



D.C. Holding Magnet Type GMH

Armature Type G ZZ
Rectifier for A.C. supply
Range up to 3630 N

9

Product group

Type **G MH G ZZ**

- According to VDE 0580 and ISO 9001 (conform with article 10 of direction 73/23/EEC – according to CENELEC memorandum no. 3 of march 1987).
- Robust cylindrical construction zinc plated and passivated with body mounting
- Seven sizes, 25 to 100 mm diameter
- Pole piece may be supplied with centre bore for push operation
- Armature, nickel plated, with self-aligning mounting, type G ZZ, provides optimum holding force and low remanence
- Increasing force characteristic (Fig. 2)
- Coil with insulation to class F for voltages up to 250 volts
- Protection classification – DIN VDE 0470 / EN 60529 – IP 20 (terminal block)
- Connections with free leads, terminal block or plug connector
- Plug connectors available with rectifier for A.C. supply (List Z KB G)
- Boxed, protective or weather-proof units
- Release Mechanisms for shutters and doors
- Strip magnets, 4 lengths type G HL
- Permanent magnets with electro-magnetic release (Range up to 500 N) – Product Group G MP
- General-purpose holding magnets for arduous service in the field of:
 - Machine tools
 - Lifting-locking-door holding
 - Feeder mechanisms
 - Short stroke/high force operations
 - Textile machinery



Magnet Armature

Fig. 1
Holding Magnet G MH X 065 X 20 A01
with armature G ZZ E 065 X 00 A01

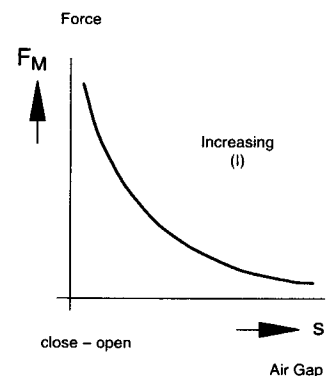


Fig. 2
Force characteristic



Performance tables for type GMH magnet and armature GZZ

G MH X	025	030	040	050	065	080	100
Duty rating ED	S1	S1	S1	S1	S1	S1	S1
Power consumption P ₂₀ (W)	3,2	4	5,6	6,2	9,8	12,4	17
Magnet weight m _M (kg)	0,07	0,1	0,22	0,38	0,75	1,3	2,2
Armature weight m _A (kg)	0,012	0,029	0,05	0,1	0,21	0,4	0,74
Armature thickness (mm)	3	5	5	6	8	10	12
Armature diameter Ø (mm)	25	30	40	50	65	80	100
Air gap s (mm)	Holding force F _M (N)						
See note 1	0	150	280	520	800	1480	2280
	0,1	36,3	70	275	569	1128	1942
	0,16	18,2	38	157	373	883	1600
	0,25	9,8	20	80	216	618	1256
	0,4	3,5	10	30	93	294	657
	0,6	1,8	5	14	41	132	314
	1,0	0,9	2	6,2	18	61	128
	1,6	–	–	2,6	7	18	45
	2,5	–	–	1,3	2,2	10	18
	4	–	–	0,5	0,8	3,2	9,8
	6	–	–	–	0,4	2,6	4,9
Holding force F _M (N) with armature G ZZ (s = 0 mm) See note 2	130	230	420	700	1200	1850	3000

NOTES

1. That force produced when using plain pole faces and plain steel armature of material ST 37 (9S Mn 28) with thickness as in tables and a surface finish of 15 µm.

The force will be altered if other material specifications, thicknesses and surfaces are used, or if the armature fails to make positive contact over the full diameter of the magnet face.

2. That force produced when using plain pole faces and plated (chemical nickel) armature

3. The pole faces of the magnet can be supplied electroplated for corrosion protection. This will marginally reduce holding force and remanence.

4. The magnetic remanence is approx. 5% of the magnetic force F at 0 mm and can be reduced by increasing the air gap as in 2. and 3. above i. e. plating either or both surfaces or by machining away an area of pole piece or armature surface.

Note: – 0 mm is completion of energized stroke

PERFORMANCE TABLE

Terms are explained in Technical Bulletin G XX & VDE 0580/35.

TABLE BASIS

24 V/100 % duty Ambient temperature 35° C
Heat insulated base Free air mounted
Lifting vertically Tolerance ± 10 % (inherent & manufacture).

MAGNETIC FORCE (F_M)

is listed in HOT condition at 90 % of rated voltage (increase approx. 20 % of rated voltage). Adjust for armature weight.

POWER CONSUMPTION (P₂₀)

is listed with a 20° C coil temperature (decrease/HOT). The temperature rise is limited to 60° K to provide a low surface contact temperature, the magnetic forces can therefore be increased with special coil winding for continuous or short duty.

DUTY RATING (ED %)

% of energized time per operation cycle: $\frac{t_{on}}{t_{on} + t_{off}} \times 100$.

Max. energized time/cycle:

100 % continuous: 40 % – 120 secs., 25 % – 75 secs., 15 % – 45 secs., 5 % – 15 secs.

Force figures available for respective duty ratings.)

SUPPLY VOLTAGES

The standard supply voltages are: 12 V, 24 V, 97 V, 205 V D.C. (for rectified 110 V, 230 V, 50/60 Hz A.C.).

DESIGN ARRANGEMENTS

Terminal block –...X 20 A 01– 2 pole cable entry from magnet face.
Free leads –...X 00 A 01– Side entry (rear entry on mounting pitch circle can be provided)
Plug connector –...X 20 A 02– D.C. Z KB X 211 B 02 – A.C. Z KB G 211 A 02 (rectifier) – S 114 A 01 (overvoltage)

MOUNTING

3 tapped holes and centre thread for adjustable mounting in rear face. Any attitude may be used.

SPECIAL PROTECTION

The magnets may be provided with plated pole faces and protective or weatherproof boxed assemblies, with test switch and indicator light as required (page 4).

SPECIAL

Special magnets and armatures are available, including release and strip magnet assemblies to meet specific requirements. Please advise full application and operating details.

POLE DIAMETER

The centre pole piece may be bored for push operation or mounting, with a loss of magnetic force.

the pole diameters are:

G MH X	025	030	040	050	065	080	100
Ø mm	12	14	19	24	31	38	47

Conversion Factors	
1 N =	0.102 kp ≈ 0.1 kg
1 kg =	2.2 lb.
1 mm =	0.039 in.
1 Ncm =	0.086 in. lb.

Dimension tables type G MH magnet and armature G ZZ

Terminal block

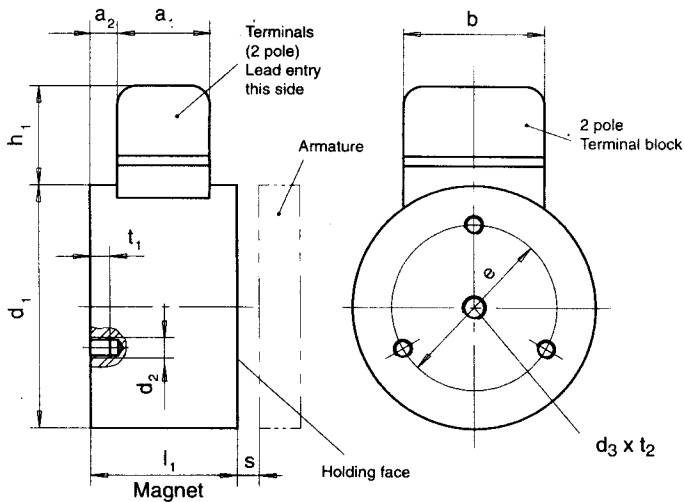


Fig. 3 Terminal block
Type G MH X 025 to 100 X 20 A01

Free leads

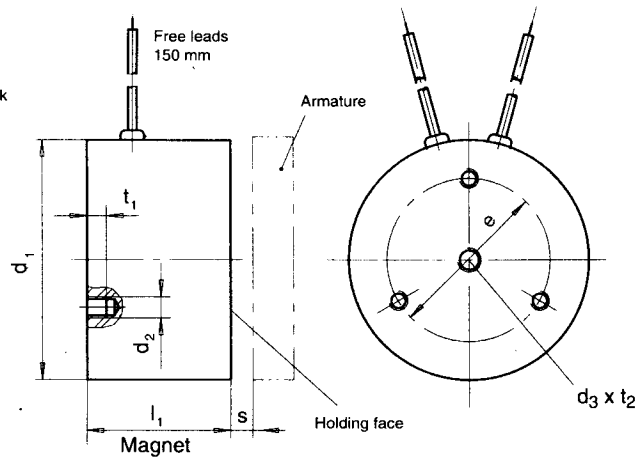


Fig. 4 Free leads
Type G MH X 025 to 100 X 00 A01
(Size 030 ... D02)

The solenoid shown is not ready-to-use device in the sense of DIN VDE 0580. The general requirements and protective measures are included in DIN VDE 0580.

Plug Connector

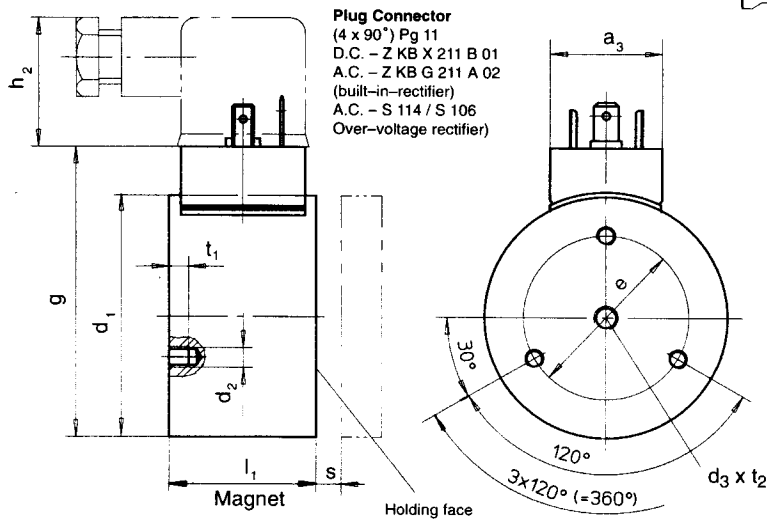
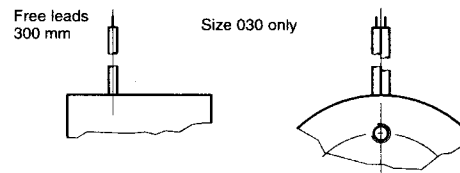


Fig. 5 Plug connector
Type G MH X 050 to 100 X 20 A02
(Size 025 to 040 special)



Armature

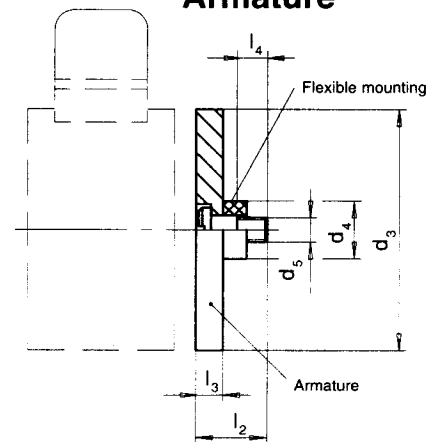


Fig. 6 Armature
Type G ZZ E 025 to 100 X 00 A01
(Size 030 ... D01)

Type	G MH X							Magnet							
Size	025	030	040	050	065	080	100								
Dim.	Dims. mm														
a ₁	13,5	13,5	13,5	13,5	13,5	13,5	13,5								
a ₂	4,5	5,6	6	6	7	8,5	11								
a ₃	-	-	-	29	29	30	30								
b	19	19	19	19	19	19	19								
d ₁	25	30	40	50	65	80	100								
d ₂	M3	M3	M4	M4	M5	M6	M6								
d ₃	M4	M5	M5	M5	M8	M8	M10								
e	15	18	26	34	40	50	75								
g	-	-	-	61,5	76,5	100	120								
h ₁	16	16	16	16	16	16	16								
h ₂	-	-	-	39	39	39	39								
l ₁	20	24	27	30	35	38	43								
t ₁ *	3	4	4	4	5	7	7								
t ₂ *	6	5	8	8	12	12	15								

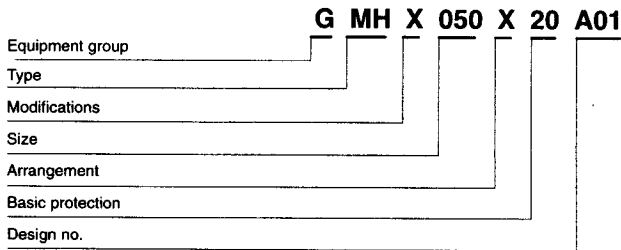
Type	G ZZ E							Armature							
Size	025	030	040	050	065	080	100								
Dim.	Dims. mm														
d ₃	25	30	40	50	65	80	100								
d ₄	8	10,5	10,5	10,5	13,5	16	21,5								
d ₅	M3	M4	M4	M4	M5	M6	M8								
l ₂	9,5	14	14	15	19	23	26								
l ₃	3	5	5	6	8	10	12								
l ₄	4,5	6	6	6	7	9	11								

Conversion Factors
1 N = 0.102 kp ≈ 0,1 kg
1 kg = 2.2 lb.
1 mm = 0.039 in.
1 Ncm = 0.086 in. lb.

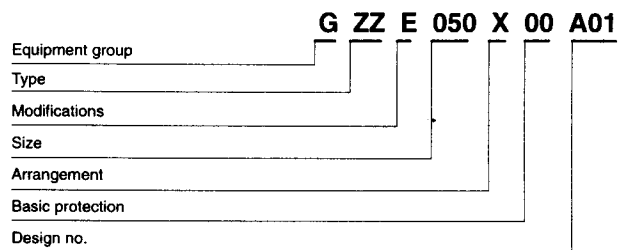
* Do not use overlength mounting screws

Classification for type G MH magnet and armature G ZZ

Type code – magnet



Type code – armature



Order Example

1. MAGNET

Equipment group	– Group	– G
Type	– Standard	– MH
Modification	– Standard	– X
Size	– Select from tables	– 050
Arrangement	– Standard	– X
Protection	– Free leads – 00	
	– Plug connector – 20	
	– Terminal block – 20	– 20
Design number	– Free leads or Terminal block ... A01 (size 030 ... D02)	– A01
	– Plug connector ... A02 (size 050 to 100)	
Voltage (V) – standards – page 2		– 24 V
Duty rating (ED %)	– normally 100 %	– S1

Additional requirements

1. Special protection
Plated pole face

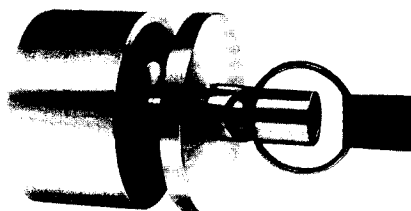
2. D.C. plug Z KB X 211 B 01
A.C. plug Z KB G 211 A02 – Built-in rectifier
S 114 A01 / S 106 – Over-voltage rectifier

2. ARMATURE comprises ARMATURE, bolt and washer)

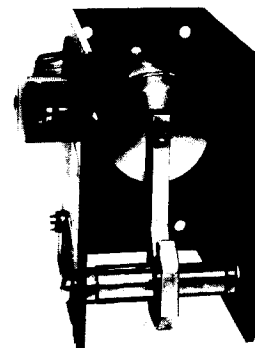
Equipment group	– Group	– G
Type	– Standard	– ZZ
Modification	– Standard	– E
Size	– Select from tables	– 050
Arrangement	– Standard	– X
Protection	– Standard	– 00
Design number	– Standard (size 030 ... D01)	– A01



**Boxed
Assembly**



**Ring
Release**



**Release
Mechanism**