

Retaining magnets



Standard Machine Elements Worldwide



Retaining magnets

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Types / Range of retaining magnets

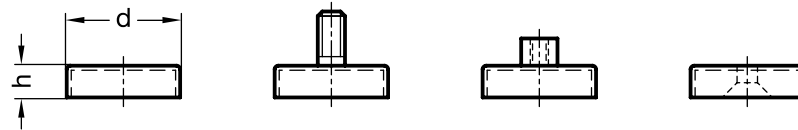
Retaining magnets are simple problem solvers for no-wear fixings.

Owing to their structure, these magnet systems have only one adhesion level. The magnets and iron poles are optimised and arranged such that the whole of the magnetic energy is focused on the adhesive surface.

The spatial effect of the magnetic field is limited in shielded systems, with the effect that surrounding objects are not magnetised.

Flat gripper:

$\varnothing d = 6$ to 125 $h = 4,5$ to 26
Housing steel, zinc plated, red lacquered or Stainless Steel

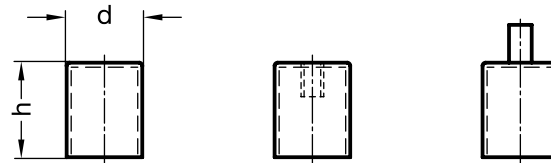


$\varnothing d = 12$ to 8 $h = 6$ to 8,5
Housing steel, zinc plated, with rubber jacket

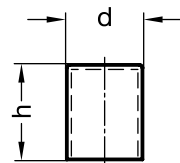


Rod gripper:

$\varnothing d = 4$ to 63 $h = 10$ to 65
Housing steel, zinc plated, red lacquered

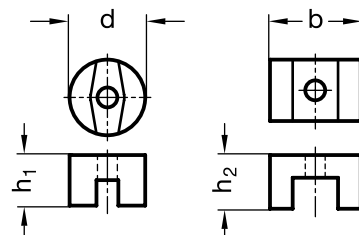


$\varnothing d = 6$ to 32 $h = 20$ to 40
Sandwich configuration of the steel poles , housing brass



Button-type / U-Magnets:

$\varnothing d = 13$ to 32 $h_1 = 10$ to 25,4
 $b = 22$ to 79 $h_2 = 17$ to 54
Cast, unshielded system, red lacquered



Retaining magnets - Materials of the magnet

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Retaining magnets

Hard ferrite (HF)

SrFe (Strontium ferrite)

Magnets made of hard ferrite (80% iron oxide) are made by sintering process.

Like all ceramic materials, these magnets are very hard and brittle and virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

AlNiCo (AN)

Aluminium nickel cobalt

Magnets made of AlNiCo (main constituents include aluminium, nickel, cobalt and iron) are made by sintering or casting process.

The material is very hard and tough, but can be redressed.

These magnets are used in applications in which the magnetic field is to remain as static and stable as possible, also under higher temperature fluctuations.

SmCo (SC)

Samarium cobalt

Magnets made of SmCo (main constituents include samarium and cobalt) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

The magnetic adhesive force drops when the magnet is heated.

NdFeB (ND)

Neodymium iron boron

Magnets made of NdFeB (main constituents include neodymium, iron and boron) are made by sintering process.

The material is very hard and brittle and is virtually non-machinable.

This material delivers ultimate magnetic holding power.

The magnetic adhesive force drops when the magnet is heated.

Magnet materials in comparison:

Description	Hard ferrite (HF)	AlNiCo (AN)	SmCo (SC)	NdFeB (ND)
Adhesive force	good	medium	strong	very strong
Max. working temperature *)	≈ 200° C	≈ 450° C	≈ 200° C	≈ 80° C
Corrosion resistance	very good	very good	good	less good
Machineability	not possible	diamond cutting, grinding	not possible	not possible
Demagnetisation capability	moderate	easy	very difficult	difficult
	by demagnetising fields	by demagnetising fields	only by large demagnetising fields	only by large demagnetising fields
Price	very reasonable	high	very high	reasonable

*) The max. temperature used is only a guide value because it also depends on the dimensions of the magnet.



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Retaining magnets - Adhesive forces

Other factors apart from the magnet material and the size of the magnet affecting the magnetic adhesive force are:

- an air gap (magnetically non-conductive materials act like an air gap)
- the quality of the surface (roughness and shape)
- the temperature
- the content of ferro-magnetic material in the steel or its volume to absorb the entire magnetic flux.

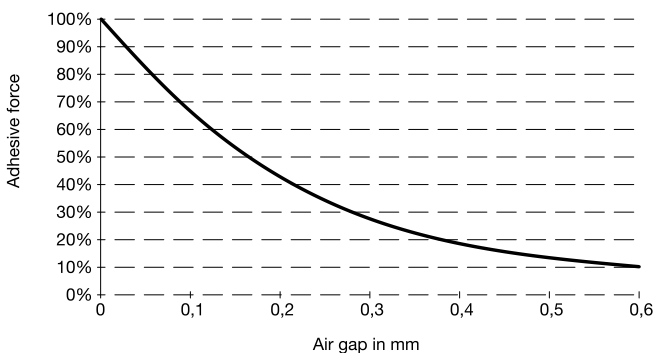
The magnetic adhesive force can also be impaired by alternating thermal stress and by chemical factors (aggressive baths, gases, etc.).

The diagrams and graphs below show guide values relating to the impact on the magnetic adhesive force caused by different mechanical specifications.

The nominal magnetic adhesive forces shown in the tables of the standard pages are minimum values which are achieved at:

- room temperature
- perpendicular „tear-off“ under full surface contact of the magnet
- workpieces made of low-carbon steel with a minimum thickness of 10 mm

Influence of the air gap

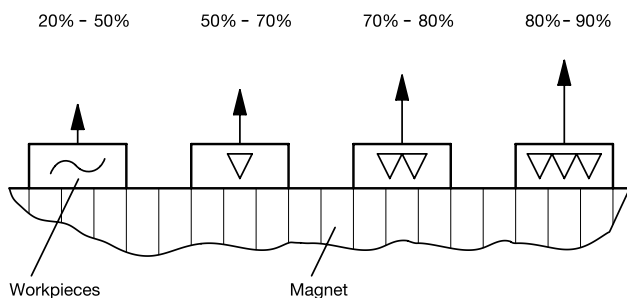


Influence of the material (steel grade)

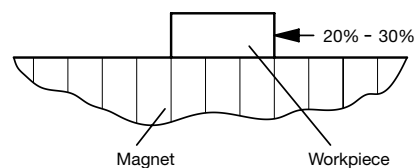
100%	technically pure iron	86%	C60
95%	St37	84%	42CrMo4
95%	C15	75%	St50
94%	34CrNiMo6	72%	X155CrMo12
93%	St52-3	65%	X210CrW12
92%	90MnV8	50%	20MnCr5
90%	C45	30%	GG
87%	Ck45	0%	non-ferrous metals

Hardened workpieces are bad conductors of the magnetic flux. The magnetic adhesive force is therefore lower.

Influence of the workpiece surface on the magnetic adhesive force



Displacement force = 20% - 30% of the magnetic adhesive force



The displacement force is also influenced by the surface roughness and the adhesion.

GN 50.1

Retaining magnets

• Specification

Disc shaped, without thread
Housing steel, zinc-plated

• Materials of the magnet

- Hard ferrite **HF**, temperature resistant up to 200° C
- Samarium, cobalt SmCo **SC**, temperature resistant up to 200° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

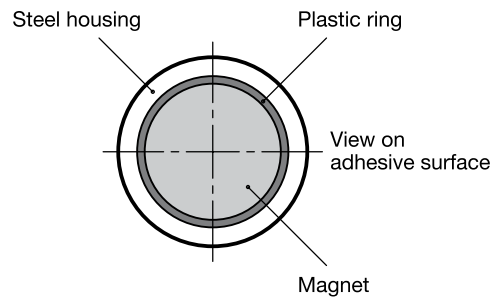
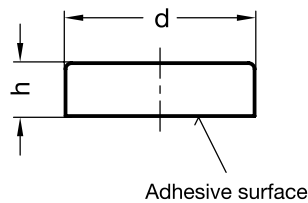


Features and applications

Retaining magnets GN 50.1 are a shielded magnetic system.

Fixed in place by gluing or side-mounted thrust bolt
(e.g. GN 913.2 grub screw with pointed nose).

Further details for retaining magnets see page 3 to 5.



Standard Elements Description	Main dimensions		Nominal adhesive forces in N	△△ g
	d	h		
GN 50.1-HF-10	10 +0.1/-0.1	4,5 +0.2/-0.1	4	2
GN 50.1-HF-13	13 +0.1/-0.1	4.5 +0.2/-0.1	10	3
GN 50.1-HF-16	16 +0.1/-0.1	4,5 +0.2/-0.1	18	5
GN 50.1-HF-20	20 +0.1/-0.1	6 +0.2/-0.1	30	10
GN 50.1-HF-25	25 +0.1/-0.1	7 +0.3/-0.1	40	18
GN 50.1-HF-32	32 +0.1/-0.1	7 +0.3/-0.1	80	29
GN 50.1-HF-40	40 +0.2/-0.1	8 +0.4/-0.1	125	55
GN 50.1-HF-50	50 +0.2/-0.1	10 +0.5/-0.1	220	102
GN 50.1-HF-63	63 +0.3/-0.1	14 +0.5/-0.1	350	226
GN 50.1-HF-80	80 +0.5/-0.1	18 +0.5/-0.1	600	468
GN 50.1-HF-100	100 +0.5/-0.1	22 +0.5/-0.1	900	915
GN 50.1-HF-125	125 +0.5/-0.1	26 +0.5/-0.1	1300	1680
GN 50.1-SC-6	6 +0.1/-0.1	4.5 +0.1/-0.1	5	1
GN 50.1-SC-8	8 +0.1/-0.1	4.5 +0.1/-0.1	11	2
GN 50.1-SC-10	10 +0.1/-0.1	4.5 +0.1/-0.1	20	3
GN 50.1-SC-13	13 +0.1/-0.1	4.5 +0.1/-0.1	40	4
GN 50.1-SC-16	16 +0.1/-0.1	4.5 +0.1/-0.1	60	7
GN 50.1-SC-20	20 +0.1/-0.1	6 +0.1/-0.1	90	14
GN 50.1-SC-25	25 +0.1/-0.1	7 +0.2/-0.2	150	26
GN 50.1-SC-32	32 +0.1/-0.1	7 +0.2/-0.2	220	42
GN 50.1-ND-6	6 +0.1/-0.1	4.5 +0.1/-0.1	5	1
GN 50.1-ND-8	8 +0.1/-0.1	4.5 +0.1/-0.1	13	2
GN 50.1-ND-10	10 +0.1/-0.1	4.5 +0.1/-0.1	25	2.5
GN 50.1-ND-13	13 +0.1/-0.1	4.5 +0.1/-0.1	60	4
GN 50.1-ND-16	16 +0.1/-0.1	4.5 +0.1/-0.1	95	6
GN 50.1-ND-20	20 +0.1/-0.1	6 +0.1/-0.1	140	14
GN 50.1-ND-25	25 +0.1/-0.1	7 +0.2/-0.2	200	25
GN 50.1-ND-32	32 +0.1/-0.1	7 +0.2/-0.2	350	41

GN 50.3



Retaining magnets

• Specification

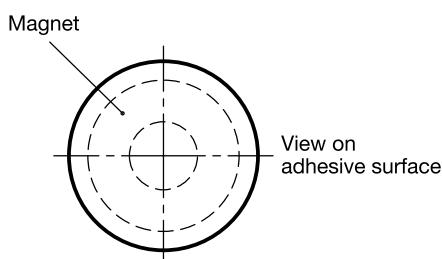
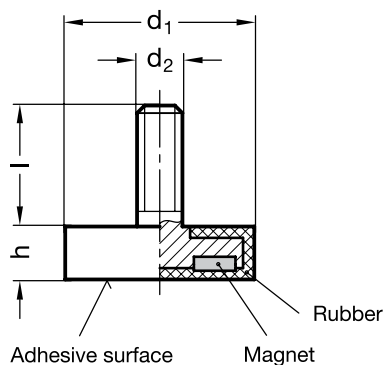
Disc-shaped, with threaded stud
Housing / threaded stud steel, zinc-plated

• Materials of the magnet

- Hard ferrite **HF**, temperature resistant up to 200° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 50.3 are a shielded magnetic system.
Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions				Nominal adhesive forces in N	△△
Description	d ₁	d ₂	h	Length l		g
GN 50.3-HF-10	10 +0.1/-0.1	M 3	4,5 +0.2/-0.1	7	4	2
GN 50.3-HF-13	13 +0.1/-0.1	M 3	4,5 +0.2/-0.1	7	10	3
GN 50.3-HF-16	16 +0.1/-0.1	M 3	4,5 +0.2/-0.1	7	18	5
GN 50.3-HF-20	20 +0.1/-0.1	M 3	6 +0.2/-0.1	7	30	10
GN 50.3-HF-25	25 +0.1/-0.1	M 4	7 +0.3/-0.1	8	40	19
GN 50.3-HF-32	32 +0.1/-0.1	M 4	7 +0.3/-0.1	8	80	30
GN 50.3-HF-47	47 +0.2/-0.1	M 6	9 +0.5/-0.1	8	80	85
GN 50.3-HF-63	63 +0.3/-0.1	M 6	14 +0.5/-0.1	15	350	233
GN 50.3-ND-10	10 +0.1/-0.1	M 4	4,5 +0.1/-0.1	8	25	3
GN 50.3-ND-13	13 +0.1/-0.1	M 5	4,5 +0.1/-0.1	8	60	5
GN 50.3-ND-16	16 +0.1/-0.1	M 6	4,5 +0.1/-0.1	8	95	5
GN 50.3-ND-20	20 +0.1/-0.1	M 6	6 +0.1/-0.1	10	140	15
GN 50.3-ND-25	25 +0.1/-0.1	M 6	7 +0.1/-0.1	10	200	27
GN 50.3-ND-32	32 +0.1/-0.1	M 6	7 +0.1/-0.1	10	350	42

GN 50.2

Retaining magnets

• Specification

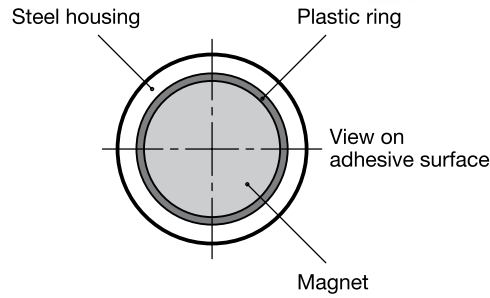
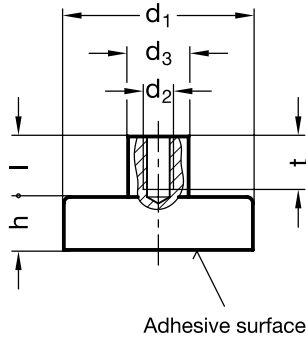
Disc shaped, with female thread
Housing / threaded bush steel, zinc-plated

• Materials of the magnet

- Hard ferrite **HF**, temperature resistant up to 200° C
- Samarium, cobalt SmCo **SC**, temperature resistant up to 200° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 50.2 are a shielded magnetic system.
Further details for retaining magnets see page 3 to 5.



Standard Elements Description	Main dimensions						Nominal adhesive forces in N	⚖ g
	d ₁	d ₂	d ₃	h	Length l	t		
GN 50.2-HF-10	10 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.2/-0.1	7	5	4	3
GN 50.2-HF-13	13 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.2/-0.1	7	5	10	4
GN 50.2-HF-16	16 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.2/-0.1	7	5	18	6
GN 50.2-HF-20	20 +0.1/-0.1	M 3	6 +0.1/-0.1	6 +0.2/-0.1	7	5	30	11
GN 50.2-HF-25	25 +0.1/-0.1	M 4	8 +0.1/-0.1	7 +0.3/-0.1	8	7	40	20
GN 50.2-HF-32	32 +0.1/-0.1	M 4	8 +0.1/-0.1	7 +0.3/-0.1	8	7	80	31
GN 50.2-HF-40	40 +0.2/-0.1	M 5	10 +0.1/-0.1	8 +0.4/-0.1	10	9	125	59
GN 50.2-HF-50	50 +0.2/-0.1	M 6	12 +0.1/-0.1	10 +0.5/-0.1	12	11	220	111
GN 50.2-HF-63	63 +0.3/-0.1	M 8	15 +0.1/-0.1	14 +0.5/-0.1	16	14	350	242
GN 50.2-HF-80	80 +0.5/-0.1	M 10	20 +0.1/-0.1	18 +0.5/-0.1	16	15	600	500
GN 50.2-HF-100	100 +0.5/-0.1	M 12	22 +0.1/-0.1	22 +0.5/-0.1	21	18	900	948
GN 50.2-HF-125	125 +0.5/-0.1	M 14	25 +0.1/-0.1	26 +0.5/-0.1	24	20	1300	1732
GN 50.2-SC-6	6 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	5	2
GN 50.2-SC-8	8 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	11	3
GN 50.2-SC-10	10 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	20	4
GN 50.2-SC-13	13 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	40	6
GN 50.2-SC-16	16 +0.1/-0.1	M 4	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	60	8
GN 50.2-SC-20	20 +0.1/-0.1	M 4	8 +0.2/-0.2	6 +0.1/-0.1	7	7	90	16
GN 50.2-SC-25	25 +0.1/-0.1	M 4	8 +0.2/-0.2	7 +0.2/-0.2	7	7	150	28
GN 50.2-SC-32	32 +0.1/-0.1	M 5	10 +0.2/-0.2	7 +0.2/-0.2	8.5	8	220	47
GN 50.2-ND-6	6 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	5	2
GN 50.2-ND-8	8 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	13	3
GN 50.2-ND-10	10 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	25	4
GN 50.2-ND-13	13 +0.1/-0.1	M 3	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	60	5
GN 50.2-ND-16	16 +0.1/-0.1	M 4	6 +0.1/-0.1	4.5 +0.1/-0.1	7	6	95	7
GN 50.2-ND-20	20 +0.1/-0.1	M 4	8 +0.2/-0.2	6 +0.1/-0.1	7	7	140	16
GN 50.2-ND-25	25 +0.1/-0.1	M 4	8 +0.2/-0.2	7 +0.2/-0.2	7	7	200	27
GN 50.2-ND-32	32 +0.1/-0.1	M 5	10 +0.2/-0.2	7 +0.2/-0.2	8.5	8	350	45



Retaining magnets

• Specification

Disc shaped, with female thread
Housing / threaded bush, stainless steel

• Material of the magnet

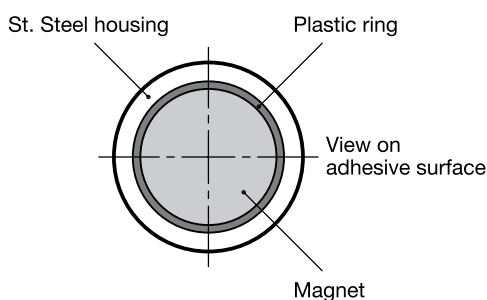
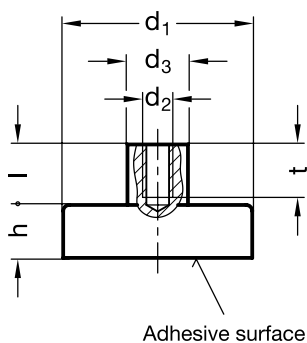
Hard ferrite **HF**, temperature resistant up to 220° C

Features and applications

Stainless Steel-Retaining magnets GN 50.25 are a shielded magnetic system.

Owing to the lower magnetic conductivity of the stainless steel housing, the adhesive forces are lower than in steel.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions						Nominal adhesive forces in N	⚖
Description	d1	d2	d3	h	Length l	t		g
GN 50.25-HF-25	25 +0.1/-0.1	M 5	8	7 +0.3/-0.1	9	9	32	20
GN 50.25-HF-32	32 +0.1/-0.1	M 5	8	7 +0.3/-0.1	9	9	64	31
GN 50.25-HF-40	40 +0.2/-0.1	M 5	8	8 +0.3/-0.1	8.5	9	100	56
GN 50.25-HF-50	50 +0.2/-0.1	M 5	8	10 +0.4/-0.1	8.5	9	175	105
GN 50.25-HF-63	63 +0.3/-0.1	M 5	8	14 +0.5/-0.1	8	9	280	228

GN 50.4

Retaining magnets

• Specification

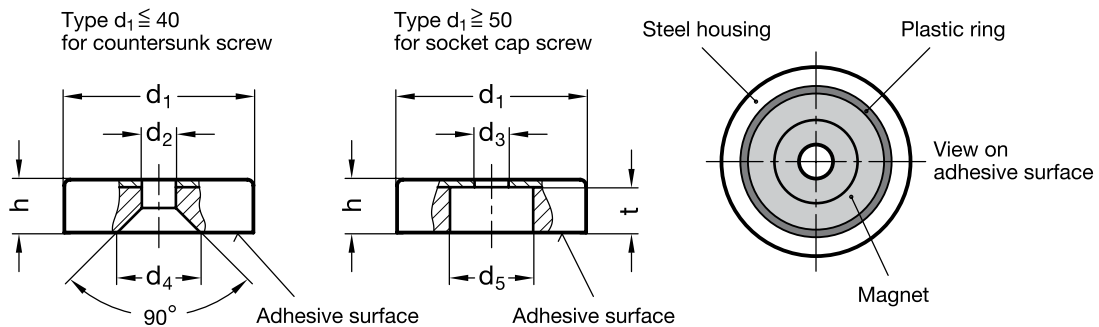
Disc shaped, with bore
Housing / Steel, zinc plated

• Material of the magnet

Hard ferrite **HF**, temperature resistant up to 200° C

Features and applications

Retaining magnets GN 50.4 are a shielded magnetic system.
To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material.
Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions							Nominal adhesive forces in N	⚖ g
	d1	d2	d3	d4	d5	h	t		
GN 50.4-HF-16	16 +0.1/-0.1	3.5	-	7.5	-	4.5 +0.2/-0.1	-	14	4
GN 50.4-HF-20	20 +0.1/-0.1	4.1	-	10.5	-	6 +0.2/-0.1	-	27	9
GN 50.4-HF-25	25 +0.1/-0.1	5.5	-	12	-	7 +0.3/-0.2	-	36	17
GN 50.4-HF-32	32 +0.1/-0.1	5.5	-	12	-	7 +0.3/-0.1	-	72	27
GN 50.4-HF-40	40 +0.2/-0.1	5.5	-	13.5	-	8 +0.4/-0.1	-	90	52
GN 50.4-HF-50	50 +0.2/-0.1	-	8.5	-	22	10 +0.5/-0.1	8.5	180	84
GN 50.4-HF-63	63 +0.3/-0.1	-	6.5	-	24	14 +0.5/-0.1	12	290	197
GN 50.4-HF-80	80 +0.5/-0.1	-	6.5	-	11.5	18 +0.5/-0.1	15	540	458
GN 50.4-HF-100	100 +0.5/-0.1	-	10.5	-	34	22 +0.5/-0.1	18	680	815



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Retaining magnets

• Specification

Disc-shaped, with bore
Housing Stainless steel

• Material of the magnet

Hard ferrite **HF**, temperature resistant up to 220° C

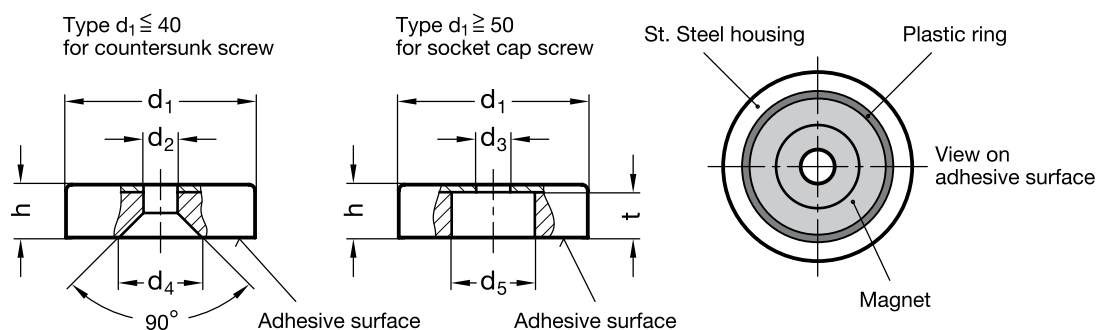
Features and applications

Stainless Steel-Retaining magnets GN 50.45 are a shielded magnetic system.

Owing to the lower magnetic conductivity of the stainless steel housing, the adhesive forces are lower than in steel.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions							Nominal adhesive forces in N	⚖ g
	d ₁	d ₂	d ₃	d ₄	d ₅	h	t		
GN 50.45-HF-20	20 ^{+0.1/-0.1}	4.1	-	10	-	6 ^{+0.2/-0.1}	-	22	9
GN 50.45-HF-25	25 ^{+0.1/-0.1}	5.5	-	11.5	-	7 ^{+0.3/-0.2}	-	29	17
GN 50.45-HF-32	32 ^{+0.1/-0.1}	5.5	-	11.5	-	7 ^{+0.3/-0.2}	-	58	27
GN 50.45-HF-40	40 ^{+0.2/-0.1}	5.5	-	11.5	-	8 ^{+0.4/-0.2}	-	72	52
GN 50.45-HF-50	50 ^{+0.2/-0.1}	-	8.5	-	22	10 ^{+0.5/-0.2}	8.5	145	85
GN 50.45-HF-63	63 ^{+0.3/-0.1}	-	6.5	-	24	14 ^{+0.5/-0.2}	12	230	195

GN 58

Pot magnets

• Specification

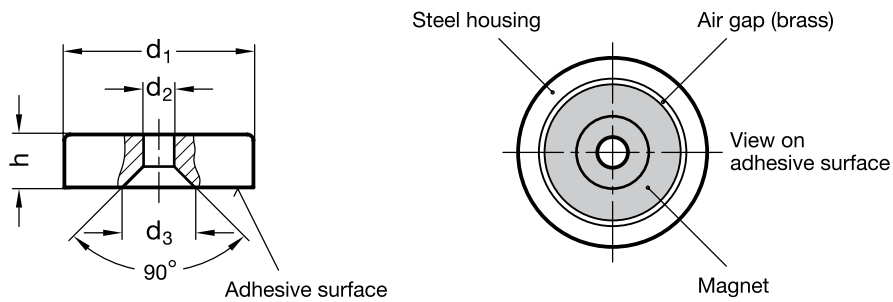
With bore
Housing steel

• Material of the magnet

Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 280° C
Lacquering red, temperature resistant up to 180° C

Features and applications

Pot magnets GN 58 are a shielded magnetic system.
To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material.
For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.
Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions				Nominal adhesive forces in N	△△
	d ₁	d ₂	d ₃	h		g
GN 58-AN-19	19	3.7	7.5	7.5	30	17
GN 58-AN-29	29	4.7	10	8.5	50	43
GN 58-AN-38	38	4.7	11	10.5	130	83



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GN 51.2



Retaining magnets

• Specification

Disc-shaped, with female thread, with rubber jacket

Steel part, zinc plated

Rubber jacket Elastomer (TPE), 73 shore, black

• Material of the magnet

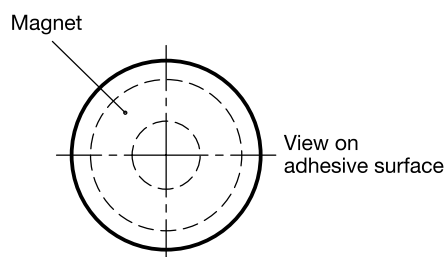
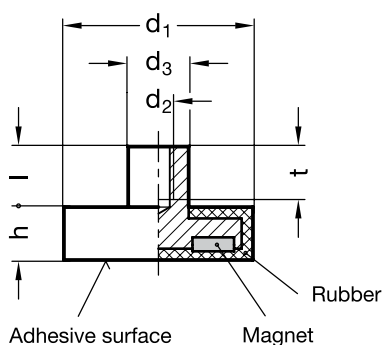
Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 51.2 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions						Nominal adhesive forces in N	⚖ g
	d ₁	d ₂	d ₃	h	Length l	t min.		
GN 51.2-ND-12	12	M 4	8	7	8	6	10	6
GN 51.2-ND-22	22	M 4	8	6	5.5	5	50	13
GN 51.2-ND-31	31	M 4	8	6	5.5	5	75	22
GN 51.2-ND-43	43	M 4	8	6	4.5	5	85	30
GN 51.2-ND-66	66	M 5	10	8.5	6.5	8	180	105
GN 51.2-ND-88	88	M 8	12	8.5	8.5	11	420	192

GN 51.5

Retaining magnets

• Specification

Disc-shaped, with female thread, with rubber jacket
Steel part, zinc-plated
Rubber jacket, Elastomer (TPE), 73 shore, black

• Material of the magnet

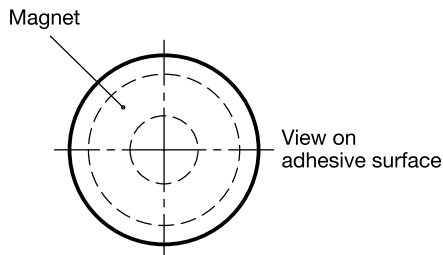
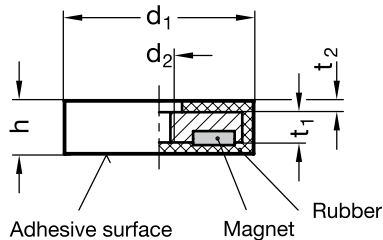
Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 51.5 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions					Nominal adhesive forces in N	⚖ g
	d1	d2	h	t1	t2		
GN 51.5-ND-22	22	M 4	6	4.5	0.8	35	9
GN 51.5-ND-31	31	M 5	6	4.5	0.8	75	21
GN 51.5-ND-43	43	M 4	5.5	4	0.8	85	29
GN 51.5-ND-66	66	M 6	8.5	6	1.8	180	100
GN 51.5-ND-88	88	M 6	8.5	6	1.8	420	186

GN 51.3

Retaining magnets

• Specification

Disc-shaped, with threaded stud, with rubber jacket
Steel part, zinc plated
Rubber jacket Elastomer (TPE), 73 shore, black

• Material of the magnet

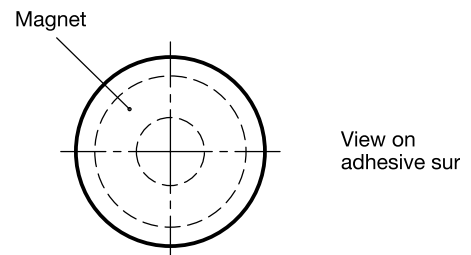
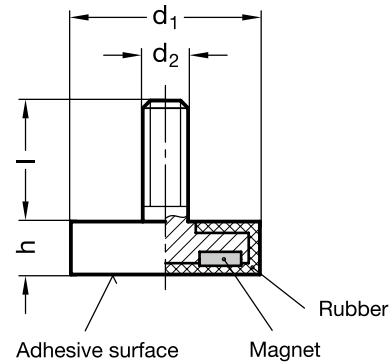
Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 51.3 are a shielded magnetic system with rubber jacket.

They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions				Nominal adhesive forces in N	⚖ g
	d1	d2	h	l		
GN 51.3-ND-22	22	M 4	6	6.5	50	11
GN 51.3-ND-43	43	M 6	6	15	85	32
GN 51.3-ND-66	66	M 8	8.5	15	180	107
GN 51.3-ND-88	88	M 8	8.5	15	420	193



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GN 51.4

Retaining magnets

• Specification

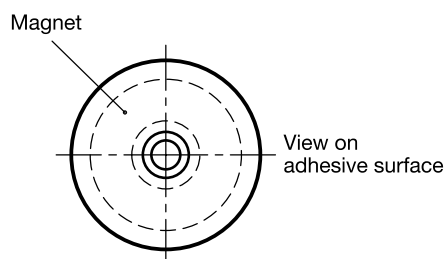
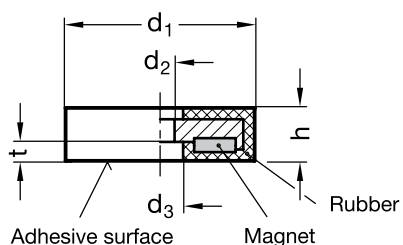
Disc-shaped, with bore, with rubber jacket
 Steel part, zinc-plated
 Rubber jacket, Elastomer (TPE), 73 shore, black


• Material of the magnet

Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 51.4 are a shielded magnetic system with rubber jacket.
 They are preferably used for sensitive surfaces. Also, the coefficient of friction is increased, with the effect that high lateral retaining forces are achieved.
 Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions					Nominal adhesive forces in N	 g
	d1	d2	d3	t	h		
GN 51.4-ND-22	22	4	8	3.5	6	35	8
GN 51.4-ND-31	31	6	9	3.5	6	75	20
GN 51.4-ND-57	57	8	25.3	3.5	7.5	175	77
GN 51.4-ND-66	66	5.5	25	3.5	8.5	210	100

GN 52.1

Retaining magnets

• Specification

Rod-shaped, smooth finish
Housing, steel

Identification no. 1: zinc plated, tolerance $d = +0.2/-0.2$

Identification no. 2: blank, tolerance $d = h6$

• Materials of the magnet

- Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 450° C

- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 52.1 are a shielded magnetic system.

Attachment options include pressing in, shrinking in or gluing in.

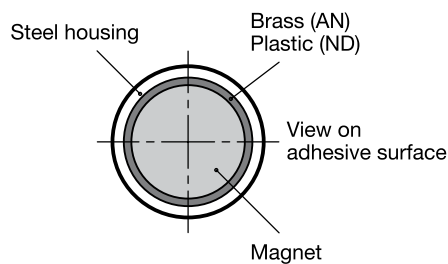
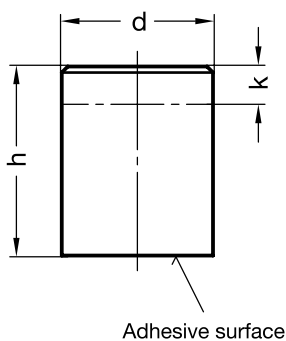
Further details for retaining magnets see page 3 to 5.

*) k is the maximum dimension by which the retaining magnet can be shortened without losing its properties.



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Retaining magnets



Standard Elements	Main dimensions			Nominal adhesive forces in N	\triangle
Description	d	h $+0.2/-0.2$	k *)		g
GN 52.1-AN-6-1	6	20	12	2	5
GN 52.1-AN-8-1	8	20	11	4	8
GN 52.1-AN-10-1	10	20	10	8.5	12
GN 52.1-AN-13-1	13	20	8	12	19
GN 52.1-AN-16-1	16	20	6	20	30
GN 52.1-AN-20-1	20	25	5	40	58
GN 52.1-AN-25-1	25	35	13	60	125
GN 52.1-AN-32-1	32	40	9	160	220
GN 52.1-AN-40-1	40	50	10	240	440
GN 52.1-AN-50-1	50	60	10	400	813
GN 52.1-AN-63-1	63	65	10	660	1306
GN 52.1-AN-6-2	6	10	2	2	2
GN 52.1-AN-8-2	8	12	3	4	5
GN 52.1-AN-10-2	10	16	6	8.5	10
GN 52.1-AN-13-2	13	18	6	12	18
GN 52.1-AN-16-2	16	20	6	20	30
GN 52.1-AN-20-2	20	25	5	40	57
GN 52.1-AN-25-2	25	30	7	60	106
GN 52.1-AN-32-2	32	35	4	160	187
GN 52.1-AN-40-2	40	45	5	240	390
GN 52.1-AN-50-2	50	50	-	400	639
GN 52.1-AN-63-2	63	60	5	660	1175
GN 52.1-ND-4-1	4	20	15	2.5	2
GN 52.1-ND-5-1	5	20	15	4.5	3
GN 52.1-ND-6-1	6	20	15	6	5
GN 52.1-ND-8-1	8	20	15	12	8
GN 52.1-ND-10-1	10	20	15	24	12
GN 52.1-ND-13-1	13	20	15	60	21
GN 52.1-ND-16-1	16	20	15	90	31
GN 52.1-ND-20-1	20	25	18	135	61
GN 52.1-ND-25-1	25	35	27	190	133
GN 52.1-ND-32-1	32	40	32	340	249
GN 52.1-ND-6-2	6	10	5	6	2
GN 52.1-ND-8-2	8	12	7	12	5
GN 52.1-ND-10-2	10	16	11	24	9
GN 52.1-ND-13-2	13	18	13	60	18
GN 52.1-ND-16-2	16	20	15	90	31
GN 52.1-ND-20-2	20	25	18	135	60
GN 52.1-ND-25-2	25	30	22	190	115
GN 52.1-ND-32-2	32	35	27	340	218

GN 54.1

Retaining magnets

• Specification

Rod-shaped, smooth finish
Housing, brass

• Materials of the magnet

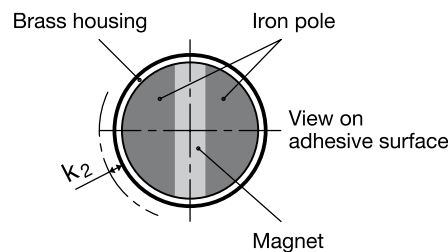
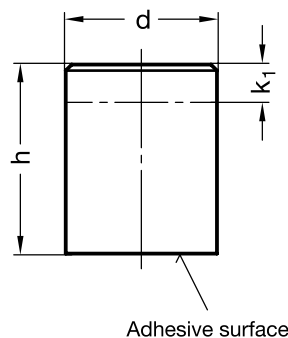
- Samarium, cobalt SmCo **SC**, temperature resistant up to 200° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C
Identification of ND: blue inked adhesive surface.

Features and applications

Retaining magnets GN 54.1 are a shielded magnetic system. The configuration of magnetic and iron poles is known as sandwich magnet system. These retaining magnets deliver ultimate holding power, also with smaller workpieces. Attachment options include pressing in or gluing in. Further details for retaining magnets see page 3 to 5.

1) k_1 is the maximum dimension by which the retaining magnet can be shortened without losing its properties.

2) Mounting these retaining magnets directly in steel components will create a magnetic short-circuit which reduces the retaining power by as much as 15 %. To avoid this effect, the spacings k_2 between brass jacket and steel component should be observed. These spacings should also be maintained if the retaining magnet is shortened.



Standard Elements	Main dimensions				Nominal adhesive forces in N	⚖
Description	d h6	h	k_1 1)	k_2 2)		g
GN 54.1-ND-6	6	20 +0.2/-0.2	10	1.5	10	5
GN 54.1-ND-8	8	20 +0.2/-0.2	10	1.5	22	8
GN 54.1-ND-10	10	20 +0.2/-0.2	8	2	45	12
GN 54.1-ND-13	13	20 +0.2/-0.2	6	2.5	70	20
GN 54.1-ND-16	16	20 +0.2/-0.2	2	3	150	30
GN 54.1-ND-20	20	25 +0.2/-0.2	5	4	280	59
GN 54.1-ND-25	25	35 +0.3/-0.3	7	5	450	132
GN 54.1-ND-32	32	40 +0.3/-0.3	4.5	6	700	246
GN 54.1-SC-6	6	20 +0.2/-0.2	10	1.5	8	5
GN 54.1-SC-8	8	20 +0.2/-0.2	10	1.5	22	8
GN 54.1-SC-10	10	20 +0.2/-0.2	8	2	40	12
GN 54.1-SC-13	13	20 +0.2/-0.2	6	2.5	60	20
GN 54.1-SC-16	16	20 +0.2/-0.2	2	3	125	30
GN 54.1-SC-20	20	25 +0.2/-0.2	5	4	250	60
GN 54.1-SC-25	25	35 +0.3/-0.3	7	5	400	134
GN 54.1-SC-32	32	40 +0.3/-0.3	4.5	6	600	251



GN 52.2



Retaining magnets

• Specification

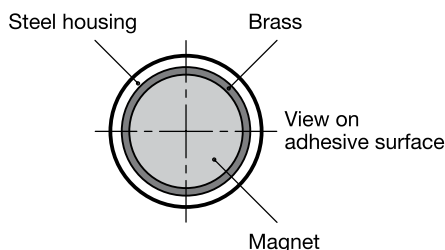
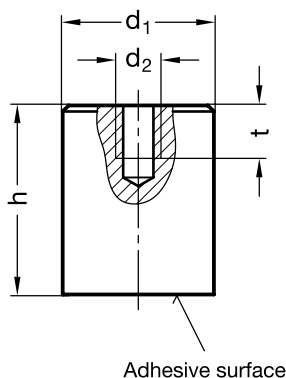
Rod-shaped, with female thread
Housing, steel, zinc plated

• Materials of the magnet

- Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 450° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 52.2 are a shielded magnetic system.
Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions				Nominal adhesive forces in N	△
	d1 +0.2/-0.2	d2	h +0.2/-0.2	t		g
GN 52.2-AN-6	6	M 3	20	5	2	4
GN 52.2-AN-8	8	M 3	20	5	4	8
GN 52.2-AN-10	10	M 4	20	7	8.5	11
GN 52.2-AN-13	13	M 4	20	7	12	19
GN 52.2-AN-16	16	M 4	20	7	20	30
GN 52.2-AN-20	20	M 6	25	7	40	55
GN 52.2-AN-25	25	M 6	35	9	60	121
GN 52.2-AN-32	32	M 8	40	9	160	212
GN 52.2-AN-40	40	M 8	50	9	240	437
GN 52.2-AN-50	50	M 10	60	12	400	793
GN 52.2-AN-63	63	M 12	65	14	660	1273
GN 52.2-ND-6	6	M 3	20	5	6	4
GN 52.2-ND-8	8	M 3	20	5	12	8
GN 52.2-ND-10	10	M 4	20	7	24	11
GN 52.2-ND-13	13	M 4	20	7	60	20
GN 52.2-ND-16	16	M 4	20	7	90	30
GN 52.2-ND-20	20	M 6	25	7	135	58
GN 52.2-ND-25	25	M 6	35	9	190	131
GN 52.2-ND-32	32	M 8	40	9	340	243
GN 52.2-ND-40	40	M 8	50	9	600	480
GN 52.2-ND-50	50	M 10	60	12	900	904
GN 52.2-ND-63	63	M 12	65	14	1300	1555

GN 52.4

Retaining magnets

• Specification

- Rod-shaped, with stud
- Housing, steel, zinc plated
- Type **D**: with smooth stud
- Type **E**: with threaded stud

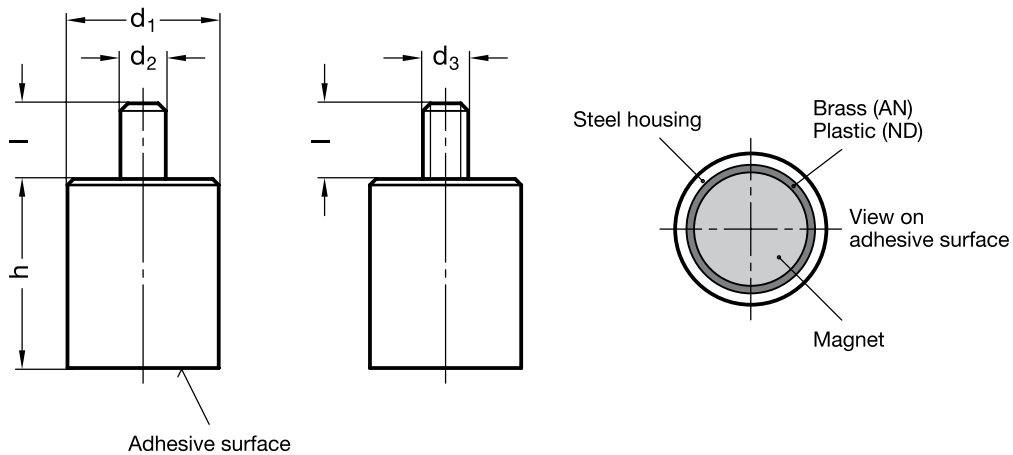
• Materials of the magnet

- Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 450° C
- Neodymium, iron, boron NdFeB **ND**, temperature resistant up to 80° C

Features and applications

Retaining magnets GN 52.4 are a shielded magnetic system. The design version with smooth stud is designed for attachment with rivets.

Further details for retaining magnets see page 3 to 5.



Standard Elements	Main dimensions					Nominal adhesive forces in N	Δ g
	Description	d ₁	d ₂ +0.2/-0.2	d ₃	h +0.2/-0.2		
GN 52.4-AN-6-3-D	6	3	-	20	8	2	5
GN 52.4-AN-8-3-D	8	3	-	20	8	4	8
GN 52.4-AN-10-4-D	10	4	-	20	8	8.5	13
GN 52.4-AN-13-4-D	13	4	-	20	8	12	21
GN 52.4-AN-16-5-D	16	5	-	20	8	20	32
GN 52.4-AN-20-6-D	20	6	-	25	8	40	59
GN 52.4-AN-25-8-D	25	8	-	35	10	60	128
GN 52.4-AN-32-10-D	32	10	-	40	10	160	220
GN 52.4-AN-40-15-D	40	15	-	50	20	240	468
GN 52.4-AN-50-18-D	50	18	-	60	25	400	872
GN 52.4-AN-63-20-D	63	20	-	65	30	660	1371
GN 52.4-AN-6-M3-E	6	-	M 3	20	7	2	5
GN 52.4-AN-8-M3-E	8	-	M 3	20	7	4	8
GN 52.4-AN-10-M4-E	10	-	M 4	20	8	8.5	13
GN 52.4-AN-13-M4-E	13	-	M 4	20	8	12	21
GN 52.4-AN-16-M4-E	16	-	M 4	20	10	20	31
GN 52.4-AN-20-M6-E	20	-	M 6	25	12	40	60
GN 52.4-AN-25-M6-E	25	-	M 6	35	10	60	125
GN 52.4-AN-32-M8-E	32	-	M 8	40	15	160	217
GN 52.4-AN-40-M8-E	40	-	M 8	50	15	240	458
GN 52.4-AN-50-M10-E	50	-	M 10	60	15	400	855
GN 52.4-AN-63-M12-E	63	-	M 12	65	20	660	1345
GN 52.4-ND-6-3-D	6	3	-	20	8	6	5
GN 52.4-ND-8-3-D	8	3	-	20	8	12	9
GN 52.4-ND-10-4-D	10	4	-	20	8	24	13
GN 52.4-ND-13-4-D	13	4	-	20	8	60	21
GN 52.4-ND-16-5-D	16	5	-	20	8	90	31
GN 52.4-ND-20-6-D	20	6	-	25	8	135	62
GN 52.4-ND-25-8-D	25	8	-	35	10	190	133
GN 52.4-ND-32-10-D	32	10	-	40	10	340	252
GN 52.4-ND-40-15-D*	40	15	-	50	20	600	-
GN 52.4-ND-50-18-D*	50	18	-	60	25	900	-
GN 52.4-ND-63-20-D*	63	20	-	65	30	1300	-
GN 52.4-ND-6-M3-E	6	-	M 3	20	7	6	5
GN 52.4-ND-8-M3-E	8	-	M 3	20	7	12	9
GN 52.4-ND-10-M4-E	10	-	M 4	20	8	24	14
GN 52.4-ND-13-M4-E	13	-	M 4	20	8	60	23
GN 52.4-ND-16-M4-E	16	-	M 4	20	10	90	33
GN 52.4-ND-20-M6-E	20	-	M 6	25	12	135	62
GN 52.4-ND-25-M6-E	25	-	M 6	35	10	190	127
GN 52.4-ND-32-M8-E	32	-	M 8	40	15	340	220
GN 52.4-ND-40-M8-E	40	-	M 8	50	15	600	461
GN 52.4-ND-50-M10-E	50	-	M 10	60	15	900	860
GN 52.4-ND-63-M12-E	63	-	M 12	65	20	1300	1350

* This sizes and types are as a rule not available from stock and subject to a minimum quantity order.

GN 52.3

Retaining magnets

• Specification

Rod-shaped, with female thread
Housing steel

• Material of the magnet

Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 450° C
Lacquering red, temperature resistant up to 180° C

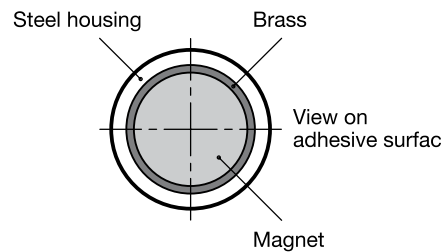
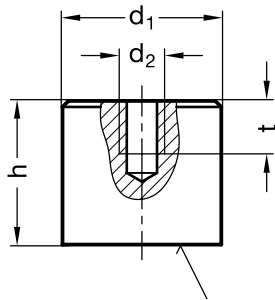
Features and applications

Retaining magnets GN 52.3 are a shielded magnetic system.
For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.
Further details for retaining magnets see page 3 to 5.



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Retaining magnets



Standard Elements	Main dimensions				Nominal adhesive forces in N	△
Description	d1	d2	h	t		g
GN 52.3-AN-12.5	12.5	M 4	16	7	20	15
GN 52.3-AN-17	17	M 6	16	5	26	29
GN 52.3-AN-21	21	M 6	19	7	40	42
GN 52.3-AN-27	27	M 6	25	9	65	89
GN 52.3-AN-35	35	M 6	30	9	150	190



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GN 60

Button-type magnets



•Material of the magnet

Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 280° C
Lacquering red, temperature resistant up to 180° C

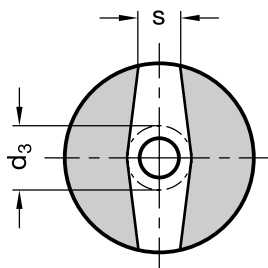
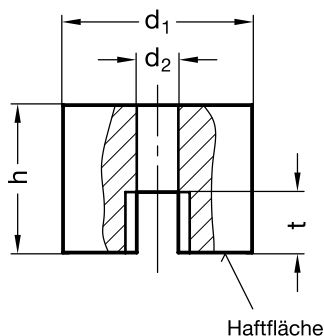
Features and applications

The button-type magnets GN 60 have a split adhesive surface. These are non-shielded magnetic systems made by casting method.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material (magnetically non-conductive).

For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

Further details for retaining magnets see page 3 to 5.



Ansicht auf Haftfläche

Standard Elements	Main dimensions							Nominal adhesive forces in N	Δ/Δ g
	d1	d2	d3	h	s	t			
Description	Nominal dimension	Actual dimension	max. \varnothing screw head						
GN 60-AN-13	13	13	4.2	7	10	2	4.5	7	6
GN 60-AN-19	19	19.1	4.8	8.7	12.7	5.7	6.5	19	23
GN 60-AN-25	25	25.4	4.5	8.5	20	5.6	8	40	71
GN 60-AN-32	32	31.8	7.1	10	25.4	7.9	12.7	66	132

GN 62

U-Magnets

•Material of the magnet

Aluminium, nickel, cobalt AlNiCo **AN**, temperature resistant up to 350° C
 Lacquering red, temperature resistant up to 180° C

Features and applications

The U-magnets GN 62 have a split adhesive surface. These are non-shielded magnetic systems made by casting method.

To ensure that the magnetic properties (adhesive forces) are not impaired, the fixing screws must be made of non-magnetic material (magnetically non-conductive).

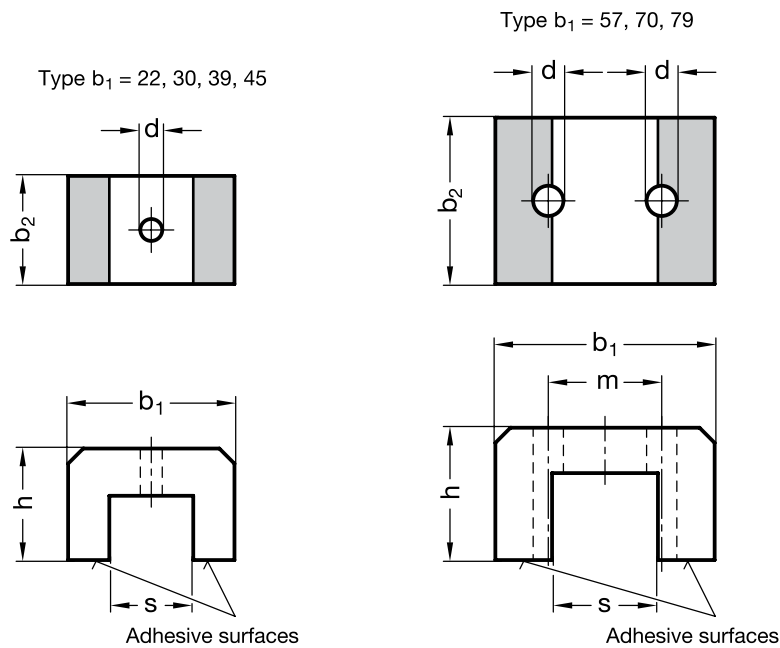
For easier handling and/or to avoid demagnetisation, these magnets have an iron plate on their adhesive surface.

Further details for retaining magnets see page 3 to 5.



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Retaining magnets



Standard Elements	Main dimensions						Nominal adhesive forces in N	△△ g
	b1	b2	d max. Ø screw head	h	m	s		
GN 62-AN-22	22	25	7	17	-	8	30	64
GN 62-AN-30	30	20	5	20	-	15	45	69
GN 62-AN-39	39	25.4	4.7	25	-	19	90	151
GN 62-AN-45	45	30	4.7	30	-	23	120	209
GN 62-AN-57	57	44.5	8	35	31.5	27.8	180	498
GN 62-AN-70	70	57	8	41	38	35	320	770
GN 62-AN-79	79	82	9.5	54	43	38.5	470	1570



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