Weight in kg
	A	B	C	D	E		
MH 13 - 13	12.7	4.7	4.0	4.8	9.5	7	0.006
MH 13 - 19	19.0	5.2	5.5	6.4	12.7	19	0.019
MH 13 - 25	25.4	5.2	5.5	8.0	19.5	29	0.063
MH 13 - 32	32.5	7.0	8.0	12.0	25.0	66	0.105

Ordering example:

Button magnet	SAV 240.13 - MH 13 - 32		
Ordering key	SAV - No.	-	Type

POT MAGNETS

SAV 240.15

With releasing bolt [1)]

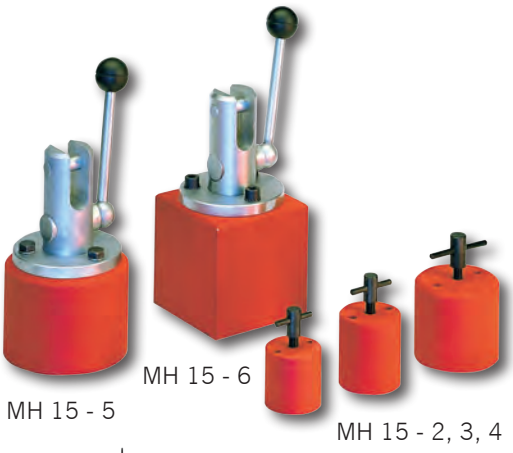
Execution:
Strong nominal holding force. The release handle facilitates the easy release of the magnet from the workpiece. Red, crinkle paint finish.
Max. application temperature: 100 °C

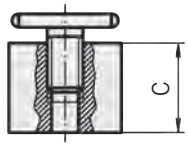
Magnetic material:
AlNiCo / Hard ferrite

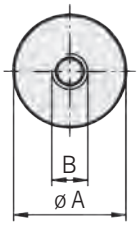
Fixing options:
Screw fixing

Use:
As a holding magnet, for light to medium transportation tasks.

Note:
[1)] MH 15 - 1 without releasing-bolt and only supplied with a T-holding bolt







Shown without T-bolt

Type	Dimensions in mm			Nom. Holding force in N	Permanent Magnet Material	Weight in kg
	A	B	C			
MH 15 - 1[1)]	50	M 8	40	270	AlNiCo	0.600
MH 15 - 2	70	M 8	63	650	AlNiCo	2.020
MH 15 - 3	75	M 12	45	400	Hartferrit	2.200
MH 15 - 4	44	M 8	44	200	AlNiCo	0.520
MH 15 - 5	102	M 8	75	1700	AlNiCo	6.400
MH 15 - 6	95	M 8	95	2200	AlNiCo	7.700

Ordering example:

Pot magnet	SAV 240.15 - MH 15 - 4		
Ordering key	SAV - No.	-	Type

BAR MAGNETS

SAV 241.06

Supplied in pairs. Rectangular and round cross-sections

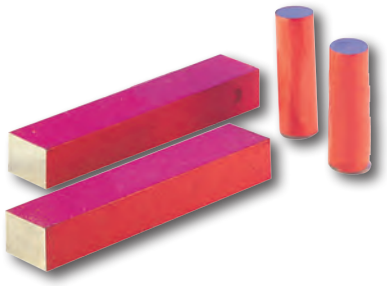
Execution:
Red, crinkle paint finish, unshielded.

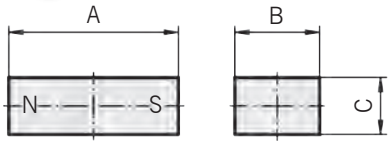
Max. application temperature: 100 °C / 400 °C

Magnetic material:
AlNiCo 500, precision cast

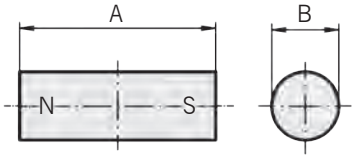
Fixing options:
Press fitting, gluing

Note:
Supplied in pairs. Machining only possible by grinding.





Type MH 630 to Type MH 636



Type MH 620 to Type MH 626

Rectangular bar magnets:

Type	Dimensions in mm A	B	C	Weight in kg
MH 630	20	10	5	0.005
MH 631	60	15	5	0.055
MH 632	50	15	10	0.063
MH 633	75	15	10	0.118
MH 634	101	15	10	0.174
MH 635	40	12.5	5	0.030
MH 636	60	12.5	5	0.036

Round bar magnets:

Type	Dimensions in mm A	B	Weight in kg
MH 620	10	4	0.001
MH 621	10	5	0.001
MH 622	10	6	0.001
MH 623	20	5	0.002
MH 624	20	6	0.003
MH 625	24	8	0.007
MH 626	30	10	0.018

Ordering example:
Bar magnet SAV 241.06 - MH 635
Ordering key SAV - No. - Type

STRONG MAGNETS

SAV 241.14

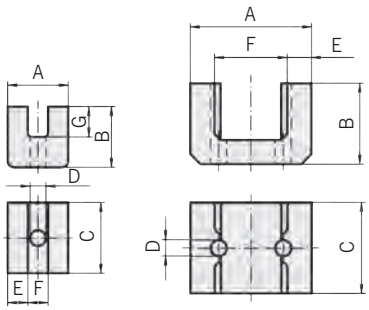
Horseshoe design with mounting holes

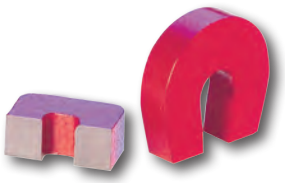
Execution:
Horseshoe magnet with high nominal holding force. Through-hole for mounting from type MH 14-17 onwards. Ground holding faces. To prevent demagnetization, iron/steel plates covering both poles should be positioned on both sides. Red, crinkle paint finish.

Max. application temperature: 100 °C / 400 °C

Magnetic material: AlNiCo, precision cast

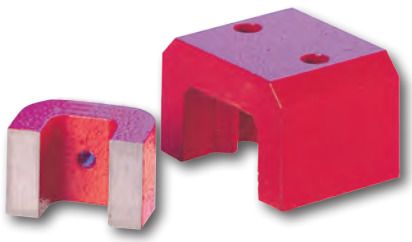
Fixing options: Screw fixing or gluing





Types MH 14 - 05 and MH 14 - 10 without mounting holes

Type	Dimensions in mm A	B	C	D	E	F	G	Nom. Holding force in N	Weight in kg
MH 14 - 05	21.4	11.3	8.0	-	7.8	6.5	3.3	20	0.012
MH 14 - 10	28.5	25.3	7.4	-	8.0	7.0	15.0	35	0.026
MH 14 - 17	22.0	22.0	25.0	7.0	7.0	8.0	9.0	45	0.010
MH 14 - 20	30.4	20.3	20.3	5.0	8.0	15.0	11.0	40	0.063
MH 14 - 25	38.1	25.4	25.4	5.0	9.5	19.1	14.5	90	0.133
MH 14 - 29	44.4	29.5	28.6	5.8	11.1	22.2	17.0	120	0.197
MH 14 - 35	58.0	35.0	44.0	8.0	11.0	28.0	23.0	230	0.500
MH 14 - 39	60.0	39.2	61.5	7.0	14.0	32.0	26.0	250	0.830
MH 14 - 41	70.0	41.0	57.0	8.0	15.0	40.0	26.0	320	1.000
MH 14 - 54	78.0	54.0	82.0	10.5	15.0	48.0	36.0	470	2.200



Types MH 14 - 17 to MH 14 - 29 with one mounting hole

Types MH 14 - 35 to MH 14 - 54 with two mounting holes

Type MH 14 - 39 without mounting holes

Ordering example:
Strong magnet SAV 241.14 - MH 14 - 29
Ordering key: SAV - No. - Type

MAGNETIC CORES

SAV 240.40

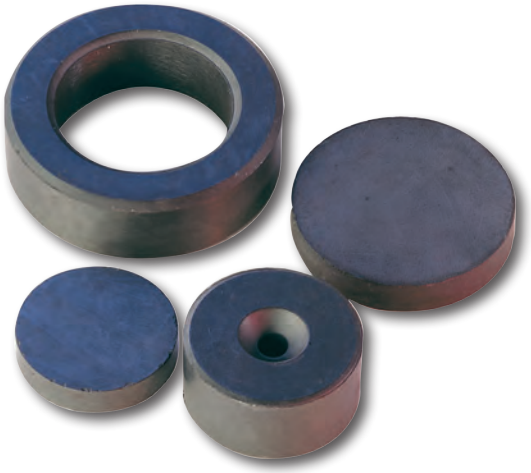
Made from Oxide 380

Execution:
Improved magnetic values through longitudinal alignment of the crystals. Unshielded.
Max. application temperature: 100 °C

Magnetic material:
Hard ferrite according to DIN 17 410

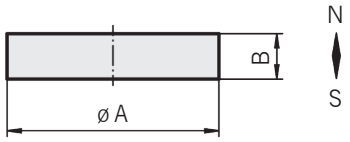
Fixing options:
Gluing, press-fitting or using non-magnetic screws.

Note:
Machining possible by grinding or using diamond-tipped tools. Resistant to weathering, oxidation and numerous chemicals. Contact with food is prohibited.



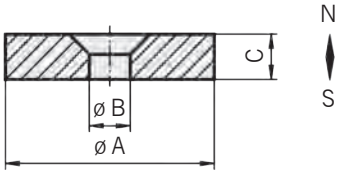
Magnetic discs MK 10

Type	Dimensions in mm A	B	Execution	Weight in g
MK 10 - 04	4.0	5.0	A and B ground	0.3
MK 10 - 05	5.0	2.6	B ground	0.3
MK 10 - 08	8.0	4.0	B ground	1.0
MK 10 - 10	10.0	5.0	-	2.0
MK 10 - 12	12.0	6.0	-	3.0
MK 10 - 30	30.0	6.0	A ground	21.0
MK 10 - 40	40.0	7.0	B ground	44.0
MK 10 - 45	45.0	9.0	B ground	72.0



Magnetic discs with centre hole MK 11

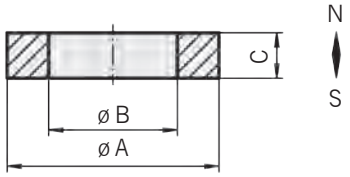
Type	Dimensions in mm A	B	C	Execution Countersink 90°	Weight in g
MK 11 - 15	15.2	3.2	6.0	One side	5.0
MK 11 - 20	20.0	4.3	6.5	Both sides	10.0
MK 11 - 21	20.0	4.2	10.0	Both sides	15.0
MK 11 - 31	31.0	5.3	15.0	One side	55.0



Only use non-magnetic screws to fasten the magnetic cores.

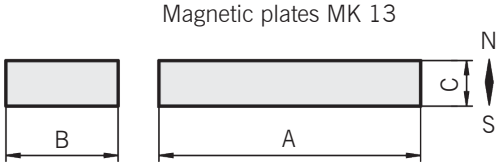
Magnetic rings MK 12

Type	Dimensions in mm A	B	C	Execution	Weight in g
MK 12 - 19	19,5	6.5	10.0	C ground	13.0
MK 12 - 20	20.0	10.0	4.3	C ground	5.0
MK 12 - 30	30.0	16.0	5.0	C ground	13.0
MK 12 - 36	36.0	27.5	8.0	B countersunk on one side	17.0
MK 12 - 40	40.0	22.0	9.0	-	29.0
MK 12 - 100	100.0	70.0	20.0	C ground	401.0



Magnetic plates MK 13

Type	Dimensions in mm A	B	C	Execution	Weight in g
MK 13 - 12	12	12	7.5	C ground	5.0
MK 13 - 25	25	10	5.0	-	6.0
MK 13 - 40	40	20	10.0	-	40.0
MK 13 - 50	50	25	7.8	C ground	49.0
MK 13 - 75	75	50	20.0	C ground	375.0
MK 13 - 100	100	100	25.0	C ground Centre hole 14 mm	1250.0



Ordering example:

Magnetic core	SAV 240.40	- MK 12	- 100
Ordering key	SAV - No.	-	Type

MAGNETIC CORES

SAV 240.45

Made from AlNiCo 500

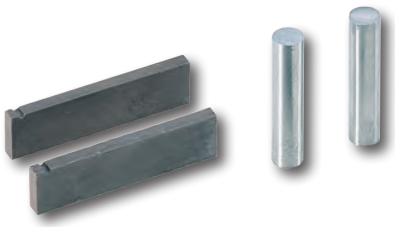
Execution:
Improved magnetic values through longitudinal alignment of the crystals. Unshielded magnet system. Rough side faces, ground end faces.

Max. application temperature: 400 °C

Magnetic material:
AlNiCo 500

Fixing options:
Gluing, press-fitting

Note:
Due to the high remanence and low coercive field strength of AlNiCo, the magnets should not be stored in the same pole direction (repellent), as demagnetization can occur.
Machining only possible by grinding.

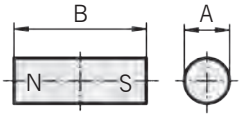


Round bar magnets MK 20:

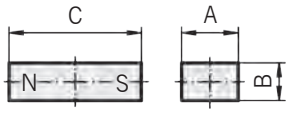
Type	Dimensions in mm A ± 0.2	B ± 0.2	Weight in kg
MK 20 - 15	3	15	0.001
MK 20 - 20 - 4	4	20	0.002
MK 20 - 20 - 5	5	20	0.003
MK 20 - 25	6	25	0.005
MK 20 - 32	8	32	0.012
MK 20 - 45	10	45	0.026
MK 20 - 60	15	60	0.078
MK 20 - 120	20	120	0.150

Rectangular bar magnets MK 21:

Type	Dimensions in mm A ± 0.3	B ± 0.2	C ± 0.3	Weight in kg
MK 21 - 25	4.8	4.8	25.4	0.004
MK 21 - 32	6.3	6.3	32.0	0.009
MK 21 - 20	10.0	5.0	20.0	0.007
MK 21 - 60	15.0	5.0	60.0	0.033



Round bar magnets from AlNiCo 500 – precision cast MK 20



Rectangular bar magnets MK 21

Ordering example:

Magnetic core	SAV 240.45 - MH 21 - 60			
Ordering key	SAV - No.	-	Type	

MAGNETIC CORES

SAV 240.46

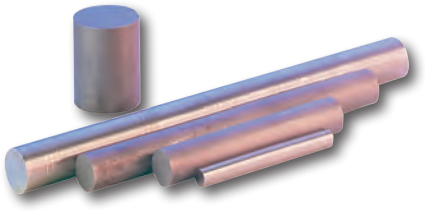
Made from AlNiCo 500 in a free choice of lengths

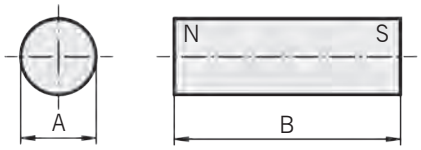
Execution:
Ground end faces. Unshielded magnet.
Max. application temperature: 450 °C

Magnetic material:
AlNiCo 500

Fixing options:
Press-fitting, gluing

Type	Dimensions in mm A ± 0.2	B ± 0.2 Standard
MK 30 - 03	3	10 / 12
MK 30 - 04	4	10 / 16 / 20
MK 30 - 05	5	10 / 20 / 30
MK 30 - 06	6	15 / 20 / 24 / 30
MK 30 - 08	8	10 / 25
MK 30 - 10	10	20 / 30 / 40
MK 30 - 12	12	40
MK 30 - 15	15	30 / 60
MK 30 - 20	20	40 / 60 / 80
MK 30 - 34	34	80





Note:
It is not possible to provide details of the nominal holding force values in open magnetic systems. Machining only possible by grinding. Intermediate sizes can also be supplied. Due to financial reasons the minimum order size is 25 pieces.

Ordering example:

Magnetic core	SAV 240.46 - MK 30 - 12 x 50				
Ordering key	SAV - No.	-	Type	x	Length

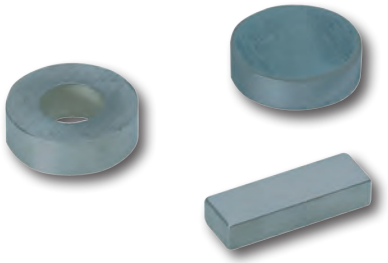
$SmCo_5$ MAGNETIC CORES

SAV 240.50

With high nominal holding force

Execution:
The holding magnets are manufactured by sintering.
The magnets are hard and brittle and can only be machined in an unmagnetized condition.

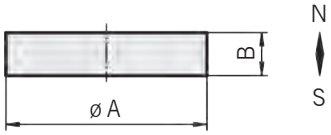
Max. application temperature: 200 °C
Remanence: ca. 8500 G
Up to 9300 G



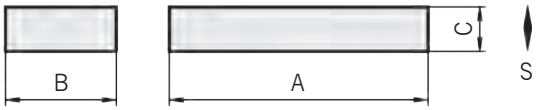
Magnetic material:
Samarium-Cobalt, $SmCo_5$
Unshielded, anisotropic

Fixing options:
Gluing, press-fitting

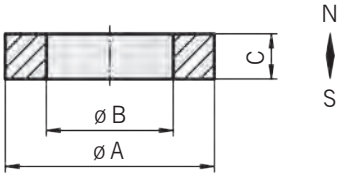
Magnetic discs MK 40



Magnetic plates MK 41



Magnetic rings MK 42



Magnetic discs MK 40:

Type	Dimensions in mm A	B	Weight in g
MK 40 - 01 - 03	1.5	3	1.0
MK 40 - 02 - 04	1.8	4	1.0
MK 40 - 02 - 02	2.0	2	1.0
MK 40 - 02 - 10	2.0	10	0.3
MK 40 - 03 - 02	3.0	2	0.1
MK 40 - 04 - 02	4.0	1.5	0.2
MK 40 - 04 - 05	4.0	5	0.5
MK 40 - 05 - 02	5.0	2	0.3
MK 40 - 05 - 03	5.0	3	0.5
MK 40 - 05 - 05	5.0	5	0.8
MK 40 - 06 - 02	6.0	2	0.5
MK 40 - 06 - 04	6.0	4	1.0
MK 40 - 06 - 10	6.0	10	2.0
MK 40 - 07 - 03	7.0	3	1.0
MK 40 - 08 - 05	8.0	5	2.0
MK 40 - 10 - 03	10.0	3	2.0
MK 40 - 10 - 05	10.0	5	3.0
MK 40 - 10 - 10	10.0	10	7.0
MK 40 - 15 - 05	15.0	5	7.0
MK 40 - 15 - 10	15.0	10	15.0
MK 40 - 20 - 05	20.0	5	13.0
MK 40 - 25 - 08	25.0	8	33.0
MK 40 - 25 - 15	25.0	15	62.0

Note:
The magnetic values are not decreased, even in the presence of strong opposing fields. Custom dimensions available on request.

Magnetic plates MK 41:

Type	Dimensions in mm A	B	C	Weight in g
MK 41 - 02 - 02 - 01	2	2.0	1.0	0.1
MK 41 - 03 - 03 - 02	3	3.0	2.0	0.2
MK 41 - 04 - 04 - 02	4	4.0	2.0	0.3
MK 41 - 05 - 05 - 03	5	5.0	3.0	0.6
MK 41 - 05 - 05 - 02	5	4.5	1.5	0.3
MK 41 - 06 - 03 - 01	6	3.0	1.0	0.2
MK 41 - 10 - 07 - 02	10	7.0	2.0	1.0
MK 41 - 10 - 10 - 03	10	10.0	3.0	3.0
MK 41 - 12 - 09 - 03	12	9.0	2.5	2.0
MK 41 - 15 - 15 - 06	15	15.0	6.0	11.0
MK 41 - 16 - 12 - 03	16	12.0	3.0	5.0
MK 41 - 18 - 16 - 04	18	16.0	4.0	10.0
MK 41 - 26 - 21 - 05	26	21.0	5.0	23.0
MK 41 - 30 - 10 - 06	30	10.0	6.0	15.0
MK 41 - 30 - 20 - 10	30	20.0	10.0	50.0
MK 41 - 32 - 27 - 06	32	27.0	6.0	44.0

Magnetic rings MK 42:

Type	Dimensions in mm A	B	C	Weight in g
MK 42 - 20 - 10 - 05	20	10	5	0.4
MK 42 - 25 - 12 - 08	25	12	8	0.4
MK 42 - 30 - 10 - 10	30	10	10	0.5
MK 42 - 40 - 15 - 10	40	15	10	0.9

Ordering example:

Magnetic core	SAV 240.50 - MK 40 - 01 - 03		
Ordering key	SAV - No.	-	Type

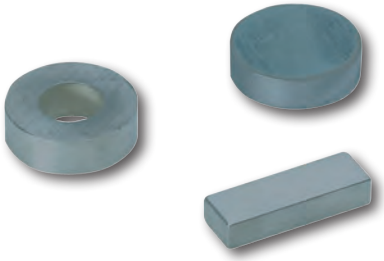
High energy magnets

Execution:
Neodymium-iron-boron is the strongest magnetic material currently available. Compared to Samarium-Cobalt, the energy product is approx. 40% higher and the density is approx. 12% lower. The availability of the raw materials is also better. The magnets are produced by sintering.

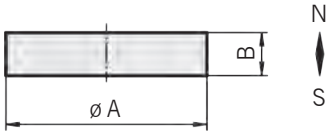
Max. application temperature: 80 °C
Remanence: 10,000 to 12,500 G

Magnetic material:
Neodymium-Iron-Boron, $Nd_2Fe_{14}B$
Unshielded

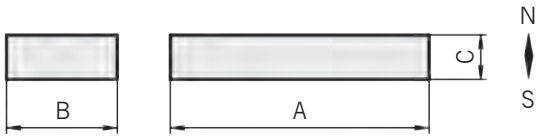
Fixing options:
Gluing, press-fitting



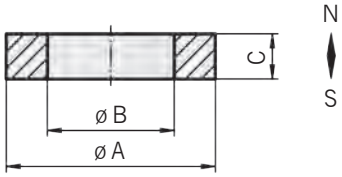
Magnetic discs MK 50



Magnetic plates MK 51



Magnetic rings MK 52



Magnetic discs MK 50:

Type	Dimensions in mm A	B	Weight in g
MK 50 - 02 - 02	1.5	2.0	0.1
MK 50 - 02 - 04	2.0	4.0	0.1
MK 50 - 02 - 10	2.0	10.0	0.2
MK 50 - 03 - 03	3.0	3.0	0.2
MK 50 - 04 - 01	4.0	1.2	0.1
MK 50 - 04 - 02	4.0	1.5	0.1
MK 50 - 04 - 05	4.0	5.0	0.5
MK 50 - 05 - 03	5.0	3.0	0.4
MK 50 - 05 - 10	5.0	10.0	2.0
MK 50 - 06 - 02	6.0	2.0	0.4
MK 50 - 06 - 05	6.0	5.0	1.0
MK 50 - 08 - 06	8.0	6.0	2.0
MK 50 - 09 - 05	9.0	5.0	2.0
MK 50 - 10 - 03	10.0	3.0	2.0
MK 50 - 10 - 05	10.0	5.0	2.0
MK 50 - 14 - 04	13.5	3.5	4.0
MK 50 - 15 - 03	15.0	3.0	4.0
MK 50 - 15 - 05	15.0	5.0	4.0
MK 50 - 20 - 05	20.0	5.0	7.0
MK 50 - 20 - 10	20.0	10.0	23.0
MK 50 - 25 - 07	25.0	7.0	25.0

Note:
The magnetic values are not decreased, even in the presence of strong opposing fields.
The magnets are susceptible to corrosion at high humidity levels and are not resistant to acids, bases and salts.
Custom dimensions available on request.

Magnetic plates MK 51:

Type	Dimensions in mm A	B	C	Weight in g
MK 51 - 02 - 02 - 01	2.0	2.0	1.0	0.1
MK 51 - 03 - 03 - 01	3.0	3.0	1.0	0.1
MK 51 - 04 - 04 - 02	4.0	4.0	2.0	0.2
MK 51 - 04 - 05 - 05	4.8	4.8	4.5	0.8
MK 51 - 05 - 05 - 02	5.0	5.0	2.0	0.4
MK 51 - 05 - 05 - 01	5.0	4.5	1.5	0.2
MK 51 - 06 - 03 - 01	6.0	3.0	1.0	0.1
MK 51 - 06 - 06 - 05	6.0	6.0	5.0	1.0
MK 51 - 08 - 08 - 06	8.0	8.0	6.0	1.0
MK 51 - 10 - 07 - 02	10.0	7.0	2.0	3.0
MK 51 - 10 - 10 - 03	10.0	10.0	3.0	2.0
MK 51 - 10 - 10 - 06	10.0	10.0	6.0	4.0
MK 51 - 12 - 09 - 03	12.0	9.0	2.5	2.0
MK 51 - 15 - 15 - 05	15.0	15.0	5.0	8.0
MK 51 - 18 - 16 - 04	18.0	16.0	4.0	9.0
MK 51 - 20 - 10 - 05	20.0	10.0	5.0	7.0
MK 51 - 20 - 20 - 08	20.0	20.0	8.0	24.0
MK 51 - 30 - 10 - 06	30.0	10.0	6.0	13.0
MK 51 - 30 - 30 - 06	30.0	30.0	6.0	40.0
MK 51 - 50 - 20 - 08	50.0	20.0	8.0	59.0
MK 51 - 75 - 50 - 10	75.0	50.0	10.0	278.0

Magnetic rings MK 52:

Type	Dimensions in mm A	B	C	Weight in g
MK 52 - 15 - 05 - 06	15	5.0	6.0	7.0
MK 52 - 20 - 04 - 05	20	4.2	5.0	11.0
MK 52 - 20 - 10 - 06	20	10.0	6.0	10.0
MK 52 - 25 - 12 - 08	25	12.0	8.0	22.0
MK 52 - 40 - 23 - 06	40	23.0	6.0	37.0

Ordering example:
Magnetic core SAV 240.55 - MK 50 - 02 - 02
Ordering key SAV - No. - Type

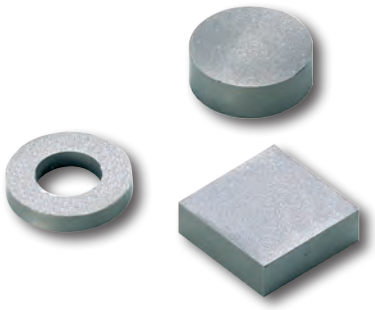
NdFeB MAGNETIC CORES

SAV 240.56

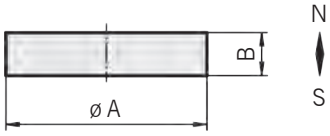
Epoxy-bonded, with high nominal holding forces

Execution:
Epoxy-bonded neodymium-iron-boron magnets are not sintered like other magnets, instead the magnetic powder is mixed with epoxy and hot-pressed in moulds. On request the form-pressed standard magnets can be machined in an unmagnetized state according to customer specifications.

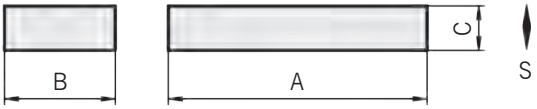
Max. application temperature: 80 °C
Remanence: ca. 6800 G
Tolerance range: ± 0.1 to 0.2 mm



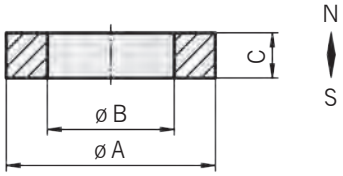
Magnetic discs MK 60



Magnetic plates MK 61



Magnetic rings MK 62



Magnetic material:
Neodymium-Iron-Boron, $Nd_2Fe_{14}B$
Epoxy bonded, isotropic magnetization

Fixing options:
Gluing, press-fitting

Magnetic discs MK 60:

Type	Dimensions in mm		Weight in g
	A	B	
MK 60 - 02 - 05	2.0	5.0	0.1
MK 60 - 03 - 10	3.0	10.0	0.4
MK 60 - 04 - 10	4.0	10.0	0.8
MK 60 - 05 - 10	5.0	10.0	1.2
MK 60 - 06 - 02	6.0	2.0	0.3
MK 60 - 06 - 10	6.0	10.0	1.7
MK 60 - 08 - 03	8.5	3.0	1.0
MK 60 - 10 - 05	10.0	5.0	2.0
MK 60 - 10 - 10	10.0	10.0	5.0
MK 60 - 13 - 05	12.5	5.0	4.0
MK 60 - 13 - 10	12.5	10.0	7.0
MK 60 - 15 - 03	15.0	3.0	3.0
MK 60 - 20 - 08	20.0	7.7	15.0
MK 60 - 25 - 05	25.0	5.0	15.0

Magnetic plates MK 61:

Type	Dimensions in mm			Weight in g
	A	B	C	
MK 61 - 05 - 05 - 02	5.0	5.0	2.0	0.3
MK 61 - 10 - 05 - 05	10.0	5.0	5.0	2.0
MK 61 - 24 - 12 - 10	24.0	12.0	10.0	18.0
MK 61 - 50 - 10 - 10	50.0	10.0	10.0	30.0
MK 61 - 50 - 12 - 10	50.0	12.0	10.0	36.0
MK 61 - 30 - 30 - 10	30.0	30.0	10.0	54.0

Magnetic rings MK 62:

Type	Dimensions in mm			Weight in g
	A	B	C	
MK 62 - 26 - 22 - 05	26	22.0	5.0	5.0
MK 62 - 30 - 16 - 05	30	16.0	5.0	15.0
MK 62 - 35 - 21 - 05	35	21.0	5.0	18.0
MK 62 - 35 - 21 - 10	35	21.0	10.0	37.0

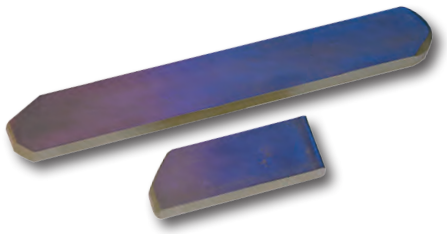
Note:
The magnetic values are not decreased, even in the presence of strong opposing fields.
At normal ambient temperatures and relative humidity levels up to 50% (no condensation), the magnets can be used without surface protection.
Custom dimensions are not possible.

Ordering example:
Magnetic core SAV 240.56 - MK 60 - 02 - 05
Ordering key SAV - No. - Type

FLEXIBLE PERMANENT MAGNETS

SAV 240.70

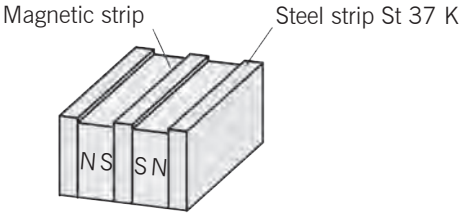
Light machining possible



Use:
When bent into a circle, ring magnets are formed. These can be used in small DC-motors when placed into the stator housing. Axial magnetized rings or discs can be punched out of these magnetic strips. Magnetic clamping strips with excellent holding forces can be produced in any length by placing the magnetic strips between two steel strips (sandwich system, see diagram). Fixing is achieved by gluing or press-fitting. Easy to machine with standard tools.

Execution:
Improved magnetic values by alignment of the crystals in the magnetic field (anisotropic). Resistant to demagnetization and ageing.

Magnetic material: Hard ferrite, epoxy bonded
Max. application temperature: 85 °C
Max. bending radius: 8 x thickness



Type	Dimensions in mm Thickness ± 0.15	Width ± 0.25	Length ± 0.50
MF 10 - 03	3	25	200
MF 10 - 05	5	25	200
MF 10 - 06	6	30	200
MF 10 - 08 - 30	8	30	200
MF 10 - 08 - 09	8	9	250
MF 10 - 08 - 24	8	24	500

Hardness: 90 - 100 Shore
Density: 3.7 g/cm³

Resistance to chemicals:
Excellent resistance to degradation by air, ozone and steam. Impervious to mineral oil, weak acids and bases, kerosene and glycol. Slightly affected by nitric acid. Swells up in contact with petroleum, acetone and 90% alcohol. Dissolves when in contact with benzene and chloral solvent.

Ordering example:
Flexible permanent magnet SAV 240.70 - MF 10 - 06
Ordering key: SAV - No. - Type

MAGNETIC TAPES

SAV 240.72

Self-adhesive

Execution:
Improved holding force by alignment of the crystals; magnetized on one side; dark-brown with smooth surface; can be cut with scissors. The sliding force is approx. 1/3 of the nominal holding force.

Max. application temperature: 75 °C
Nominal holding force: 0.8 N/cm²

Mounting options:
Practically non-magnetic rear side with self-adhesive layer.

Note:
Excellent holding force on thin steel sheets due to the 4-pole magnetization.

Type	Dimensions in mm Width	Thickness	Width tolerance	Length per roll in m
MB 60 - 12*	12.7	1.5	± 0.3	10 / 30
MB 60 - 20	20	1.5	± 0.3	10 / 30
MB 60 - 25*	25.4	1.6	± 0.3	10 / 30

* Also available in an execution in which the magnetic tape is magnetized in such a manner that 2 tapes fit exactly on top of one another. In this case, a set of 2 rolls is supplied, one in execution A and one in execution B.

Ordering example:
Magnetic tape SAV 240.72 - MB 60 - 12 - A - B
Ordering key SAV - No. - Type

MAGNETIC TAPES

SAV 240.71

Can be cut with scissors, holding surface on one side

Execution:
Plastic bonded magnet; can be cut with scissors.

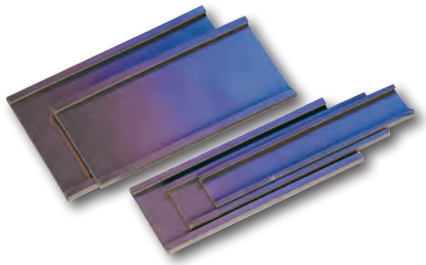
Mounting options:
Tape adheres magnetically. Type MB 51 with a practically non-magnetic rear side with self-adhesive layer.

Holding force Permaflex 424:

Thickness	1.0 mm	0.55 N/cm²
	1.5 mm	0.57 N/cm²
	2.0 mm	0.58 N/cm²

Magnetic tape, coloured MB 50:
black (SW), white (WS), red (RT), blue (BL), green (GR), yellow (GB)

Type	Dimensions in mm		Length per roll in m
	Width	**Thickness**	
MB 50 - 10	10	0.8	10
MB 50 - 15	15	0.8	10
MB 50 - 20	20	0.8	10
MB 50 - 25	25	0.8	10
MB 50 - 30	30	0.8	10
MB 50 - 35	35	0.8	10
MB 50 - 40	40	0.8	10
MB 50 - 50	50	0.8	10
MB 50 - 60	60	0.8	10
MB 50 - 70	70	0.8	10
MB 50 - 80	80	0.8	10
MB 50 - 90	90	0.8	10
MB 50 - 100	100	0.8	10



Magnetic tape, self- adhesive, anisotropic MB 51:
Permaflex, colour red-brown
Self-adhesive layer on rear side

Type	Dimensions in mm		Length per roll in m
	Width	**Thickness**	
MB 51 - 10	10	0.6	10
MB 51 - 15	15	0.6	10
MB 51 - 20	20	0.6	30
MB 51 - 25	25	0.6	30
MB 51 - 30	30	0.6	10
MB 51 - 35	35	0.6	10
MB 51 - 40	40	0.6	10
MB 51 - 50	50	0.6	10

Magnetic tape, C-Profile MB 54:
Flexible magnetic label strips

Type	Dimensions in mm **Width**	Length per roll in m
MB 54 - 10	10	50
MB 54 - 15	15	50
MB 54 - 20	20	50
MB 54 - 25	25	50
MB 54 - 30	30	50
MB 54 - 40	40	50
MB 54 - 50	50	50

Magnetic tape, anisotropic MB 52 and MB 53:
Permaflex, colour red-brown
Self-adhesive layer on rear side

Type	Dimensions in mm		Length per roll in m
	Width	**Thickness**	
MB 52 - 10	10	1.0	10
MB 52 - 15	15	1.0	10
MB 52 - 20	20	1.0	10
MB 52 - 25	25	1.0	10
MB 52 - 30	30	1.0	10
MB 52 - 35	35	1.0	10
MB 52 - 40	40	1.0	10
MB 52 - 50	50	1.0	10
MB 53 - 10	10	1.5	10
MB 53 - 15	15	1.5	10
MB 53 - 20	20	1.5	10
MB 53 - 25	25	1.5	10
MB 53 - 30	30	1.5	10
MB 53 - 35	35	1.5	10
MB 53 - 40	40	1.5	10
MB 53 - 50	50	1.5	10

Ordering example:

Magnetic tape	SAV 240.71 -	MB 50 -	10 -	SW
Ordering key	SAV - No.	-	Type	- Colour

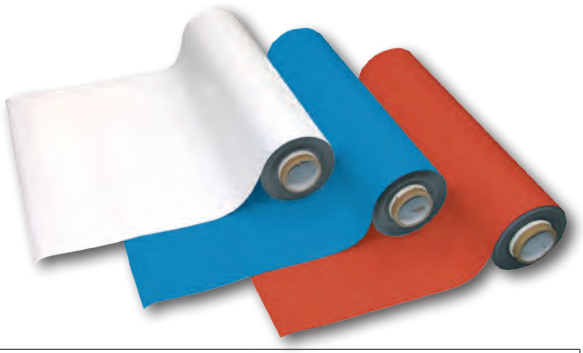
MAGNETIC FOILS

SAV 240.73

In various colours

Execution:
Plain; with coloured vinyl coating or self-adhesive (SK). The magnetic foil can be cut to size or stamped to the desired form upon request.

Colours:
White (WS), Black (SW), Grey (GR), Red (TR), Yellow (GB), Green (GN), Blue (BL)



Quality	Dimensions in mm		Type No.	
	Width	Thickness	Roll 10m	Roll 1m
Semi anisotropic	615	0.6	SAV 240.73-615-6-SA	SAV 240.73-615-6-SA-M
Semi anisotropic		0.85	SAV 240.73-615-85-SA	SAV 240.73-615-85-SA-M
Semi anisotropic		1.0	SAV 240.73-615-10-SA	SAV 240.73-615-10-SA-M
Semi anisotropic		1.6	SAV 240.73-615-16-SA	SAV 240.73-615-16-SA-M
Anisotropic		0.6	SAV 240.73-615-6-A	SAV 240.73-615-6-A-M
Anisotropic		0.8	SAV 240.73-615-8-A	SAV 240.73-615-8-A-M
Anisotropic		1.1	SAV 240.73-615-11-A	SAV 240.73-615-11-A-M
Anisotropic		1.6	SAV 240.73-615-16-A	SAV 240.73-615-16-A-M
Anisotropic	350	2.1	SAV 240.73-350-21-A	SAV 240.73-350-21-A-M

Ordering example:
Magnetic foil SAV 240.73 - 615 - 16 - A - WS - M
Ordering key: SAV - No. - Width - Thickness - Execution - Colour - Length

MAGNETIC FOILS

SAV 240.74

In raw brown

Execution:
Plain; without vinyl coating or self-adhesive (SK). The magnetic foil can also be supplied per linear metre.

Colour:
Raw brown

Quality	Dimensions in mm		Type No.	
	Width	Thickness	Roll 10m	Roll 1m
Semi anisotropic	615	0.5	SAV 240.74-615-5-SA	SAV 240.74-615-5-SA-M
Semi anisotropic		0.75	SAV 240.74-615-75-SA	SAV 240.74-615-75-SA-M
Semi anisotropic		0.9	SAV 240.74-615-9-SA	SAV 240.74-615-9-SA-M
Semi anisotropic		1.5	SAV 240.74-615-15-SA	SAV 240.74-615-15-SA-M
Anisotropic		0.5	SAV 240.74-615-5-A	SAV 240.74-615-5-A-M
Anisotropic		0.75	SAV 240.74-615-7-A	SAV 240.74-615-7-A-M
Anisotropic		0.9	SAV 240.74-615-1-A	SAV 240.74-615-1-A-M
Anisotropic		1.5	SAV 240.74-615-15-A	SAV 240.74-615-15-A-M
Anisotropic	350	2.1	SAV 240.74-350-21-A	SAV 240.73-350-21-A-M

Ordering example:
Magnetic foil SAV 240.74 - 615 - 15 - A
Ordering key: SAV - No. - Width - Thickness - Execution

MAGNETIC PLACARDS

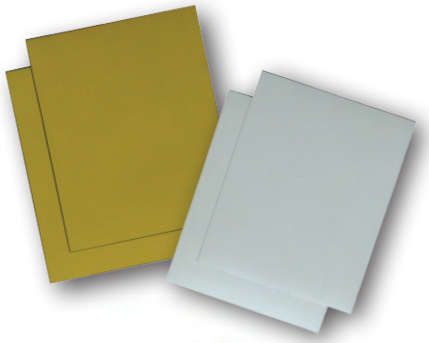
SAV 240.75

In various colours

Available thicknesses:
0.6 mm, 0.8 mm

Set 100 Pcs.

Available colours:
White (WS), Yellow (GB)
Other colours, sizes and thicknesses upon request.



Possible dimensions	
Width	**Height**
100	10
100	15
100	20
100	25
100	30
100	50
150	50

Ordering example:
Magnetic Placard SAV 240.75 - 100x10 - 6 - WS
Ordering key: SAV - No. - Width x Height - Thickness - Colour

5

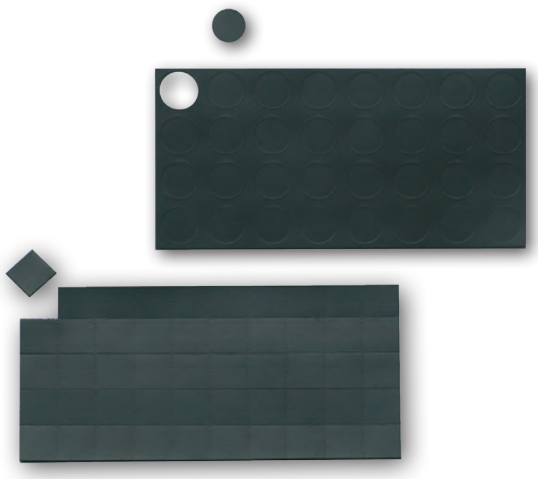
MAGNETIC "TAKKIS"

SAV 240.76

Punched squares and rectangular sheet

Execution:
Self-adhesive magnetic foil. Stamped into squares or as a rectangular sheet.

Use:
For pictures, cards and small objects. Coated with a magnetic adhesive. These"Takkis"are simple to apply and remove without leaving adhesive residues.



Dimensions in mm	Number per sheet	Dimensions in mm	Number per sheet
Square 10 x 10	200	Sheet ø10	78
Square 15 x 15	78	Sheet ø15	50
Square 20 x 20	50	Sheet ø20	32
Square 25 x 25	32	Sheet ø25	15

Ordering example:
Magnetic Takkis SAV 240.77 - 10 x 10 - Quadrat
Ordering key: SAV - No. - Dimensions - Execution

Execution:
Plastic bag with magnetic strips (ST)
or magnetic loops (SF).
Sizes: DIN A4, A5, EA6.
Other sizes and executions upon request.

Use:
For the simple fixing of various labels, signs, lettering, instructions etc. to the magnetic surface.

Ordering example:
Magnetic Bag SAV 240.76 - A4 - ST
Ordering key: SAV - No. - Size - Execution

ORGANIZER MAGNETS

SAV 240.80

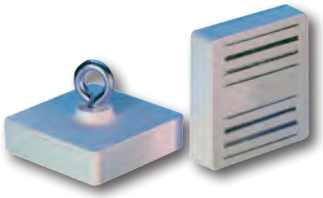
In plastic housing

Execution:
Strong laminated magnet in plastic housing.

Magnetic material:
Hard ferrite, anisotropic

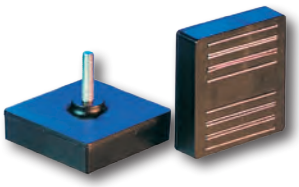
Available in 4 executions:

Typ MO 10 - 01 with eye-bolt, white.
Typ MO 10 - 02 with hook-bolt, white.
Typ MO 10 - 03 with threaded stud M6, black.
Max. application temperature: 50 °C
Typ MO 10 - 04 with inner thread M6, black.

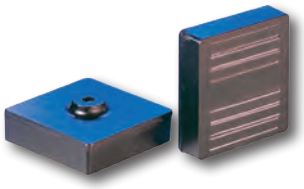


Type MO 10 - 01

Type MO 10 - 02



Type MO 10 - 03



Type MO 10 - 04

Type	Dimensions in mm				Nom. Holding force in N	Weight in kg
	Length	Width	Height	Total height ca.		
MO 10 - 01	58	58.0	15.0	41.5	300	0.130
MO 10 - 02	53	27.5	12.5	28.0	150	0.053
MO 10 - 03	58	58.0	19.5	42.0	300	0.125
MO 10 - 04	58	58.0	15.0	19.5	300	0.119

Organizer magnet SAV 240.80 - MO 10 - 01
Ordering key SAV - No. - Type

ORGANIZER MAGNETS

SAV 240.83

In steel housing

Execution:
Flat holding magnet with hook or eye. (MO 20 - 80). Steel housing with white lacquer finish. Special colours can be supplied at no price surcharge for quantities of 1000 pcs. or more.

Use:
As a decorating magnet.

Magnetic material:
Hard ferrite, anisotropic

Type	Diameter in mm	Hook	Nom. Holding force in N	Weight in kg
MO 20 - 16	16	M 3	18	0.007
MO 20 - 20	20	M 3	30	0.012
MO 20 - 25	25	M 4	40	0.023
MO 20 - 32	32	M 4	80	0.034
MO 20 - 36	36	M 4	100	0.045
MO 20 - 40	40	M 4	125	0.059
MO 20 - 47	47	M 4	180	0.089
MO 20 - 50	50	M 4	220	0.107
MO 20 - 57	57	M 4	280	0.149
MO 20 - 63	63	M 4	350	0.233
MO 20 - 80	80	Öse M 6	600	0.485

Ordering example:
Organizer magnet SAV 240.83 - MO 20 - 47
Ordering key SAV - No. - Type

ORGANIZER MAGNETS

SAV 240.84

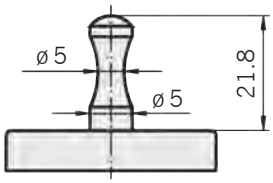
With steel cover

Use:
Holding magnet with grip, galvanized with a white lacquer finish. For holding paper, drawings, plans etc.

Execution:
Powerful holding magnets with steel housing and white lacquer finish. With grip for easy removal. Special colours can be supplied at no price surcharge for quantities of 1000 pcs. or more.

Magnetic material:
Hard ferrite, anisotropic

Type	Dimensions in mm		Nom. Holding force in N	Weight in kg
	Diameter	Height		
MO 30 - 25	25	29.5	40	0.025
MO 30 - 32	32	29.5	80	0.035
MO 30 - 36	36	29.5	100	0.045
MO 30 - 40	40	30.0	125	0.062



Ordering example:
Organizer magnet SAV 240.84 - MO 30 - 32
Ordering key SAV - No. - Type

ORGANIZER MAGNETS

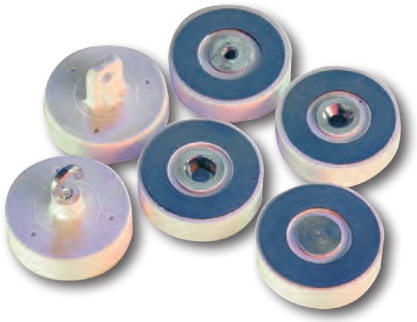
SAV 240.85

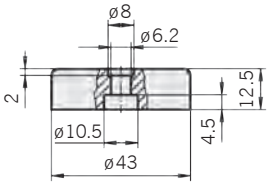
With a plastic cover – Type MO 40

Execution:
Decoration magnet with white plastic cover in different shapes.
Nominal holding force: 120 N
Application temperature: max. 50 °C

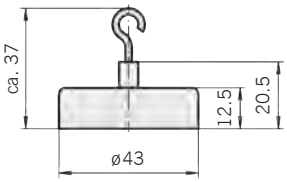
Use:
As a decorating magnet, for drawing boards, etc.

Magnetic material:
Hard ferrite (Oxide 380), anisotropic
Form 05 also available in M5.*

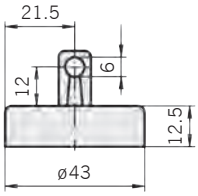




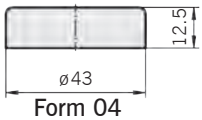
Form 01



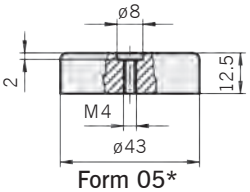
Form 02



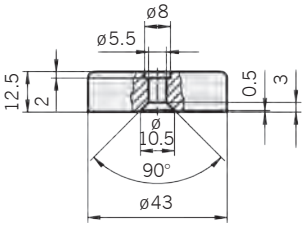
Form 03



Form 04



Form 05*



Form 06

Ordering example:
Organizer magnet SAV 240.85 - MO 40 - 01
Ordering key SAV - No. - Type - Shape

ORGANIZER MAGNETS

SAV 240.88

Printable

Use:
For holding paper, drawings, plans etc. As a marker, for example, on planning and notice boards.

Execution:
Powerful holding magnets with nicely shaped, coloured plastic caps. Gripping edge for easy removal (round design).
If requested, the top of the plastic housing can be silk-screen printed for publicity/advertising purposes.

Type	Dimensions in mm		Nom. Holding force in N
	Diameter Holding surface	Height	
MO 50 - 10 - 1	ø 10	6.5	0.7
MO 50 - 10 - 2	ø 10	6.5	1.5
MO 50 - 16	ø 16	7.0	1.3
MO 50 - 20	ø 20	7.5	1.5
MO 50 - 25	ø 25	7.5	3.0
MO 50 - 30	ø 30	8.0	6.0
MO 50 - 36*	ø 36	8.5	9.5
MO 50 - 11	11 x 11	6.5	1.5
MO 50 - 35	35 x 35	9.0	6.0
MO 50 - 21	21 x 12.5	6.5	1.5
MO 50 - 37	37 x 22	7.5	4.5
MO 50 - 55	55 x 22.5	8.5	7.0

Ordering example:

Organizer magnet	SAV 240.88 -	MO 50 - 36 -	BL
Ordering key	SAV - No.	-	Type	- Colour

Magnetic material:
Hard ferrite, isotropic / anisotropic

Available colours:
Red (RT), Blue (BL), Green (GN), Yellow (GB), Black (SW), White (WS), Orange (OR), Grey (GR), Brown (BR), Light blue (HB)

Note:
Min. quantity with print: 1000 pcs.
Package size per colour: 10 pcs.

* Preferred magnet with high holding force.
Colour blue, height 12 mm

ORGANIZER MAGNETS

SAV 240.89

Printable

Use:
For holding paper, drawings, plans etc. As a marker, for example, on planning and notice boards.

Execution:
Powerful holding magnets with nicely shaped, coloured plastic caps. Cover of high quality ABS with a lightly domed surface. Gripping edge for easy removal. If requested, the top of the plastic housing can be silk-screen printed for publicity/advertising purposes.

Magnetic material:
Hard ferrite, isotropic / anisotropic

Type	Dimensions in mm		Nom. Holding force in N
	Diameter	Height	
MO 60 - 20	20	10	2
MO 60 - 30	30	10	5
MO 60 - 40	40	10	8

Ordering example:

Organizer magnet	SAV 240.89 -	MO 60 - 20 -	RT
Ordering key	SAV - No.	-	Type	- Colour

Available colours:
Red (RT), Blue (BL), Green (GN), Yellow (GB), Black (SW), White (WS), Orange (OR), Mustard (SN)

Note:
Min. quantity with print: 300 pcs.
Package size per colour: 10 pcs.

ORGANIZER MAGNETS

SAV 240.90

With personalized printed decoration – Type MO 70 (Special design)

Use:
For holding paper, drawings, plans etc. As a marker, for example, on planning and notice boards.

Execution:
Powerful holding magnets in plastic housing. The SAV-Logo can be exchanged with your personal decoration on request.

Height:	13 mm
Holding force:	36 N at ø 36 mm
Weight:	0.040 kg

Magnetic material:
Hard ferrite (Oxide 380)

Note:
Min. quantity with print: 300 pcs.
Package size per colour: 10 pcs.

Shape:
A: round, ø 36 mm
B: square, 36 mm

Decoration:
1: smooth, without print
2: with printed sticker
3: direct print
4: as a printed relief

Available colours:
Red (RT), Blue (BL), Green (GN), Yellow (GB), White (WS)

Ordering example:

Organizer magnet	SAV 240.90	- MO 70	- A	- 1		- RT
Ordering key	SAV - No.	- Type	- Shape	- Decoration		- Colour

ORGANIZER MAGNETS

Keeping your advertising in the Public's view...
Using our organizer magnets you help to keep your company's name in the minds of the Public. These attractive magnets are extremely versatile and can be used for a wide variety of applications. In offices, factories, public buildings etc, they can be used to quickly and reliably affix drawings, notices and plans.

Making the message stick...
The holding magnets are made from powerful magnets in attractively shaped plastic or steel housings. In many cases the plastic housings can be printed on or supplied with attractive and sophisticated logos or other decorations according to your wishes. You are sure to find the right choice for you – regardless of whether they are supplied with hooks, eyes, threaded studs or simply with a smooth, printed finish.

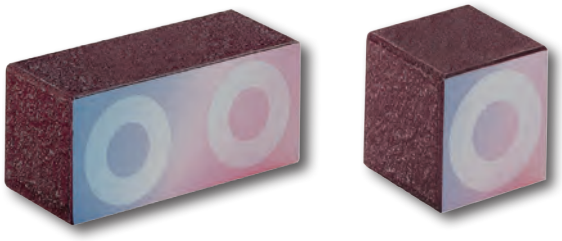
Free scope of design...
Prints and reliefs can be produced according to standard designs or with the assistance of SAV according to your individual design wishes. Attractive packaging and package sizes can be supplied.

PERMANENT MAGNET CLAMPING BLOCKS

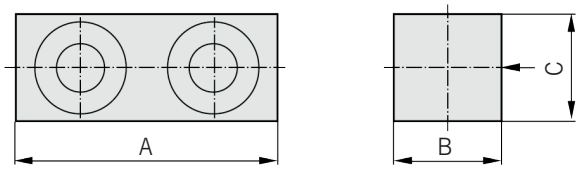
SAV 242.08

With inlaid holding magnets

Execution:
Robust, pressure resistant block with inlaid holding magnets.
Non-switchable. Can be affixed using press-fitting or adhesive bonding.
Type MH2 has an M6 thread on the rear face.
Red, crinkle paint finish.
Application temperatures up to 100 °C.



Type	Dimensions in mm A	B	C	Nom. Holding force in N	Weight in kg
MH 1	26	26	25	100	0.11
MH 2	60	26	25	200	0.25



1 magnetic clamping face

Ordering example:

Permanent Magnet Clamping block	SAV 242.08 - MH 2
Ordering key	SAV - No. - Type

PERMANENT MAGNET MITRED HOLDER

SAV 246.50

Magnetic aid for welding and mounting operations at set angles

Use:
As a welding and mounting aid for frame processing at angles of 180 degrees, 90 degrees, 75 degrees, 60 degrees, 45 degrees and 30 degrees.
If increased holding forces are required, multiple magnetic protractors can be used. As the maximum application temperature of 120 °C should not be exceeded, it is recommended that the magnetic protractors should only be used for holding during the welding process and then removed.

Execution:
All edges are magnetic. The pre-bored holes enable quick and easy positioning.

Dimensions in mm Length	Width	Bore holes	Nom. holding force in daN	Weight in kg
100	64	2 x ø 5	30	0.26

Ordering example:

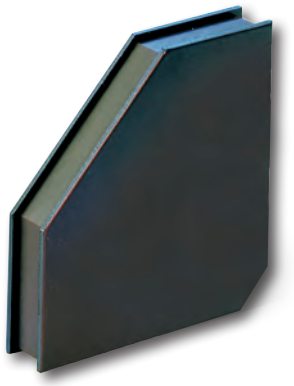
Permanent Magnet Mitred Holder	SAV 246.50
Ordering key	SAV - No.

PERMANENT MAGNET MITRED HOLDER

SAV 246.51

Magnetic aid for welding and mounting operations at 45° und 90° angles

Use:
As a welding and mounting aid for frame processing at angles of 90 degrees and 45 degrees. If increased holding forces are required, multiple magnetic protractors can be used. As the maximum application temperature of 120 °C should not be exceeded, it is recommended that the magnetic protractors should only be used for holding during the welding process and then removed.



Execution:
All edges are magnetic. SAV 246.51 – 85 with 28.5 diameter pre-bored hole.

Dimensions in mm			Weight in kg
Length	Width	Height	
80	80	16	0.55
85	85	16	0.65

Ordering example:

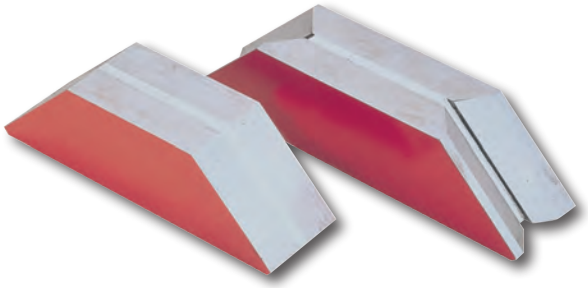
Permanent Magnet Mitred Holder	SAV 246.51 - 80
Ordering key	SAV - No. - Length

PERMANENT MAGNET MITRED HOLDER

SAV 246.53

Magnetic aid for welding and mounting operations at 45° and 90°

Use:
As a welding and mounting aid for frame processing at angles of 45 degrees and 90 degrees. In order that the mitred holders are not thermally overloaded, it is recommended that they should only be used for holding during the welding process and then removed.



Execution:
All contact surfaces including the V-block faces are magnetic. SAV 246.53 - 145 without V-profile.

Dimensions in mm			Weight in kg
Length	Width	Height	
145	44.5	41	1.36
178	44.5	41	1.65

Ordering example:

Permanent Magnet Mitred Holder	SAV 246.53 - 178
Ordering key	SAV - No. - Length

MAGNETIC HOLDING RACK

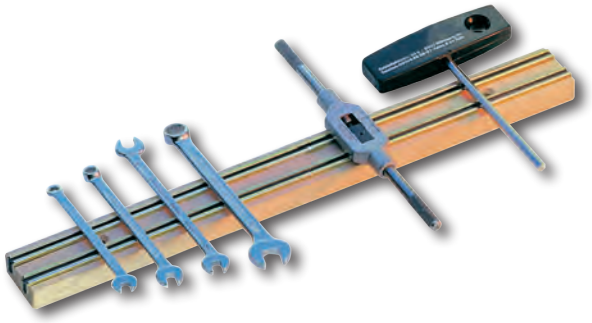
SAV 240.66

For use as an organisational aid

Use:
For use as a workplace repository. Steel and iron parts are held safely.

Execution:
Two continuous, permanently magnetic holding strips in a beech wood housing.
2 fixing bores for wall mounting using screws and plugs.

Execution in steel with 3 fixing bores.



Dimensions in mm			Colour	Material
Length	Width	Depth		
300	33	12	Black	Plastic
330	24	19	Red	Steel
500	24	19	Red	Steel

Ordering example:

Magnetic Holding Rack	SAV 240.66 - 500	
Ordering key	SAV - No.	- Length

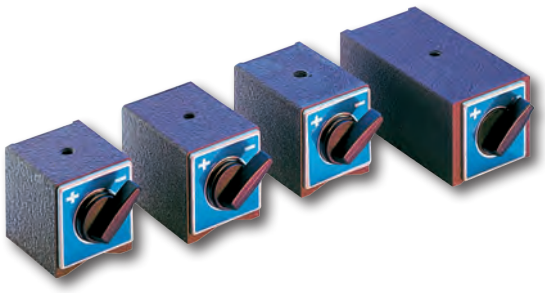
PERMANENT MAGNETIC BASE

SAV 482.70

Switchable

Use:
For supports, truing device, dial gauge stands etc.

Execution:
Permanent magnet with ON-OFF switch. Magnetic holding surfaces on the rear and underside. Additional mitred contact surface on the underside. SAV 482.70 - M 10 x 117 does not have a mitred underside.



Thread	Dimensions in mm			Nom. clamping force in daN	Weight in kg
	Length	Width	Height		
M 8	58	50	55	20	1.0
M 8	73	50	55	30	1.3
M 10	73	50	55	30	1.3
M 8	120	60	52	50	1.8
M 10	117	60	55	40	2.0

Ordering example:

Permanent Magnetic Base	SAV 482.70 - M 10 x 117	
Ordering key	SAV - No.	- Thread x Length

BLIND BORE SWARF ROD

SAV 246.01

To remove swarf from blind bores

Execution:
Magnetic head with a chromed, metal sleeve and a permanent magnet insert. MH 05, MH 08 and MH 12 executions with a plastic ball head on the handle.

Please Note:
A complete set (5 pieces) in 1.6 - 3 - 5 - 8 – 12 mm diameters available in a wooden case. Type MH 16-12. Total weight: 0.51 kg.
Types MH 16 and MH 3 without a plastic ball head on the handles.

Type MH		16	03	05	08	12
Head diameter	in mm	1.6	3	5	8	11
Head length	in mm	32	54	40	40	42
Total length	in mm	68	93	150	175	180
Weight	in kg	0.015	0.035	0.017	0.029	0.047

Ordering example:

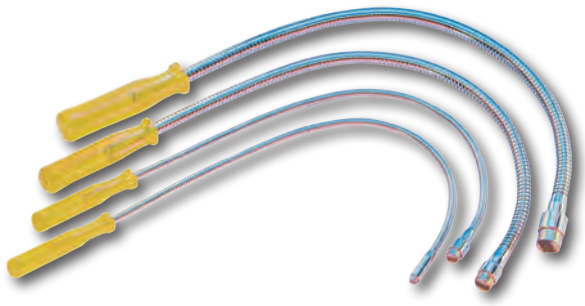
Blind Bore Swarf Rod	SAV 246.01 - MH 05
Ordering key	SAV - No. - Type

FLEXIBLE, MAGNETIC PICK-UP TOOL

SAV 246.02

To lift parts in areas which are difficult to access

Execution:
Polished, flexible, brass stalk with a plastic handle. The pick-up end has a powerful holding magnet. Chromed surface.



Type MH		500	1000	1800	3000
Magnet-ø	in mm	6	10	13	17
ø max.	in mm	8	12	15	19
Length	in mm	450	450	520	520
Nom. Holding force	in N	5	10	18	30
Weight	in kg	0.070	0.076	0.212	0.266

Ordering example:

Flexible, magnetic Pick-up Tool	SAV 246.02 - MH 3000
Ordering key	SAV - No. - Type

MAGNETIC PICK-UP WAND

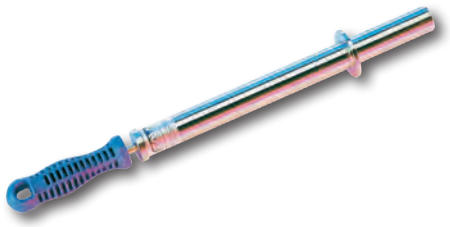
SAV 512.03

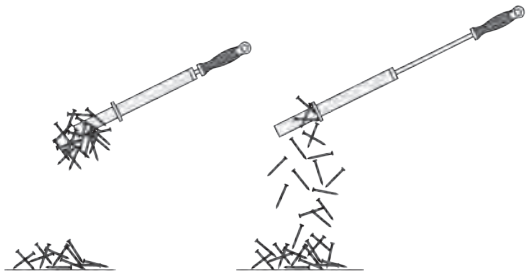
For sorting small ferrite parts and swarf collection

Use:
Permanent magnetic pick-up wand with NdFeB magnetic material for capturing small ferrite parts and swarf.
The captured parts can be easily loosened by pulling back the grip.

Execution:
Stable brass tube design, bright-nickel plated.

Max. application temperature: 100 °C





Dimensions in mm				Weight in kg
Wand diameter	Centre flange diameter	Overall length	Effective magnet length	
28	47	440	90	0.75

Ordering example:

Magnetic pick-up wand	SAV 512.03
Ordering key	SAV - No.

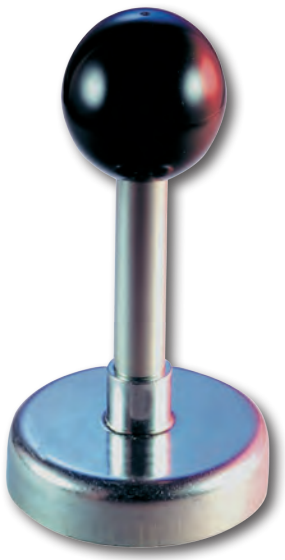
MANUAL SEPARATOR WITH HANDLE

SAV 532.10

For separating metal sheets

Use:
Used to separate iron and steel sheets from stacks and the positioning of sheets onto sheet processing machinery.
Place the separator onto the sheet, then lift. To lift larger sheets it is sensible to use two separators. The separators can be released by simply tilting and pulling free.

Execution:
With a long handle for easy lifting.
Available in 2 sizes.



Dimensions in mm		Nom. Holding force in daN
Diameter	For sheet thicknesses	
80	< 5	40
100	> 5	65

Ordering example:

Manual Separator with Handle	SAV 532.10 - 100
Ordering key	SAV - No. - Diameter

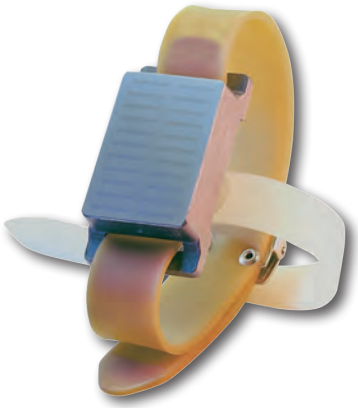
HAND PLATE LIFTER WITH BELT

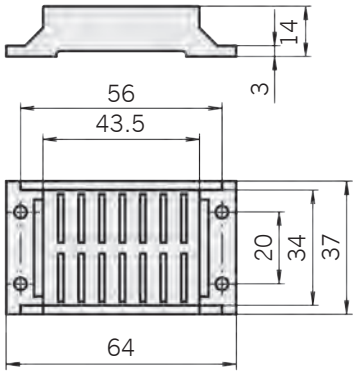
SAV 532.11

For separating sheets

Use:
For depiling and lifting of sheets up to 2mm thickness. For carrying on the right or left inner flat of the hand. Can also be put on the outer flat of the hand for holding of srews or similar small parts.

Execution:
The permanent magnetic system, which is kept in a stable pressure casing, guarantees high holding forces. Spare belts are available on request.





Dimensions in mm			Nom. Holding force in daN*	Weight in kg
Length	**Width**	**Height**		
64	37	14	20	0.1

* measured at vertical pull-off

Ordering example:

Hand Plate Lifter with belt	SAV 532.11
Ordering key	SAV - No.

HOLDING MAGNETS

SAV 581.03

For efficient flushing operations

Use:
To close unneeded flushing holes in EDM operations etc.

Execution:
8 pcs. high-quality permanent, flat, holding magnets made from SmCo5 magnetic material with an extremely high holding force (100 N). With knurled edges for easier removal of the magnets. Supplied in a wooden storage case. Also available in other sizes or individually, on request.

Diameter:	20 mm
Height:	9 mm
Weight:	0.225 kg
	(8 pieces in wooden case)

Ordering example:

Holding magnet	SAV 581.03
Ordering key	SAV - No.

SAV Magnetic workholding

Magnetic chucks and accessories to clamp Workpieces for the following applications:

- Grinding
- Milling
- Turning and hard turning
- Circular grinding
- Drilling
- EDM operations

Our main focus is on standard and specific, individual customer solutions.

The area of SAV Workholding covers:

- Permanent magnetic chucks and circular chucks
- Electro-magnetic chucks and circular chucks
- Electro-permanent magnetic chucks and circular chucks
- Sine tables
- Combined solutions
- Polarity-reversing control units
- Demagnetizing equipment
- Holding and lifting magnets
- Magnetic clamping blocks and V-blocks
- Welding aids and separating magnets

Our product overview offers you a wide range of application examples to promote ideas and highlight the range of possibilities available to you. These specific solutions help you to find a concept for your clamping operations.

We will be happy to assess your requirements. We will naturally take into account and calculate all the technical parameters required to supply you with a detailed offer.

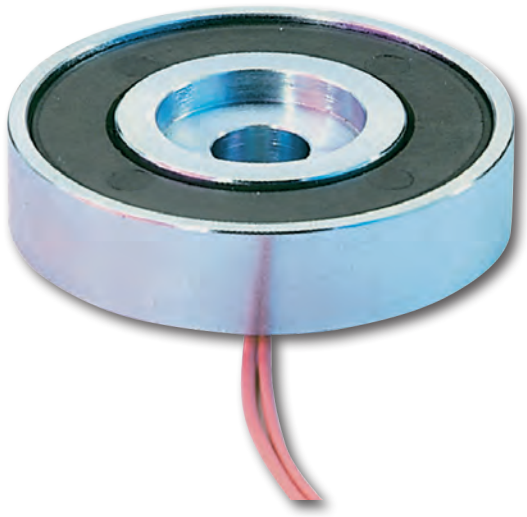
Flat design

Use:
Due to the extremely low construction design, these Holding magnets are used primarily in handling applications. When switched on, the active magnet enables the holding of ferro-magnetic workpieces. To reach the nominal holding force, the steel poles of the holding surface must be completely covered by the workpiece.

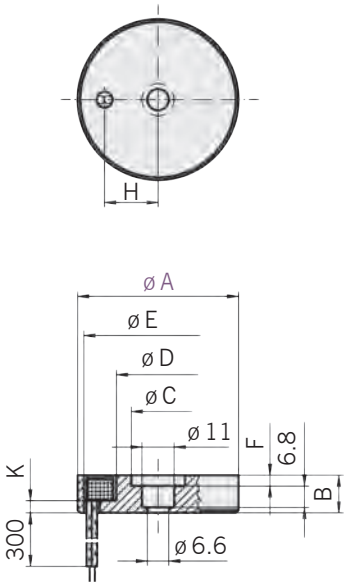
Execution:
The holding magnets consist of an electromagnetic holding system.
Depending upon the area of application, the corresponding accident prevention regulations must be complied with.
For devices in safety class 1, the user must ensure that the equipment grounding conductor corresponds with the provisions of VDE 0100 § 6.

When using the devices, the technical notes (chapter 10) should be noted.

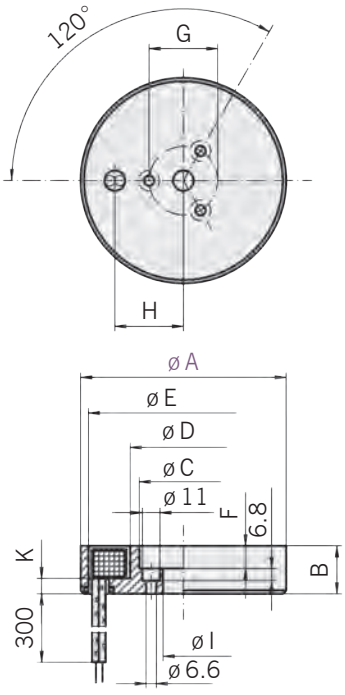
Nominal Voltage:	24 V DC
Duty cycle:	100 % ED
Protection rating: according to DIN 40050	IP 65
Isolation class:	E



Notes to technical data:
The maximum holding forces are given for St 37 and are based on optimal workpiece thickness, at an air gap ∂L = 0 and 100% coverage of clamping surface.
The values are given for 90% nominal voltage and at an operating state temperature (approx. 60 °C over-temperature without additional heat transfer).
If the application is based on other conditions, the holding force is reduced (see technical notes, chapter 10). For safety reasons and depending on the application, a safety factor is to be taken into account.
The nominal power values in the table are intended to determine the correct electronic accessories and are based on 20°C excitation winding temperature at nominal voltage (VDE 0580/ 10.70 § 9.1). During operation the power decreases in relation to the length of the duty cycle. The holding magnets are fixed from the front using cylinder screws.



SAV 241.29 - 56



SAV 241.29 - 110 and -170

Dimensions in mm										Nominal Force in N	Optimum workpiece thickness in mm	Power in W	Weight in kg
A $^{+0.1}_{-0.3}$	B	C	D	E	F	G	H	I	K				
56	13	23.0	32.0	51.5	4	-	23.5	-	3.7	750	>4.0	6.0	0.17
110	21	53.5	65.3	103.5	10	40	49.2	26	5.5	2050	>6.0	15.5	0.90
170	29	90.7	110.3	158.0	19	76	76.4	60	9.0	5000	>10.0	32.0	3.00

Ordering example:

Electro Holding Magnet	SAV 241.29 - 170
Ordering key	SAV - No. - A

ELECTRO HOLDING MAGNET

SAV 241.31

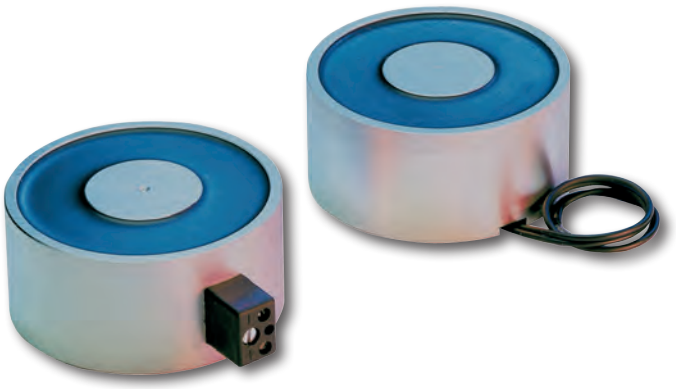
With 2 types of electrical connection

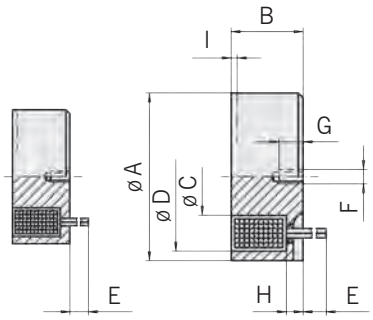
Use:
Electro holding magnets can hold ferrous magnetic workpieces. Their application is found in steel construction, production and have significant advantages in handling small and medium mass products. To reach the nominal holding force, the steel poles of the holding surface must be completely covered by the workpiece.

Notes to technical data:
The maximum holding forces are given for St 37 and are based on optimal workpiecethickness, at airgap dL= 0 and 100% coverage of clamping surface.
The values are given for 90% nominal voltage and warmed condition (approx. 60 K overtemperature without additional heat transfer).
If the application is based on other conditions, the holding force is reduced.

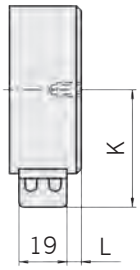
Nominal Voltage: 24 V DC
Duty: 100 % ED
Isolation class: E

Bitte Bestelldaten beachten!





SAV 241.31 - A 01
with connecting wire



SAV 241.31, Type A
with stripped connecting wire

SAV 241.31, Type B
with connection terminals

Type and Dimensions	Dimensions in mm											Nominal Force in N	optimum workpiece thickness in mm	Power in W	Weight in kg
	A	B	C	D	E	F	G	H	I	K	L				
A 01	18±0.1	11.0	8.0	16.1	200	M 3	5	2.5	1	-	-	45	>2.0	1.4	0.02
A/B 02	25±0.1	20.0	11.1	22.3	200	M 4	6	3.5	1	28.5	0.5	140	>3.0	3.2	0.06
A/B 03	32±0.1	22.0	14.3	28.6	200	M 4	6	5.0	3	32.5	0.5	230	>3.6	3.6	0.11
A/B 04	40±0.1	25.5	17.9	35.8	200	M 5	8	5.0	3	37.0	0.5	475	>4.5	5.2	0.20
A/B 05	50±0.1	27.0	20.4	44.7	200	M 5	8	5.5	3	42.0	4.5	750	>6.0	6.5	0.30
A/B 06	63±0.1	30.0	28.2	56.3	200	M 8	12	6.0	3	49.0	6.5	1000	>7.0	9.0	0.55
A/B 08	80±0.1	38.0	34.0	72.8	200	M 8	12	8.5	3	57.5	7.5	1800	>9.0	15.0	1.20
A 10	100±0.1	43.0	42.8	91.3	300	M 10	15	10.0	3	-	-	3400	>10.5	20.5	2.10
A 15	150±0.1	56.0	67.9	134.0	300	M 16	24	16.5	3	-	-	9300	>17.0	37.0	6.40
A 18	180±0.1	63.0	84.8	161.0	300	M 24	36	20.5	3	-	-	15000	>21.0	50.0	10.5
A 25	250±0.1	80.0	117.5	223.0	300	M 24	36	28.5	3	-	-	30000	>29.0	90.0	25.9

Ordering example:
Electro Holding Magnet SAV 241.31 - A 01
Ordering key SAV - No. - Type und Dimensions

ELECTRO MAGNETIC HOLDING BEAM

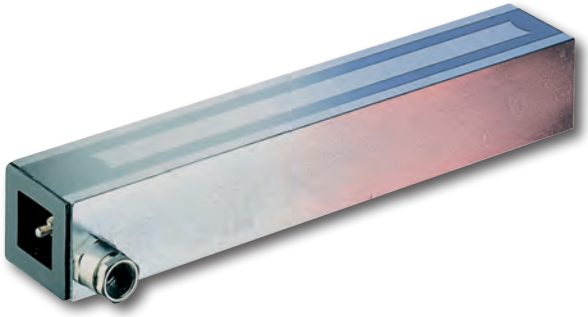
SAV 241.32

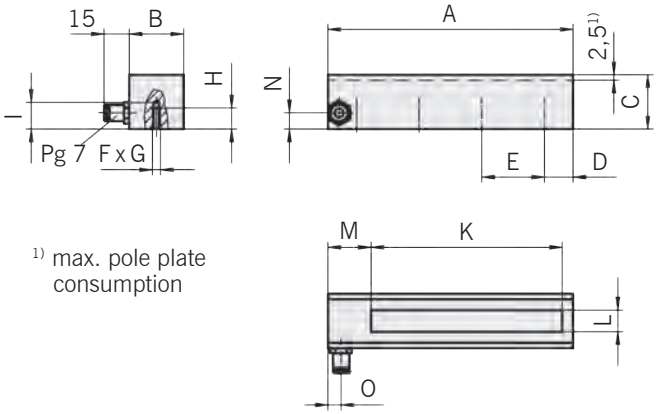
With high holding forces

Use:
The apparatus type C is suitable for holding parts withstraight surfaces, while Type D can be used for parts with rough or scaled surface. To reach the nominal holding force, the steel poles of the holding surface must be completely covered by the workpiece.

Execution:
The electro magnetic holding beams are direct current holding systems. The magnetic circuit is open in switchedon position and makes it possible to hold ferrous magnetic workpieces.
For mounting the magnets are provided with threaded holes in the bottom of the housing. Electrical connection through 2 connection bolts, which are fitted in the housing of the magnet and have easy access. Further a stud is available for mounting of a steel wire as stress release.
These studs can be screwed on the side or bottom. When working with electromagnetic holding beams, one should follow the appropriate rules for the prevention of accidents.

Nominal Voltage:	24 V DC
Isolation class:	E
Protection:	Housing IP 53 according DIN 40 050 connection IP 00
Duty:	100 % ED





1) max. pole plate consumption

Notes to technical data:
The nominal power values in the table above are intended to determine the correct electronic accessories and are based on 20°C winding temperature at nominal voltage (VDE 0580/ 10.70 § 9.1).
During operation the power decreases, depending on the duty . The pole pitch as well as their influence on the operation is described in the technical notes. The maximum holding forces FH are given for St 37 and are based on a plate thickness of > 8 mm for Type C and >10 mm for Type D.

The forces are for an airgap dL=0 and 100% coverage of clamping surface, 90% Nominal voltage and warmed condition (approx. 50 K over-temperature) without additional heat transfer. If the application is based on other conditions, the holding force is reduced. Due to safety reasons and depending on the application a safety factor is to be taken into account.

Type and Dimensions	Dimensions in mm														Pole pitch	Nominal force in N	Nominal Power in W	Weight in kg
	A	B	C	D	E	F	G	H	I	K	L	M	N	O				
C 01	101.5	32	31	20	50	2	M 6	10	13.5	68.0	10	23.5	12	8.5	16	880	7.0	0.65
C 02	151.5	32	31	20	50	3	M 6	10	13.5	118.0	10	23.5	12	8.5	16	1500	10.5	0.88
C 03	201.5	32	31	20	50	4	M 6	10	13.5	168.0	10	23.5	12	8.5	16	2100	14.0	1.22
C 04	401.5	32	31	20	50	8	M 6	10	13.5	368.0	10	23.5	12	8.5	16	4700	25.0	2.48
C 05	501.5	32	31	20	50	10	M 6	10	13.5	468.0	10	23.5	12	8.5	16	6000	35.0	3.15
C 06	601.5	32	31	20	50	12	M 6	10	13.5	568.0	10	23.5	12	8.5	16	7200	42.0	3.75
D 07	151.5	60	49	30	75	2	M 8	12	15.0	93.5	12	36.5	18	10	30	2600	22.0	2.35
D 08	201.5	60	49	35	120	2	M 8	12	15.0	143.5	12	36.5	18	10	30	3750	31.0	3.20
D 09	501.5	60	49	35	140	4	M 8	12	15.0	443.5	12	36.5	18	10	30	10400	70.0	9.20

Ordering example:

Electro Magnetic Holding Beam	SAV 241.32 - D 09
Ordering key	SAV - No. - Type and Dimensions

SAV 241.40

Electrically deactivated permanent magnets

Use:
Due to the permanent magnetic holding system, which is effective in a de-energized state, these holding magnets are used primarily in applications where long holding periods are required and only for short periods or occasionally no holding force is required. Additionally, they are used as safety magnets in transport equipment and lifting gear as the load is reliably held in the case of a power failure.
To reach the nominal holding force, the steel poles of the holding surface must be completely covered by the workpiece.

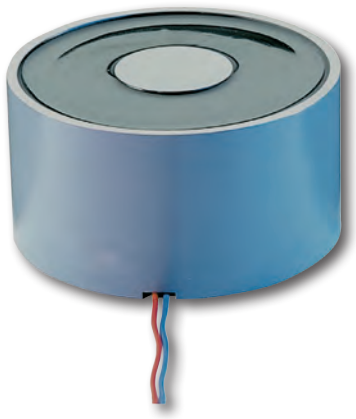
Execution:
The holding magnets consist of a permanent magnetic holding system to hold ferro-magnetic workpieces and an excitation winding, which neutralises the magnetic field on the holding surface when activated and allows the removal or setting down of loads. Depending upon the area of application, the corresponding accident prevention regulations must be complied with.
When using the devices, the technical notes should be noted.

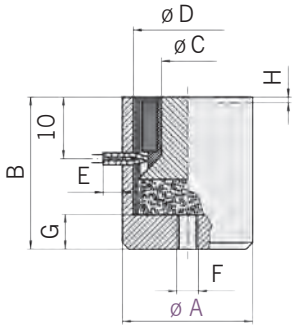
Nominal Voltage:	24 V DC
Isolation class:	E
Protection rating:	Housing IP 65 according to DIN 40050

Duty cycle:
25% at a cycle time of < 2 min or
40% at a cycle time of < 0.5 min
The relative duty cycle is:

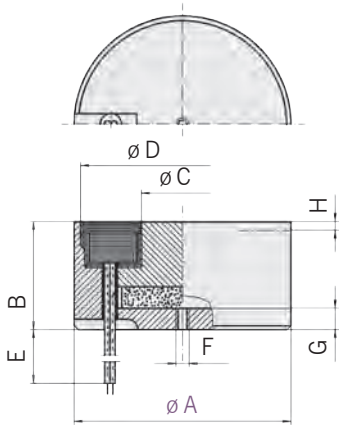
$$\text{rel. duty cycle} = \frac{\text{duty cycle}}{\text{cycle time}} \bullet 100\ \%$$

Adherence to the specified values for the duty cycle and cycle time and a nominal voltage of +5% or -10%, ensures that a reliable deactivation of the permanent magnetic system is achieved. This ensures the safe release of the load. The prevailing residual force then represents max. 3% of the nominal holding force. The holding magnet is not thermally overloaded during continuous operation. The thereby resulting over-temperature of the excitation winding however causes an increase in the residual force.





SAV 241.40 - 20



SAV 241.40 - 35
to SAV 241.40 - 150

Dimensions in mm								Nominal Force in N*	Optimum workpiece thickness in mm	Nominal power in W	Inductivity unloaded in H	Inductivity loaded in H	Weight in kg
A	B	C	D	E	F	G	H						
20	22	9.0	18.0	200	M 4	5	1	40	>2.5	3.6	0.11	0.8	0.04
35	28	11.2	33.0	200	M 4	5	2	160	>3.0	4.6	1.12	4.9	0.20
55	36	18.0	52.0	200	M 5	6	2	420	>4.5	9.0	0.82	4.65	0.50
70	45	24.0	65.6	200	M 8	8	2	720	>6.0	13.3	0.72	4.42	0.90
90	48	30.0	84.7	200	M 8	8	2	1200	>7.5	21.8	0.60	4.12	1.70
105	56	37.0	98.0	300	M 10	10	3	1600	>9.0	28.0	0.52	3.13	2.60
150	63	55.0	140.0	300	M 16	16	3	3500	>12.5	44.0	0.46	3.04	6.40

* The nominal holding force values are based upon a 100 % loading of the contact surface with a St 37 workpiece, ground and of optimal loading thickness.

Ordering example:

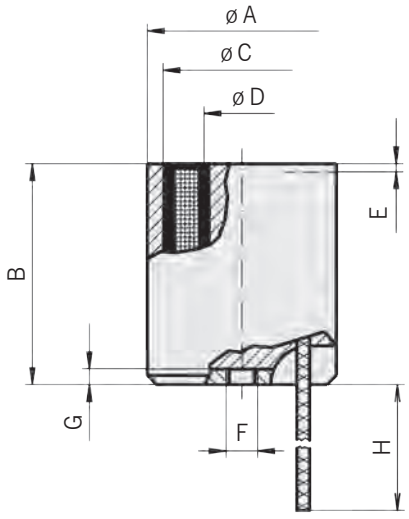
Permanent Electro Holding Magnet	SAV 241.40 - 150
Ordering key	SAV - No. - A

Electrically deactivated permanent magnets

Use:
Due to the permanent magnetic holding system, which is effective in a de-energized state, these holding magnets are used primarily in applications where long holding periods are required and only for short periods or occasionally no holding force is required. Additionally, they are used as safety magnets in transport equipment and lifting gear as the load is reliably held in the case of a power failure. To reach the nominal holding force, the steel poles of the holding surface must be completely covered by the workpiece.

Execution:
The holding magnets consist of a permanent magnetic holding system to hold ferro-magnetic workpieces and an excitation winding, which neutralises the magnetic field on the holding surface when activated and allows the removal or setting down of loads. If the winding is switched in the same direction, this increases the nominal force. Depending upon the area of application, the corresponding accident prevention regulations must be complied with.
When using the devices, the technical notes should be noted.

Nominal Voltage:	24 V DC
Isolation class:	E
Protection rating:	Housing IP 65 according to DIN 40050
Duty cycle:	100 % ED



Notes to technical data:
The maximum holding forces are given for St 37 and are based on optimal workpiece thickness, at an air gap ∂L = 0 and 100% coverage of clamping surface. The values are given for an operating state temperature.
There is no thermal overloading during continuous operation. However the thereby resulting over-temperature causes an increase in the residual force. If the application is based on other conditions, the nominal holding force is reduced (see technical notes, chapter 15).

For safety reasons and depending on the application, a safety factor is to be taken into account. The nominal power values in the table are intended to determine the correct electronic accessories and are based on 20°C excitation winding temperature at nominal voltage (VDE 0580/ 10.70 § 9.1). During operation the power decreases in relation to the length of the duty cycle.

Dimensions in mm								Nominal Force in N	Optimum workpiece thickness in mm	Switch off voltage in V	Power in W	Weight in kg
A	B	C	D	E	F	G	H					
32.2	40	28	15.5	2	M 4	5	200	260	>10.0	24	6	0.2

Ordering example:

Permanent Electro Holding Magnet	SAV 241.41
Ordering key	SAV - No.

CONDITIONS OF SALE AND DELIVERY

1. General and contract conclusion
a) all agreements and offers are based on our conditions; they apply as accepted through placement of order or acceptance of the supply. Deviating conditions of the customer, which we do not accept expressly in writing, are noncommittal for us, even if we do not contradict explicitly.
b) For the scope of supply our confirmation of order is determining. Verbal, telephonically, telegraphic and telefaxed special agreements and additional contract modifications have validity only if they are confirmed in writing by us. The same applies to assured properties of the supplied article. All data in our designs, illustrations, measurement tables, weight tables etc. are - so far not explicitly confirmed by us - only approximate values. The documents belonging to the offers remain our property, are subordinate to our copyright and may not be made accessible to third parties or only with our written approval.
c) The order acceptance by us takes place in writing. If we should deviate slightly in our order confirmation in relation to the order of the customer, then our order confirmation is obligatory, if within eight days - in urgent cases by telephone call, telegram or telefax - one does not contradict to these. Hereunder applies the principle that a wrong transmission always goes debited to the customer, and will not be borne by us.
d) Place of delivery for all obligations developing from the contractual relation is Nuremberg Germany. Area of jurisdiction for all from the contractual relation as well as law cases rising over its developing and its effectiveness is Nuremberg; after our choice also seat of the customer (with foreign contracts: also court of the capital of the country, in which the customer has his seat). The contractual relation is always subject to the German material right under exclusion of international purchase rights.
e) All written or oral offers are, unless no other agreements are made or confirmed by us, not binding.

2. Prices
The prices are in Euro. The prices apply, if not explicitly differently agreed, purely net ex works including loading, excluding packing, freight, insurance, assembly and other additional expenses. All increase of freight and tariffs, value added tax, material prices and wages are for the account of the customer. With supplementary orders the prices are newly agreed upon.

3. Delivery time.
The delivery time is specified after best discretion and is therefore to be understood as approximately, excluding explicitly firm designated agreements. The time for delivery starts only from the time, in which written agreement exists over the final supply and all questions necessary for the trouble-free execution of the order are clarified. The time for delivery does not begin before the time that all documents are made available to us, the necessary official and private explanations, permissions and releases etc. are available and the customer has fulfilled the agreed payments and other obligations.
The delivery time is considered as firm, if the shipment has left our works within the agreed delivery time. If the delivery is delayed for reasons not attributable to us, then the time for delivery is considered as firm with the message that goods are ready for dispatch within the agreed delivery time.

The time for delivery extends - also within a delivery delay appropriate at occurrence of foreseen events, which we could reasonably not prevent despite the circumstances of the case – equally to events in our work or at possible subcontractors - for example operational disturbances, wasting of an important working part, delays in the delivery of substantial raw materials and delivery parts, strike, lockout, mobilization, war and riot as well as in delay of the customer from this or another contract.

At later changes of the contract, which can affect the delivery time, the delivery time extends, unless special agreements concerning this can be made, to appropriate extent. Consequential loss or damage because of late supply with negligent behaviour by us or our personnel are explicitly excluded.
In any case we are responsible for such damage only up to the invoice amount excluding V.A.T., whose cause and extent could have been foreseen by us. Partial deliveries are permissible. For special and customer specific products a withdrawal is not possible.

4. Terms of payment
Our invoices are payable within eight days from invoice date with 2% discount or within 30 days net. Repair and spare part invoices are immediately payable without any deduction. The retention of payment due to whatever unrecognized or legally invalid counterclaims of the customer is just as inadmissible as the set-off with such counterclaims.
Cheques and discountable changes are accepted only after special agreement and only when all additional collection and discount charges are paid. When payment is received after the due date, interests according the usual bank interest on debit balances plus 2% as well as all arising additional fees or other costs can be charged.
With call-off orders we are entitled make our invoices payable at readiness for dispatch. With call-off delays, starting 14 days after announcement of readiness for dispatch, the additional charges for storage, care and shifting of the commodities can be charged.
With payments by instalments which were accepted by us the entire remainder becomes immediately due, if the customer with a due payment is over 10 days in delay or in his financial circumstances nature-due, if the customer with a due payment is over 10 days in delay or substantial degradations in his financial circumstances occurs.
In addition we are entitled to reject all pending supplies subject to payment, or to insist on acceptance and/or if necessary validate claims for damages in accordance with the condition of the previous paragraph.

5. Transfer of risk
The risk is passed-on to the customer, even if freight-free delivery was agreed:
a) At delivery of the supplies by us or one of our assigned transporters, however latest at leaving of our works or warehouse. The packing takes place with best care. The dispatch takes place after best discretion of the supplier. On request and for the account of the customer the delivery is insured by the supplier against breakage, transportation- and fire damage.
b) If the dispatch, the delivery or the acceptance are delayed for reasons, which are not attributable to us, then the risk is transferred to the customer on the day of readiness for dispatch; however we are prepared to take out a desired insurance on request and for the account of the customer.

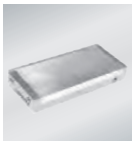
6. Receipt
Delivered articles are to be received by the customer, even if they show insignificant defects. Partial deliveries are permissible.
7. Guarantee
If a commodity is defective, is missing assured characteristics or will loose characteristics during the guarantee period due to production or material failures or will it become defective during the guarantee period due to production or material failures, then we will, under exclusion of further guarantee claims of the customer, according our choice supply a replacement or have the commodity reworked.
If this is not possible, the rework fails or is refused by us or unreasonably delayed, then the customer has the right to a replacement or reduction. Damage claims because of non-fulfilment or consequential damage are explicitly not accepted, except for mandatory liability because of guilt.
For consequential damages we only take responsibility, if the customer should be secured by the warranty against such consequential damages. In these cases we are liable only up to expectation interest, maximum up to 2-times the value of the supply, excluding value added tax.
Determination of all defects must be announced immediately - with recognized defects at the latest within 8 days after receipt of the commodities, with non-recognized defects immediately after determination - in writing.
Costs of the rework are for our account up to the value of the defective part, beyond that it is for the account of the customer.
Wear or damages, which are due to careless or unsuitable use, excessive load, unsuitable equipment, inadequate construction work, is excluded, as far as unknown to us at completion of contract and the use was expressly assured.
When improper changes or repairs are made by the customer or a third party, our liability for the consequences caused by this is waived.
For improvement work and spare pieces we are liable to the same amount as for the original delivered commodity, and only up to the expiration of the guarantee period of the original delivery commodity.
For sub supplied commodities our total liability is limited to passing on the liability claims, which we have against the supplier of these commodities.
Only if these were claimed without result, our liability according paragraph 1 is revived again. In all cases only such damages, whose cause and extent were foreseeable for us, are replaced.
The guarantee claims expire 12 months after delivery.

8. Other claims for damages, resignation
Claims for damages from impossibility of the performance, delay, positive violation of contract, debts at completion contract or tortuous liability are excluded, unless, these are based on intent or gross negligence of us. Claims for damages are limited in each case to the value of the supply.
When the performance becomes impossible to us or the customer, then general rights of law apply under the following condition:
If the impossibility is due to our fault, then the customer is entitled to require compensation of damages. This is limited to half of the value of the supply, excluding value added tax, of the part of the supply or performance, which cannot be taken in useful service because of the impossibility.
The right of the customer to the resignation remains unaffected. If unexpected events in the sense of number 3 of the economic meaning or the contents of the supply or performance change substantially or considerably affect on our company, the contract will be changed proportionally.
As far as this is economically not justifiable, a right of resignation is entitled to us. If we want to make use from this right, then we will communicate this to the customer immediately after determination of significance, and also then, when even at first with this an extension of the delivery time was agreed upon.
In all cases only such damages, whose origin and extent were foreseeable for us, are replaced.

9. Right of ownership
The supplied commodity remains our full property until full payment, also the future developing demands, indifferently from whatever argument this developed, even if payments for particularly designated demands were made. With open invoices the reserved property applies as security of our demand for balance.
a) By machining and processing of the reserved commodities, the customer does not acquire the property of the new item in accordance with. § 950 BGB. The processing is performed by the customer for us, without resulting in any obligations to us. If the reserved commodities are processed, connected, mixed or integrated with other items not belonging to us, we acquire the property of the new item in relationship to the value of the reserved commodity to the other finished items.
b) The allowances of the customer from resale or rental of the reserved commodities are directly assigned to us and without consideration, if the reserved commodities are without or after processing, connection, mixture or integration and if they are resold to one or multiple customers.
These demands serve as protection only upto the value of the already sold reserved commodities. In case that the reserved commodities are sold together with other items not belonging to us, with or without processing, the transfer of the demand for purchase price applies only to the amount of the reserved commodities , which is, together with other items, the subject of this contract.
Regardless of the transfer and our right to resignation, the customer is entitled for resignation in so far, when he fulfils his obligations to us and does not come into financial collapse. On request the customer has to give us the details necessary for the resignation of the resigned demands, and communicate the resignation to the debtors.
The customer has to inform us immediately about the execution measures of third parties in the reserved commodities or the in advance resigned demands, by handing over the documents necessary for an intervention. The customer bears the cost of our intervention.
c) The customer has the obligation to keep the commodities in proper condition during the duration of the right of ownership and will directly have the necessary repairs - apart from emergencies – performed by us or by one of our recognized repair workshop at own expense.

10. Transfer of the contract
The transfer of demands on us to third parties is impossible, if we do not agree in writing.

THE SAV PRODUCT RANGE



CATALOGUE I
SAV–MAGNETIC WORKHOLDING

CATALOGUE II
SAV–STATIONARY WORKHOLDING

CATALOGUE III
SAV–ROTARY WORKHOLDING

CATALOGUE IV
SAV–PRODUCTION AUTOMATION

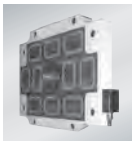
CATALOGUE V
SAV–STANDARD PARTS

CATALOGUE VI
SAV–MAGNETIC LIFTING

CATALOGUE VII
SAV–CUSTOM SOLUTIONS

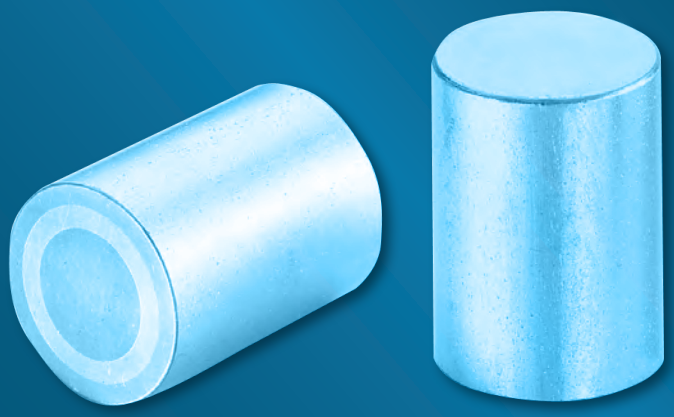
CATALOGUE VIII
SAV–SMALL MAGNETS

CATALOGUE IX
SAV–DRESSING AND CIRCULAR GRINDING



CATALOGUE X
SAV–QMC

INDEX ACCORDING TO SAV-NUMBERS



CONSULTING
DEVELOPMENT
MANUFACTURING
SALES
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