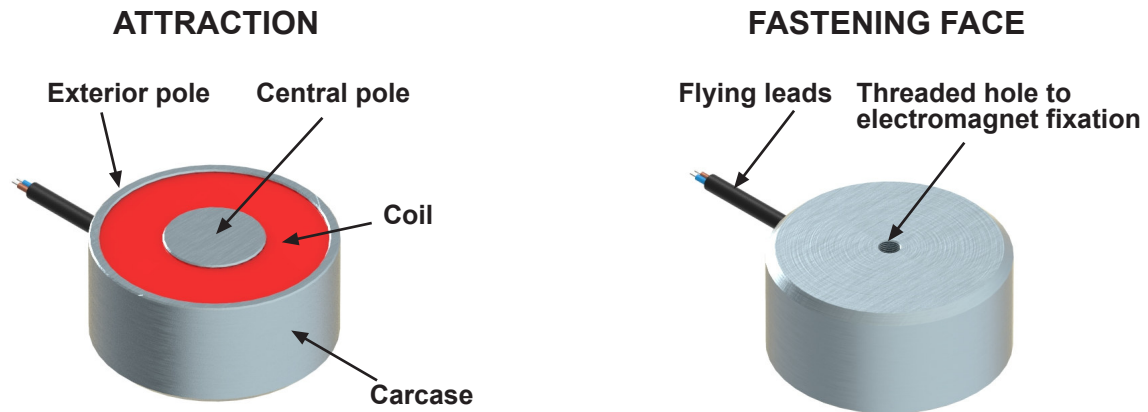


DESCRIPTION:

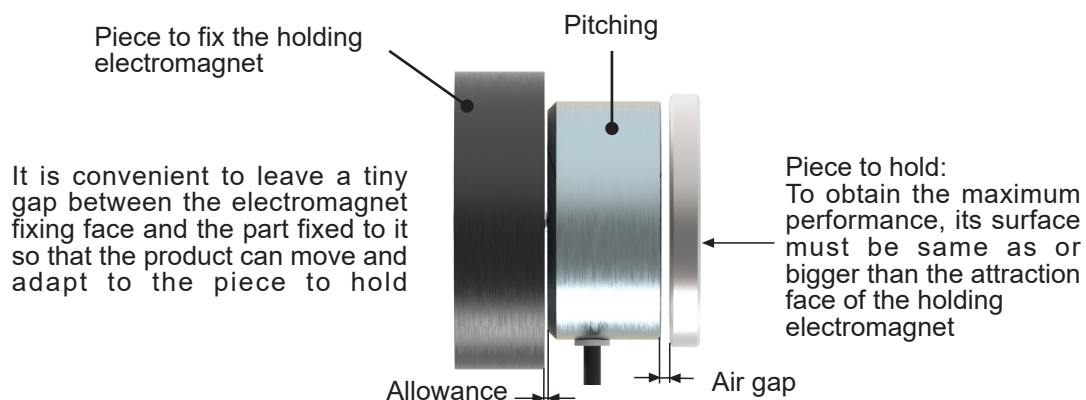
The holding electromagnets (electromagnetic and electropermanent) are used to attract and hold ferromagnetic pieces.

The maximum force efficiency is achieved with the piece to be hold over the attraction's face and in direct contact with both poles (outside pole and inside pole).



It is not recommended to use holding electromagnets in applications that require an air gap $> 0.2\text{mm}$. The retention force will fall down exponentially when the air gap increases (as can be seen in the data sheet of each product).

CONDITIONS FOR A CORRECT INSTALATION, USE AND MAINTENANCE:



In electropermanent holding electromagnets, vibration and temperature higher than the one recommended must be avoided because it could damage the magnet and the product would loose force.

MAINTENANCE:

If the attraction face suffers bumps when working, a reduction of force will occur due to the air gap generated by them, and to recover the initial force, attraction face must be rectified.

• CUSTOMIZATION

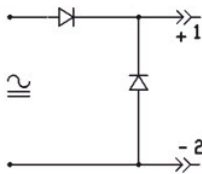
The models described in the catalogue are standard and minimum manufacturing batches are not required. However, there is the possibility of customizing them to suit better customer's needs. See below some of the most common customizations.

If any modification is needed, please ask NAFSA about the possibility and the minimum manufacturing batch required.

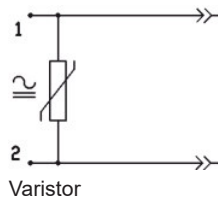
1. ELECTRICAL CUSTOMIZATION

a) Integrated electronics only in versions with DIN43650A connector:

a.1) For peak suppression Examples:

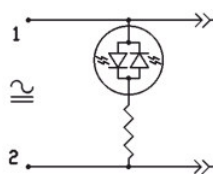


Free wheel diode+second diode to protect the free wheel diode against reverse polarity.

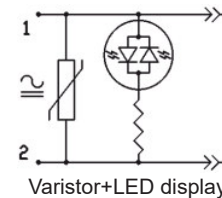


Varistor

a.2) Power display Examples:

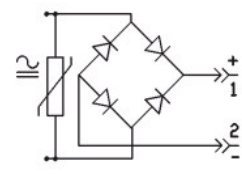


Connector under voltage display by LED

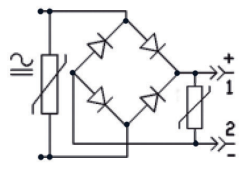


Varistor+LED display

a.3) For rectification Examples:



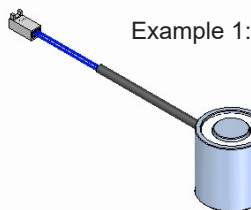
4 diodes with varistor at the input



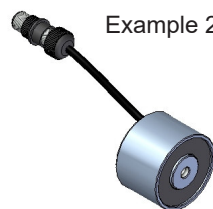
4 diodes with double varistor.

b) Cable length modification and terminal or connector mounted over cables:

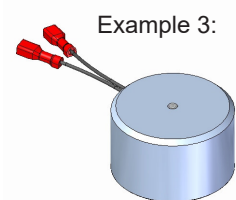
In some holding electromagnet models, cables can be replaced by connector DIN43650 or clamping screw (see each serie datasheet). In the holding electromagnet models which have supply cables, this length can be modified to customer requirement. Likewise any kind of terminals or connectors can be added to the cables.



Example 1:



Example 2:



Example 3:

c) Intermediate duty-cycle manufacturing:

In the VEM and ERM are manufactured by default with duty-cycle is 100%, but NAFSA can manufacture any intermediate duty-cycle from 0 to 100, but the viability depends on the model and the voltage associated with it. For any special requirement, please ask NAFSA.

In the VM and VM/ND series the duty-cycle can not be modified.

2. INSULATION CLASS CUSTOMIZATION:

In the VEM serie, insulation class can be increased until H (180°C).

In the VM and VM/ND, insulation class can be increased until F (155°C).

3. PROTECCIÓN RATE CUSTOMIZATION IP (EN60529):

Standard models are IP65, but it can be decreased until IP40 to cheapen production cost.

NOTE: All this customizations cannot be applied to all models, ask NAFSA for each case.

• CUSTOMIZATION

The models described in the catalogue are standard and minimum manufacturing batches are not required. However, there is the possibility of customizing them to suit better customer's needs. See below some of the most common customizations.

If any modification is needed, please ask NAFSA about the possibility and the minimum manufacturing batch required.

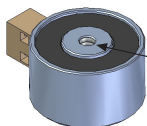
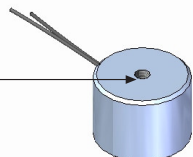
4. MECHANICAL CUSTOMIZATION:

The viability of the modifications depends on the model.

For any special requirement, ask NAFSA.

4.1) Fastening holes modification:

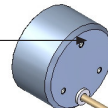
Example: VEM30M6
M4 hole has been modified to M6



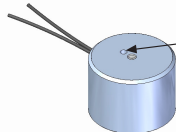
Example: VEM50RB
M5x8 hole has been modified by pass-through M8 hole

4.2) Non-rotating holes integration:

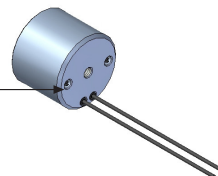
Example: VEM65E
Three M5 holes on $\varnothing 40$ have been made



Example: VEM30G
 $\varnothing 2,5$ hole has been added

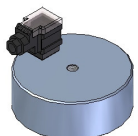
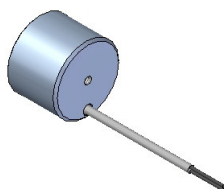


Example:
Two holes have been added



4.3) Cable or connector position modification:

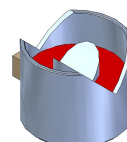
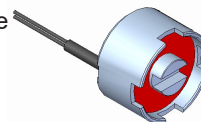
Example: VEM30D
Cables from fastening face



Example: VEM150CCA
Connector from fastening face

4.4) Carcase shape modification:

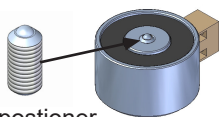
4 milled at 90° on the attraction face



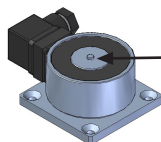
Example: VEM80VC
V-shaped milling

4.5) Antiremanence pins:

Example: VEM50/RB
with M8-ball postioner

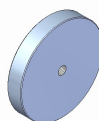


M8-ball postioner

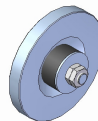


Example: VEM50/CP/1
Customized antiremanence pin

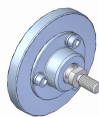
4.6) Holding plate fabrication:



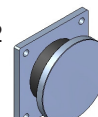
Example: CPL-42x7
Holding plate $\varnothing 42 \times 7$ with M-5 hole



Example: VEM80CP
Holding plate with damping washer



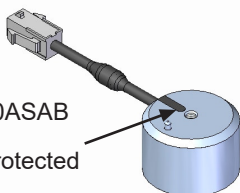
Example: VEM50CP/2
Holding plate with ball joint



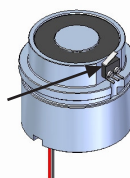
Example: VEM40CP/2
Holding plate with damping washer on support

4.7) Position detection system:

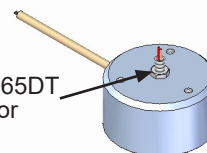
Example: VEM30ASAB
Proximity sensor integrated and protected with overmolding



Example: VM40NDFM
Microruptor screwed in the carcase



Example: VEM65DT
Magnetic sensor



NOTE: All this customizations cannot be applied to all models, ask NAFSA for each case.

• VEM SERIE

The attraction and holding of the magnetic pieces are obtained feeding the winding inside the solenoid. When the power supply stops the electromagnet loses the piece.
When working with loads security norms must be respected.



Protection rate: **IP65**
Insulation class: **B (130°C)**
Standard voltage: **24 VDC**
Standard duty cycle: **ED100%**
Other voltages, ED and sizes: **Consult**

Flying leads for every size.
Supply possibilities under demand:
*With **campling screw** from the VEM25
*With **connector** from the VEM65.
The connector (1) has 4 possibilities of direction (4x90°) and it is possible to be incorporated to the same diodes of rectification for alternating current connection (AC).

Table 1

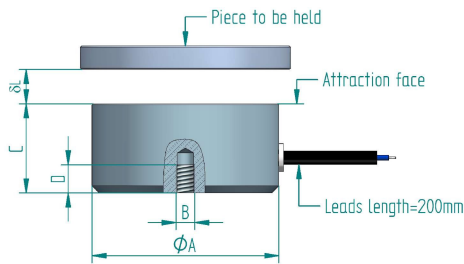
TYPE	øA (-0,3)	B	C±0.1	D	E	F	Weight (Kg)
VEM 20	20	M-3	12	5	---	---	0.02
VEM 25	25	M-4	20	6	---	40	0.06
VEM 30	30	M-4	22	6	---	45	0.10
VEM 40	40	M-5	26	8	---	55	0.20
VEM 50	50	M-5	30	8	---	65	0.30
VEM 65	65	M-8	35	12	112	80	0.80
VEM 80	80	M-8	38	12	127	95	1.30
VEM 100	100	M-10	43	15	147	115	2.10
VEM 150	150	M-16	56	24	197	165	6.40

Table 2

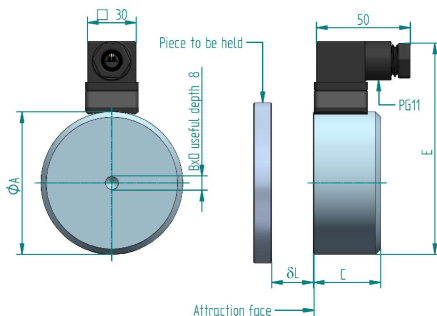
TYPE	P at 20°C (W)	e (mm)	Air gap (mm) δ_L					
			0	0,1	0,2	0,5	1	
VEM20	1.6	1 3	14.5 27	3.8 5.7	1.6 2.6	0.3 0.35		Magnetic Force Fm (N)
VEM25	3.2	1 3 6	27 114 135	19 47 50	12 20 21	3 3.5 3.7		
VEM30	4	1 3 6	37 170 190	24 80 90	18 40 45	6 9.5 12	1.5 1.6 2	
VEM40	5.6	1 3 6	38 300 400	30 203 245	24 133 160	13 27 30	4 4.5 5	
VEM50	6.5	1 3 6	40 320 500	32 235 370	30 185 240	20 65 68	15 16 20	
VEM65	10	1 3 6 10	45 310 830 980	40 290 660 750	35 250 500 560	25 148 164 190	15 40 46 50	
VEM80	15	1 3 6 10	65 430 1150 2000	42 360 970 1350	40 325 830 1000	30 230 375 420	20 90 110 125	
VEM100	20	1 3 6 10	70 530 1400 2600	50 440 1200 2200	45 426 1050 1700	35 335 730 880	25 225 310 330	
VEM150	40	3 6 10 18	700 1810 5800 7104	580 1650 4350 5760	550 1580 3910 4992	480 1400 3000 3840	390 1100 1850 2400	

e (mm): Thickness of the piece to hold

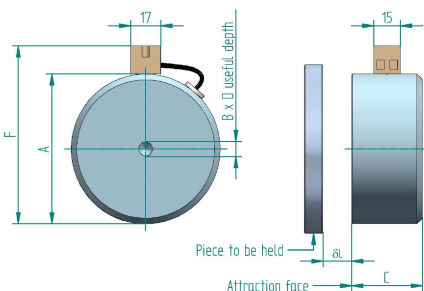
Flying leads: Ref: VEM (type)-V - ED%
Example: VEM 65-24Vdc- ED100%



Connector (C): Ref: VEM (type)/C-V-ED%
Example: VEM65/C-24Vdc ED100%
Connection:
see documentation that is enclosed with the material



Clamping screw (B): Ref: VEM(type)/B-V-ED%
Example: VEM50/B-24Vdc-ED100%



The table 2 gives for each type of holding magnet, the values of the force of maintenance (Fm) based on the air gap, measured in the following conditions:

- Direct current supply.
- Flat piece (3µm rugosity) in A°St37, thickness as shown in the table 2 and dimensions are similar or bigger than the attraction face.
- Room temperature 35°C.
- Coil working on its regime temperature.

At different conditions, the magnetic force (Fm) may decrease. The value of the magnetic remanence after the power supply stops is 5% of the holding force.

*Earthing is recommended if the metallic parts are accessible.

*Technical explanation: see pages 4 & 5.

*Under demand: any size, voltage, duty cycle etc can be manufactured.



When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

ERM SERIE

The attraction and holding of the magnetic pieces are obtained by feeding the winding inside the solenoid. When the power supply stops, the solenoid looses the piece.

When working with loads, security norms must be respected.

Protection rate: **IP65**
Insulation class: **B (130°C)**
Nominal Voltage: **24VDC**
Standard duty cycle: **ED100%**
Other voltages, ED and sizes: **Consult**



Table 1

TYPE	A	B	C	D	E	F	H	N° of holes	Compression gland	Weight(kg)
ERM100/35	125					10		2		0.9
ERM150/35	175					10		3		1
ERM200/35	225					10		4		1.5
ERM400/35	425	35±0.3	34±0.1	25	50	12	M-6	8	PG-9	2.8
ERM500/35	525					12		10		3.5
ERM600/35	625					12		12		4.5
ERM150/60	180			40	70			2		2.3
ERM200/60	230	60±0.1	49.5±0.2	40	120	12	M-8	2	PG-11	3
ERM500/60	530			70	120			4		7.8

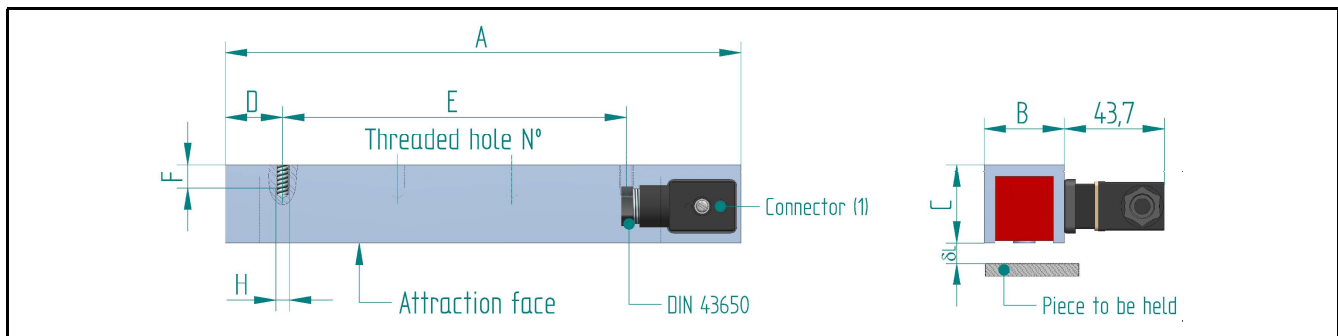


Table 2

TYPE	P at 20°C (W)	e (mm)	Airgap (mm)					Magnetic force Fm (N)
			0	0,1	0,2	0,5	1	
ERM100/35	10	1	32	22	12	8	6	
		3	396	308	120	45	8	
		6	604	320	190	52	12	
		10	752	468	238	60	18	
ERM150/35	14	1	65	50	30	21	14	
		3	769	580	220	82	17	
		6	1090	657	368	90	21	
		10	1450	904	490	116	35	
ERM200/35	18	1	80	60	42	28	14	
		3	928	720	260	94	20	
		6	1400	810	460	121	27	
		10	1758	1108	690	136	46	
ERM400/35	30	1	172	131	91	60	35	
		3	2100	1460	537	210	45	
		6	3060	1722	962	263	60	
		10	3810	2371	1297	304	93	
ERM500/35	45	1	210	150	100	60	36	
		3	2323	1806	674	234	56	
		6	3540	2100	1114	295	70	
		10	4423	2745	1501	330	117	
ERM600/35	53	1	226	173	90	66	40	
		3	2653	2053	706	266	66	
		6	4053	2266	1286	346	80	
		10	5026	3120	1806	400	120	
ERM150/60	25	1	140	112	102	75	50	
		3	780	680	600	445	180	
		6	1800	1490	1100	610	200	
		10	1900	1500	1250	650	210	
ERM200/60	40	1	205	165	155	116	72	
		3	1130	990	890	680	250	
		6	2550	2160	1800	884	280	
		10	2760	2300	1870	900	300	
ERM500/60	75	1	553	440	397	310	190	
		3	3150	2630	2320	1800	780	
		6	7250	5870	4650	2380	850	
		10	7450	5950	4820	2410	910	

e = Thickness of the piece to hold

The table 2 gives for each type of holding magnet, the values of the force of maintenance (Fm) based on the air gap, measured in the following conditions:
- Direct current supply.
- Flat piece (3µm rugosity) in A°St37, thickness as shown in the table 2 and dimensions are similar or bigger than the attraction face.
- Room temperature 35°C.
- Coil working on its regime temperature.
At different conditions, the magnetic force(Fm) may decrease. The value of the magnetic remanence after the power supply stops is 5% of the holding force.

- Alternating current connection (AC):
Only for sizes ERM150/60 to ERM500/60.
- Earthing is recommended if the metallic parts are accessible.
- Mounting, supply possibilities and ordering code: page 104.
- Technical explanations: see pages 4 & 5.
- Under demand: any size, voltage, duty cycle etc can be manufactured.

Ordering code: Size--V ED---%
Voltage: 24Vdc; Duty cycle: ED100%
ERM150/35 24Vdc 100%
For other configurations see page 104



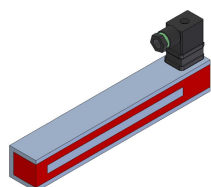
When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

ERM SERIE

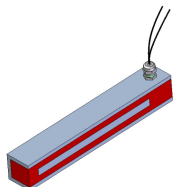
Mounting and supply possibilities for rectangular holding electromagnet

ERM --/35

Supply possibilities

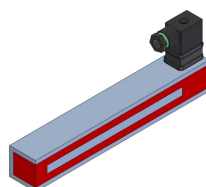


A)Connector
(Standard)

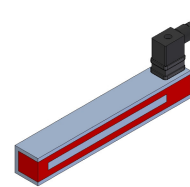


B)Stuffing box
(under demand)

2x180° connector

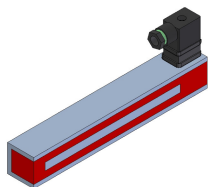


Standard mounting

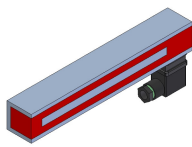


Opcional mounting
under demand

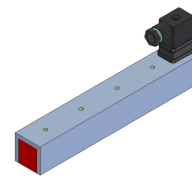
Connector and stuffing box different positions



1)Standard mounting



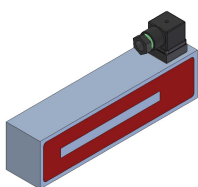
2)Face opposite to standard mounting
(Under demand)



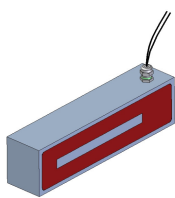
3)Fastening face
(Under demand)

ERM --/60

Supply possibilities

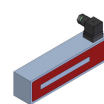
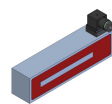
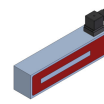
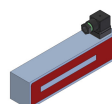


A)Connector
(Standard)



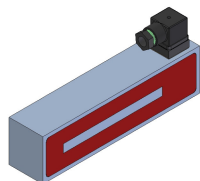
B)Stuffing box
(Under demand)

4x90° connector

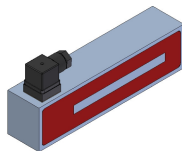


Optional mounting under demand

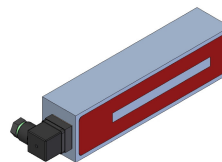
Connector and stuffing box different positions



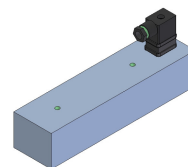
1)Standard mounting



2)Face opposite to standard
mounting (Under demand)



3)Longitudinal output
(Under demand)



4)Fastening face
(Under demand)

Ordering code:

Size; Supply possibilities; Positioning; Voltage; Duty-cycle;

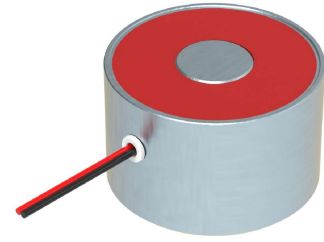
Example: ERM200/35 A2 24Vdc 100% (Connector in the opposite face to standard mounting)
ERM200/60 B4 24Vdc 50% (Stuffing box in the fastening face)

IMPORTANT: Under demand orders can be delayed in the delivery

- **VM SERIE**

The attraction and holding of magnetic pieces are made by permanent magnets mounted in the electromagnet, with these kind of products we avoid the risk of load falling down due to sudden power supply failure. The power supply on the coil allows to loose the load, when this power supply stops, the product recovers its initial force.

When working with suspended loads, security norms must be respected.



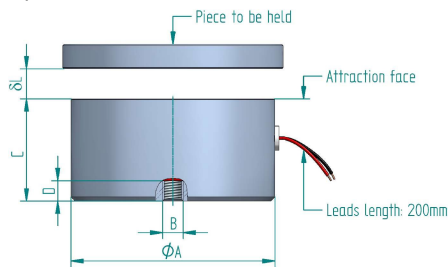
Protection rate: **IP65**
Insulation class: **B (130°C)**
Standard voltage: **24VDC**
Standard duty cycle: **ED100%**
Different voltage, ED or size: **Consult**

Flying leads for every size
Supply possibilities under demand:
 .With campling screw from the VM25
 .With connector from the VM65.
 The connector (1) has 4 possibilities of direction (4x90°)
 and it is possible to be incorporated to the same diodes
 of rectification for alternating current connection (AC).

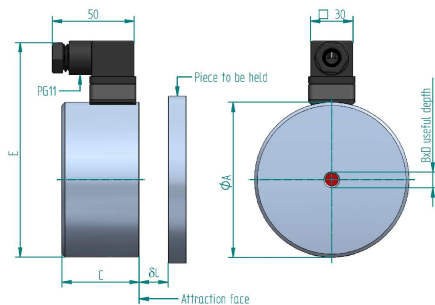
Table 1

TYPE	øA (-0,3)	B	C±0.1	D	E	F	Weight(Kg)
VM 20	20	M-3	25	5	---	---	0.04
VM 25	25	M-4	27	5	---	40	0.06
VM 30	30	M-4	28	5	---	45	0.17
VM 40	40	M-5	30	6	---	55	0.24
VM 50	50	M-5	35	6	---	65	0.44
VM 65	65	M-8	40	8	112	80	0.74
VM 80	80	M-8	45	8	127	95	1.42
VM 100	100	M-10	50	10	147	115	2.20
VM 150	150	M-16	65	15	197	165	6.60

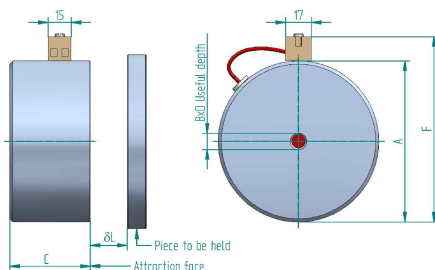
Flying leads: Ref: VM (type)-V - ED%
Example: VM 50-24Vdc- ED100%



Connector (C): Ref: VM (type)/C-V-ED%
Example: VM65/C-24Vdc ED100%
Connection:
 see documentation that is enclosed with the material



Clamping screw (B): Ref: VM(type)/B-V-ED%
Example: VM50/B-24Vdc-ED100%



Important: the clamping screw does not have to exceed measure D

TYPE	P at 20°C (W)	Thickness of the piece to hold (mm)	Air gap (mm) δ_L		
			0	0.1	0.2
VM20	2.6	1	18	5	1
		3	18	5	1
		10	18	5	1
VM25	4.3	1	20	7	3
		3	23	7	4
		10	29	10	7
VM30	4.5	1	24	10	5
		3	45	10	6
		10	52	14	7
VM40	7	1	39	29	22
		3	108	57	29
		10	128	58	37
VM50	10	1	43	30	28
		3	129	110	75
		10	226	125	80
VM65	14	1	44	35	25
		3	266	203	140
		10	374	238	145
VM80	18	1	44	35	25
		3	294	267	217
		10	588	362	256
VM100	25	1	45	35	25
		3	299	282	262
		10	1000	745	519
VM150	45	1	93	75	60
		3	415	350	320
		10	2000	1500	1300

The table 2 gives for each type of holding magnet, the values of the force of maintenance (F_m) based on the air gap, measured in the following conditions:

- Holding magnet without voltage.
- Flat piece (3μm rugosity) in A°St37, thickness as shown in the table 2 and dimensions are similar or bigger than the attraction face.
- Room temperature 35°C.
- Coil working on its regime temperature.

At different conditions, the magnetic force(Fm) may decrease.The value of the magnetic remanence after the power supply stops is 5% of the holding force.

- Earthing is recommended if the metallic parts are accessible.
- Technical explanation: see page 4 & 5.

.Under demand: any size, voltage, duty cycle etc can be manufactured.

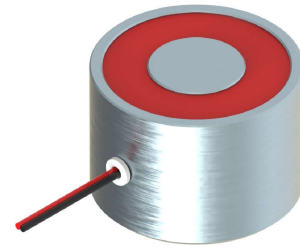


When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

• VM/ND SERIE

The attraction and holding of the magnetic pieces are made by permanent magnets mounted in the solenoid. With these kind of products, we avoid the risk of load falling due to sudden power supply failure. The power supply on the coil allows to loose the load, when this power supply stops, the product recovers its initial force.

When working with suspended loads, security norms must be respected.

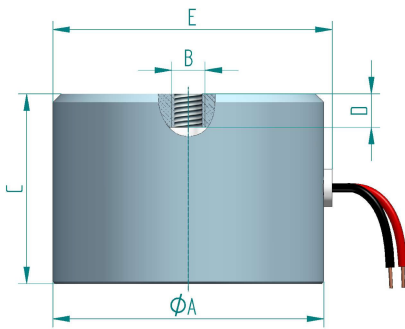


Protection rate: **IP65**
Insulation class: **Y (90°C)**
Standard voltage: **24VDC**
Standard duty cycle: **See chart**
Different voltage, ED or size: **Consult**

Supply possibilities:

Flying leads for every size:
VM20/ND, VM30/ND, VM40/ND: 1x0.25mm2
VM50/ND, VM65/ND, VM100/ND: 1x0.5mm2
VM150/ND: 2x0.75mm2
Under demand: any size, voltage, duty cycle etc can be manufactured

Flying leads



Feeding mode to take off the workpiece:

Voltage: 24Vdc
Polarization:
Red lead +VDC / Black lead -VDC

Important: the clamping screw does not have to exceed measure D

Table 1

TYPE	øA (-0,3)	B	C(±0,1)	D	E	Weight(Kg)
VM 20/ND	20	M-3	25	5	26	0.04
VM 30/ND	30	M-4	32.5	6	35.2	0.13
VM 40/ND	40	M-5	41.7	6	42.7	0.28
VM 50/ND	50	M-5	42.8	6	52.5	0.45
VM 65/ND	65	M-8	45.5	8	67	0.74
VM 100/ND	100	M-10	67	10	102	3.00
VM 150/ND	150	M-16	65	15	152	7.10

TYPE	P (W)	ED (%)	Minimum pulse (ms)	Resting time (ms)	e (mm)	Air gap (mm) ΔL			Magnetic force Fm (N)
						0	0.2	0.5	
VM20/ND	10	20	24	180	1 3 10	22 39 39	7 7 7	1.7 1.7 1.7	Magnetic force Fm (N)
VM30/ND	25	20	110	825	1 3 10	46 181 181	34 74 74	22 22 22	
VM40/ND	42	15	75	743	1 3 10	51 205 270	36 89 89	23 38 38	
VM50/ND	48	15	120	1188	1 3 10	60 304 607	41 200 225	34 95 110	
VM65/ND	80	15	225	2228	1 3 10	70 374 1220	50 340 750	40 260 400	
VM100/ND	75	25	150	1500	1 3 10	83 421 2205	61 365 1254	49 338 686	
VM150/ND	77	40	285	1070	1 3 10	78 615 2254	46 475 1490	32 401 1100	

e (mm): Thickness of the piece to hold

The table 2 gives for each type of holding magnet, the values of the minimum pulse time and resting time measured in the following conditions:

- With a weight of 5% of the maximum magnetic force made by each model
- Coil working on its regime temperature.

The table 2 gives for each type of holding magnet, the values of the force of maintenance (Fm) based on the air gap, measured in the following conditions:

- Holding magnet without voltage.
- Flat piece (3µm rugosity) in A°St37, thickness as shown in the table 2 and dimensions are similar or bigger than the attraction face.
- Room temperature 35°C.
- Coil working on its regime temperature.

At different conditions, the magnetic force(Fm) may decrease.

The value of the magnetic remanence after the power supply stops is 5% of the holding force.

Earthing is recommended if the metallic parts are accessible.

Technical explanation: see pages 4 & 5.

Under demand: any size, voltage, duty cycle etc can be manufactured.

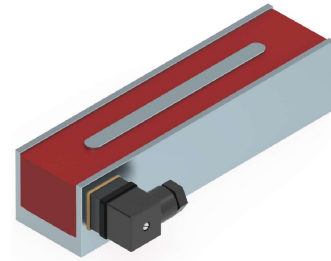
Under demand an internal protection can be added to the coil to protect it of the overheating, generated by the no respecting of the times given by the duty cycles, this overheating can demagnetize the internal magnet or destroy the coil changing the proper working of holding magnet.

⚠ When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

Ordering code : VM(size)/ND --V ED---%
VM50/ND; Voltage : 24Vdc ; Duty cycle : ED15% ; Ref.: VM50/ND 24Vdc ED15%
VM50/ND with protection ; Voltage : 24Vdc ; Duty cycle : ED15% ; Ref.: VM50/ND_WP 24Vdc ED15%

• ERM 200-60 TYPE

The attraction and holding of the magnetic pieces are made by permanent magnets mounted in the solenoid.
With these kind of products, we avoid the risk of load falling due to sudden power supply failure. The power supply on the coil allows to loose the load, when this power supply stops, the product recovers its initial force.
When working with suspended loads, security norms must be respected.



Protection rate: **IP65**
Insulation class: **Y (90°C)**
Standard voltage: **24VDC**
Standard power: **250W**
Standard duty-cycle: **ED15%**
Solenoid weight: **4.7 kg**

Supply possibilities:

- Connector standard
- **Alternating current connection (AC):**
The connector offers the possibility of incorporating rectifying diodes
- Under demand: other possibilities of input can be manufactured.

If any changes from the original (see drawing), please contact.

- Electric connection of the connector:
see documentation that is enclosed with the material
- Earthing is recommended if the metallic parts are accessible.
- Technical explanations: see pages 4 & 5.

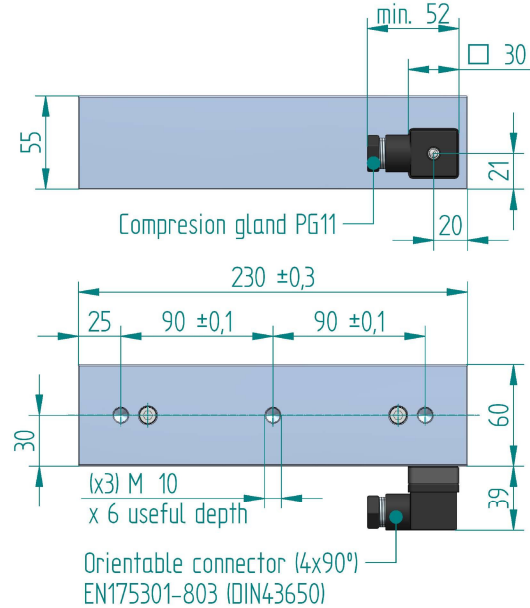


Table 1

Thickness of the piece to hold(mm)	Air gap (mm) δL							Magnetic Force Fm (N)
	0	0.1	0.2	0.3	0.4	0.5	1	
1	250	210	190	180	165	160	140	
3	1350	1250	1150	1100	1000	925	570	
6	2350	2000	1750	1400	1200	1100	590	
10	2800	2450	2150	1900	1600	1400	700	
18	3000	2550	2300	2000	1700	1500	800	

For these holding electromagnet correct working the minimum pulse and resting time must be respected:

- **Minimum pulse time: 300ms**
- **Minimum resting time: 5000ms**

The values of the minimum pulse time and resting time measured in the following conditions:

- Coil working on its regime temperature.
- Piece weight: 2 Kg (it is not recommended to use these holding electromagnet for lower weights)

The table 2 gives for each type of holding magnet, the values of the force of maintenance (Fm) based on the air gap, measured in the following conditions:

- Holding electromagnet without voltage.
- Flat piece ($3\mu m$ rugosity) in A°St37, thickness as shown in the table 2 and dimensions are similar or bigger than the attraction face.
- Room temperature 35°C.
- Coil working on its regime temperature.

At different conditions, the magnetic force(Fm) may decrease.The value of the magnetic remanence after the power supply stops is 5% of the holding force.



When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

Ordering code:

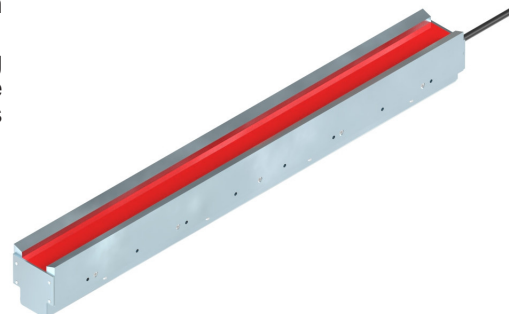
Ref.: *ERM1200/60 24Vdc ED15%*

• BP 1000-10 TYPE

It is a bipolar holding electromagnet with 1000mm of effective surface. The face is made with an angle to work with different pieces between $\varnothing 120$ mm y $\varnothing 250$ mm.

The attraction and holding of the magnetic pieces is obtained by feeding the coil inside the electromagnet. When the power supply stops the electromagnet looses the piece. When working with loads security norms must be respected.

Protection rate: **IP65**
Insulation class: **B (130°C)**
Standard voltage: **24Vdc**
Standard duty cycle ED: **100%**
Abs. power at 20°C: **217 W**
Temperature rise "DV31" **40°C**
Solenoid weight: **47 Kg**



• Maximum keeping force

\varnothing Round bar (mm)	Force N/mm	Force N (for bar \Rightarrow 1000mm)
$\varnothing 120$ - $\varnothing 200$	5.4	5400
$\varnothing 250$	8	8000

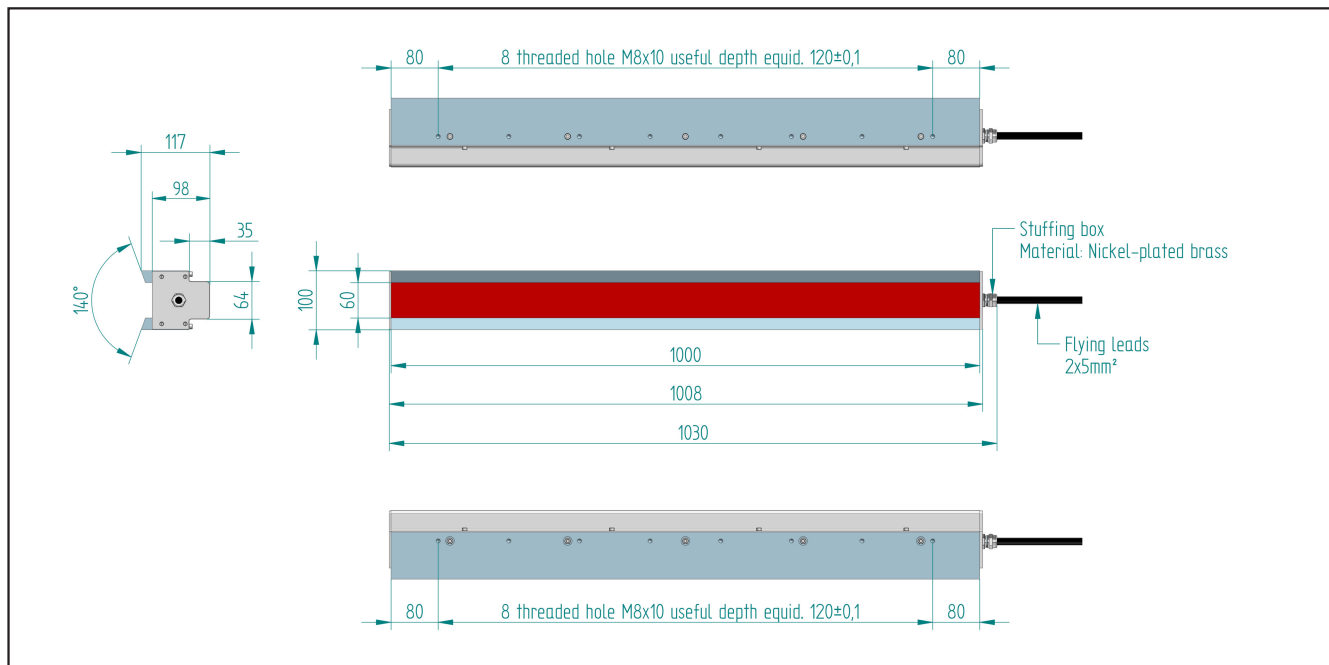
The forces values are obtained with the electromagnet at its working temperature and with the piece to be held in contact with whole attraction surface

1) To feed in alternating current the electromagnet will have an external rectifier.

2) It can be manufactured at any voltage, duty cycle, connection etc. Also other sizes for different applications.

3) Ground connection is recommended if to the metallic parts are accessible.

• General dimensions



When lifting or handling heavy loads a minimum security margin of 3 must be respected, the weight of the load cannot exceed 33% of the magnetic force.

Ordering code: BP1000/100 --V ED---%

Voltage: 24Vdc; Duty-cycle: ED100%
BP1000/100 24Vdc ED100%