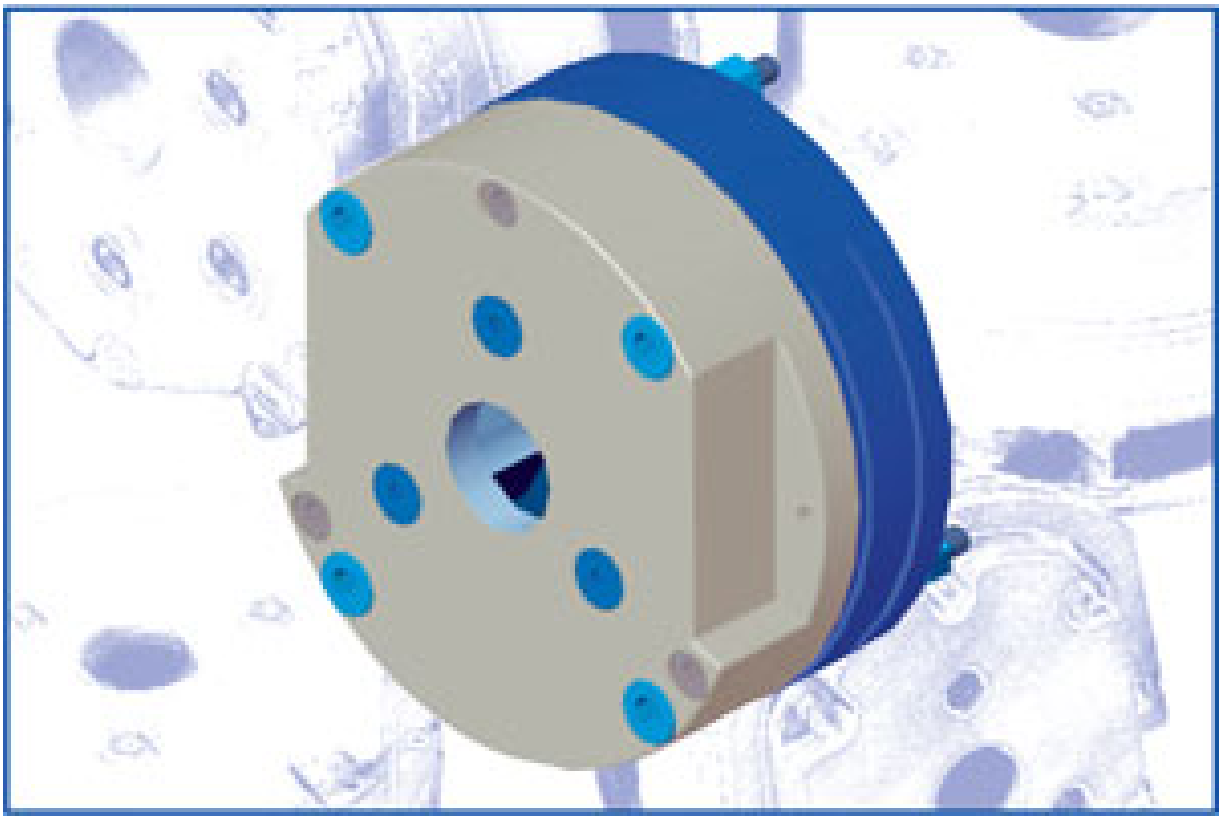
Characteristics of model “AC”

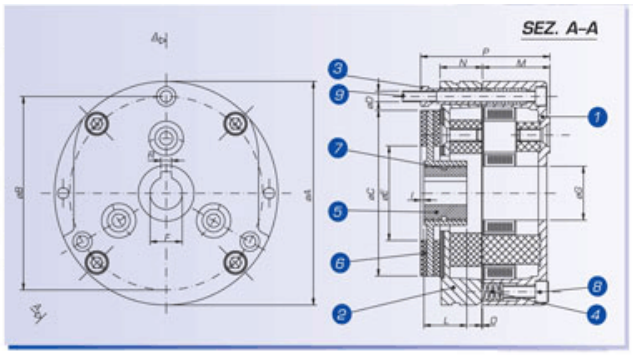
The brake model "AC" is a spring applied, power release ac brake which has been designed to stop rotational movement of machine shaft. Proper working order of the brake is guaranteed by following the instructions indicated in this catalogue at paragraph "Choice of the brake".

- Very strong structure;
- Very simple in assembling;
- Very quiet in operation (< 70dBA according to Regulation 98/37/EEC);
- The structure of the brake is made with aluminium die casting. Good heat dissipation by means of the brake structure and the motor fan;
- The coil is fully encased in epoxy resin ,unless of other construction criteria;
- Hand release in on request.



Series AC

1. Elettromagnete • *Electromagnet* *Elektromagnet*
2. Ancora • *Armature plate* *Anker*
3. Vite di registro • *Adjusting screw* • *Einstellschraube*
4. Molle di coppia • *Torque springs* *Bremsfedern*
5. Mozzo • *Splined hub* • *Nabe*
6. Disco • *Disc* • *Scheibe*
7. O-ring
8. Vite di regolazione coppia *Braking torque adjusting screw* *Regulierschraube für das Bremsmoment*
9. Viti di fissaggio • *Fixing screws* *Feststellschrauben*



Tipo Brake Model	AC1	AC2	AC3	AC4	AC5	AC6	AC7	AC8	AC8/D
Coppia frenante statica (Nm) *Static Braking Torque*	4.5	10	16	20	40	60	90	200	400
Velocità max di rotazione del motore (rpm) *Max Speed Motor*	3600	3600	3600	3600	3600	3600	3600	1800	1800
Potenza / *Input Power* (W) (VA)	17 40	22 70	27 85	27 120	39 160	61 300	69 500	134 600	134 600
Momento di inerzia masse rotanti del freno *Braking moment of inertia of the brake*(Kg. cm^2)	0.3 G-AL	0.8 G-AL	1.1 G-AL	3 3	7,6 ALL 11,5 C40	16 C 40	30 C 40	60 C 40	120 C 40
Max rumorosità (dB-A) *Max noisiness*	68	69	70	69	70	70	70	70	70
Peso / *Weight* (Kg.)	1.2	1.8	2.3	3	5	7.5	11.5	15	19
A	85	105	115	125	148	162	189	218	218
B	72	90	103	112	132	145	170	196	196
C	61	77	88	98	119	128	151	176	176
D	3xm4	3xm5	3xm5	3xm6	3xm6	3xm8	3xm8	6xm10	6xm10
E	35	44	62	69	79	80	90	90	103
Tolleranza foro fino a AC3 H7 oltre +/-0,01 *Tollerance hole till AC3 H7, other +/-0,01* F*	10-11 12	11-14 15	da 11 a 15	**	**	**	**	**	**
G	15	20	22	26	30	32	43	48	48
I	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5	1,5
L	18	20	20	20	25	30	30	40	40-60
M	31,5	31,5	31,5	34	39	41	51	54	54
N	14	20.5	20.5	26.5	29.5	33	35	44	44
O min/max	0,15-0,5	0,2-0,6	0,2-0,6	0,2-0,7	0,2-0,7	0,2-0,7	0,2-0,7	0,2-0,7	0,2-0,7
P	53.5	60	60,5	69	78,5	82,5	97	105	125

*** The structural load of the hub is connected to the length of the motion drive shaft key. As consequence it is necessary that the length of the key has the same length of the brake hub. Less length can determine breaches of the hub.**

**** For the quote L and F of the hub contact our office.**

Note (see section Choice of the brake)

- **The value of the static braking torque may vary of +/-20% from the plate value for brakes that have not been run-in.**
- **For brakes using the friction material anti-sticking, the variation of the torque may be - 30/35% of the nominal torque before the running or even less, depending of the mechanical tolerances of the mechanical components and of the braking surfaces. The environmental conditions may affect this value. It always takes control of the torque of the machine before use.**
- **The values shown in the table can be changed by the producer firm without notice.**

Servicing and repairing

All parts of the brake must be checked frequently as the friction work depends on a number of factors, mainly on the load inertia, the motor speed, and the operating frequency. In order to know the operating times you must refer to page "Operating".
The substitution of the disk must be carried out considering the following principles:
- wear of the disk; the friction material must be substituted before, if put under considerable stress due to the high working temperatures.
- the disk must be substituted after a 3mm total (1,5 mm for side) consumption of friction material.
The friction material has an initial thickness of 3 mm for each friction ring. **When the air-gap value achieve a value of 0,7 mm it's necessary to bring it back to the chart.** After checking the brake make sure that the air-gap is correctly regulated.
Air-gap adjusting is made acting on the adjusting-screws (3) and the fixing screws (9) Carry out servicing and repairing operations when the brake is disconnected and after checking earthing carefully, following the instructions of this catalogue.

Operating

The brake is designed to assure, by means of the pressure springs and when no voltage is applied, theintrinsicsafety equal than brake label value in Nm.
On exciting the electromagnet (1) the armature plate (2) is pulled towards the electromagnet itself, thus loading the pressure springs (4) and enabling the disc (6), which is axially movable on the toothed hub (5), to turn freely.
When the current fails, the pressure springs drive the armature plate towards the disc, thus braking the motor shaft. Braking torque adjusting is made acting on the adjusting screws (8).
Important: the drilling for fastening the brake must be exempt from bevels.
For the operation of the brake, the passing holes for the fixing screws to the flange, and the adjuster nuts for the air gap adjustment, they must have a mechanical game around 0,1-0,2mm , in order to grant the correct sliding of the armature plate. Therefore the angular game of the disc refraining to the mechanical tree of the system, can be of some degrees. Such game moreover can come also from the tolerances of connection between the hub and the disc. In case there was the necessity to limit such angular game we ask you to contact our technical Office.

Characteristics of the electric coil

The electric coil allows a variation of +/- 6% of the voltage from its nominal value. The most important characteristics are:

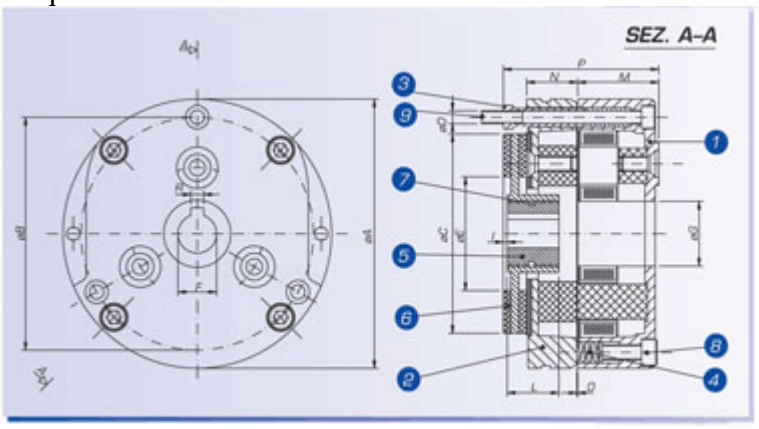
- Protection IP64: total protection against inside dust and water sprinklings. Only in case is protected by epoxy resin.
- Class F insulation: using of materials conform to CLASS F insulation (working temperature 155°C). This value includes also the room temperature.
- S1 duty: Operation at constant load and duration sufficient to reach thermal equilibrium (continuous duty) only with the ventilation of the brake.

Warning!

To guarantee the adjustment of the air-gap from the pre-arranged consumption [3mm] of the disk, the magnet is restrained to the structure by regulation springs. **For this reason nothing is able to be fixed to the magnet, as not to interfere with it's working.**

Proper working order of the brake is guaranteed when operating at room temperature. In case of greasy places or extreme temperatures, please contact our technical department.
When operating at low temperatures or in damp places it's necessary to use covers or guards to avoid the attachment of the friction material on the braking surfaces when the brake hasn't been working for a long time.
Important: loosening the screws for adjusting the brake torque is not generate any braking action on the disc. In the table for adjusting the braking torque is highlighted the minimum value of distance of the screws. The minimum adjustment of the braking torque must always be greater than 30% of the value of the rated torque.

1. Elettromagnete • *Electromagnet* *Elektromagnet*
2. Ancora • *Armature plate* *Anker*
3. Vite di registro • *Adjusting screw* • *Einstellschraube*
4. Molle di coppia • *Torque springs* *Bremsfedern*
5. Mozzo • *Splined hub* • *Nabe*
6. Disco • *Disc* • *Scheibe*
7. O-ring
8. Vite di regolazione coppia *Braking torque adjusting screw* *Regulierschraube für das Bremsmoment*
9. Viti di fissaggio • *Fixing screws* *Feststellschrauben*



Electrical connection
Connect the brake as indicated at page "Electrical Connections" of this catalogue. Before connecting check earthing carefully.

Assembling
The drawing at page "Braking Torque" shows the assembling and disassembling instructions for the brake model "AC". Place first the toothed hub (5) on the motor shaft and fit the o-ring (7) in its seat onto the hub. Insert then the disc (6) on the hub. Place the assembled brake and screw the fixing screws (9) in the mounting flange. Then adjust the air-gap by screwing the screws alternatively. After achieving the correct air-gap value hold the screw(3) tight on the motor cover by means of a dynamometric key with a lock out of:
M4=2,8 Nm, M5=5,6 Nm, M6=9,6 Nm, M8=23,2 Nm, M10=46,4Nm.
The motor cover must be made of steel or cast iron and must have a flat surface machined with a roughness value of 1,6 Ra.
In order to comply with safety legislation the following operations should be carefully carried out:
a. Drill the motor cover with an helical drill bit with diameter M4=3,2, M5=4,2, M6=5, M8=6,75, M10=8,6
(UNI 5699);
b. Make sure the drilling is made within tolerance.
c.With the correct size thread tap and lubricant, cut the threads.
d. Make sure the drilling for assembling is made equidistant.
Operate the adjusting-screws (8) to obtain the desired braking torque by following the instructions indicated at page "Braking Torque".

Air-gap adjusting

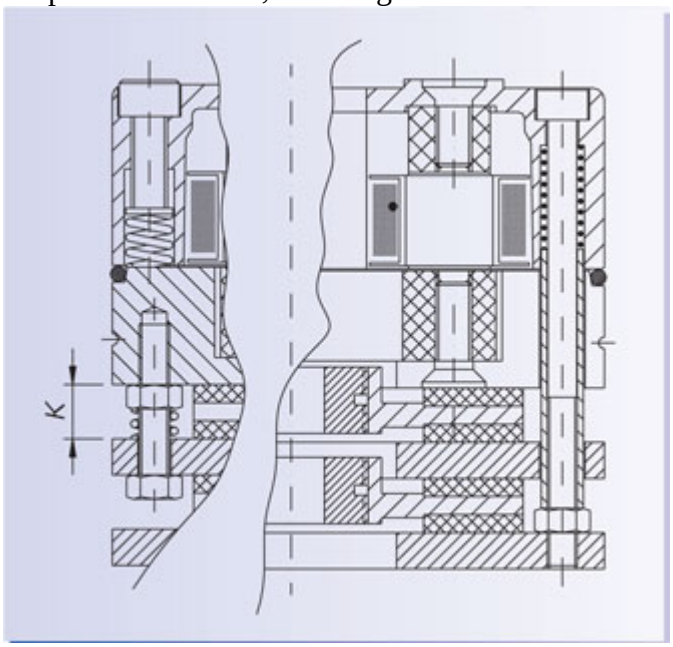
Adjusting of the air-gap is made operating the fixing-screws (9) after loosening the adjusting-screws (3). Please allow for a cooling down period before adjusting the air-gap after brake working. The correct value for the air-gap is indicated at page 50 (+0.05-0).The maximun value allowed for the air-gap is 0,7 mm. If this value is exceeded the brake performances will change and this can prevent brake from braking. The maximum admissible consumption is of 0.5+O/-0.1, which added to the value of the air-gap reported in the chart "Braking Torque" brings to the maximum air-gap value. Incorrect maintenance of the air-gap adjustment will prevent brake to work properly during motor revolution this causing an overheating of all the parts of the brake and an inevitable interruption of the working.

You can calculate when it's necessary to adjust the air-gap using the formulae shown in paragraph at page "Dimensional Calculation". Entering the graph 2/AC on page "Graphics", we may obtain a number of manoeuvres for a consumption of 0.1.

The exceeding of the maximum value of the air-gap, brings to a decline of the performances of the brake and possible damage of the electrical and mechanical parts.

Vertical assembly of double disc brake

Carry out the vertical assembling of double disc brake using the device as shown in the drawing. The brake is privided already assembled. When mounting the brake on the motor keep the K value +0,2 mm higher than disc thickness.



Operating Times

Freno Model	Tempo di diseccitazione dell'elettromagnete Disengagement braking time (ms)	Tempo di eccitazione dell'elettromagnete Engagement time (ms)
AC1	< 10	< 10
AC2	< 10	< 10
AC3	< 10	< 10
AC4	< 10	< 10
AC5	< 10	< 10
AC6	< 10	< 10
AC7	< 10	< 10
AC8-AC8/D	< 10	< 10

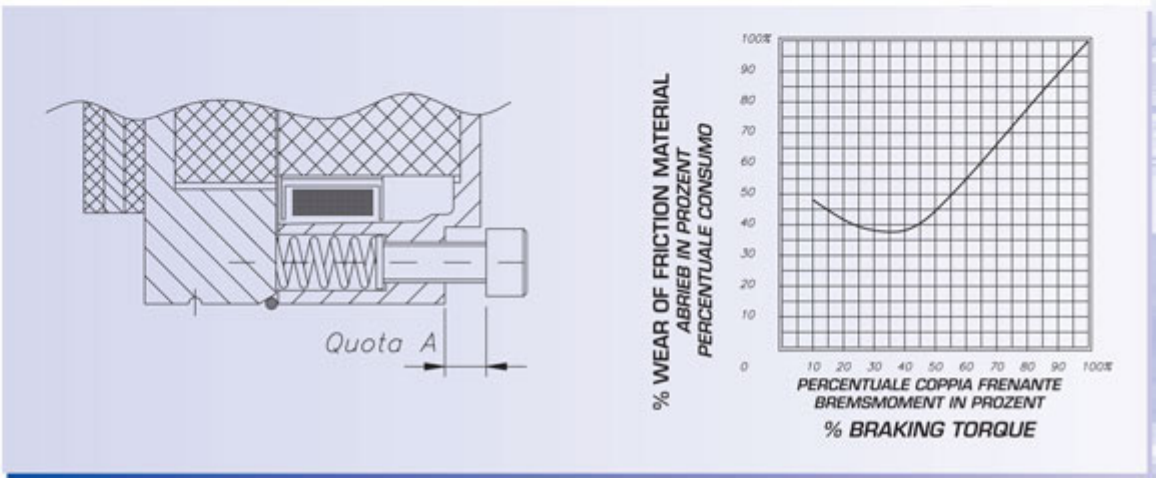
Braking Torque adjustment

The brake model AC allows to adjust the braking torque according to the load, the motor speed and the braking time. In the table below are highlighted indicative distances (dependent on the tolerances of the mechanical components) in mm of the screw head by the electromagnet, in order to obtain the desired braking torque, which must always be verified after assembly of the brake and prior to the 'use on the machine (see drawing).

Temporiti s.r.l. regulates the break at about 80% of the maximum value of the torque.

The maximum value of the torque is regulated buy the user by verifying the working with a minimum tension value (-6% nom.). If your load allows it, the adjustment of the breaking torque under the value of 100% will take to a decrease, in percentage, of the wear of the friction material of the break. The graph below relates the values % between the torque and consumption.

Tipo Model	DISTANZA TRA LA VITE DI REGOLAZIONE E L'ELETTROMAGNETE "A" [mm] DISTANCE BETWEEN ADJUSTING-SCREW AND ELECTROMAGNET "A" [mm]				
	4 mm	3 mm	2 mm	1 mm	"A" = 0 mm
AC1	COPPIA FISSA				4.5 Nm
AC2	3.6 Nm	5 Nm	6.6 Nm	8.3 Nm	10 Nm
AC3	5.3 Nm	8 Nm	10.5 Nm	13.3 Nm	16 Nm
AC4	4 Nm	8 Nm	12 Nm	16 Nm	20 Nm
AC5	20 Nm	25 Nm	30 Nm	35 Nm	40 Nm
AC6	32 Nm	39 Nm	46 Nm	53 Nm	60 Nm
AC7	38.4 Nm	51.2 Nm	64 Nm	76.8 Nm	90 Nm
AC8	85 Nm	114 Nm	142 Nm	171 Nm	200 Nm
	Valore della coppia frenante (Nm) al variare della distanza Braking Torque Value (Nm.) with different distances				Coppia massima Max Torque



Brake Accessories

FIG. 1

FIG. 2

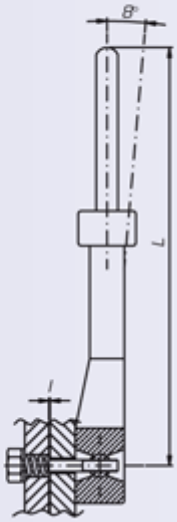


FIG. 3

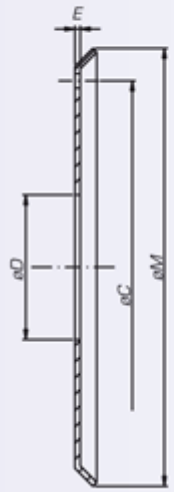
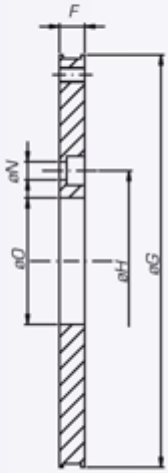


FIG. 4



Tipo Type	K1=AC1	K2=AC2	K3=AC3	K4=AC4	K5=AC5	K6=AC6	K7=AC7 K7/D	K8=AC8 K8/D	K9 K9/D
A	80	94	103	120	145	156	184	208	238
B	20	22	25	25	30	33	33	35	20 - 10
C	72	90	103	112	132	145	170	196	230
D	30	40	40	60	120	130	154	180	205
E	1	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
F	6	7	7	9	9	11	11	11	11
G	84	104	114	124	148	160	189	218	248
H	30	45	50	56	62	74	84	100	120
I	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5	1.5
L	100	115	135	143	185	185	200	225	280
M	88	108	119	130	150	165	195	223	253
N	4.5	5.5	5.5	6.5	6.5	8.5	8.5	8.5	10.5
O	20	30	35	40	45	55	65	75	90
N° Viti Screws Nr.	3	3	3	3	3	3	3	6	6

Dust seal (Fig. 1)

• It prevents penetration of dust or other fragments into the braking area. The dust seal is pulled over the brake into the grooves provided.

Hand release device (Fig. 2)

• This device releases the brake manually and goes back to its original position after operating.

Friction plate (Fig. 3)

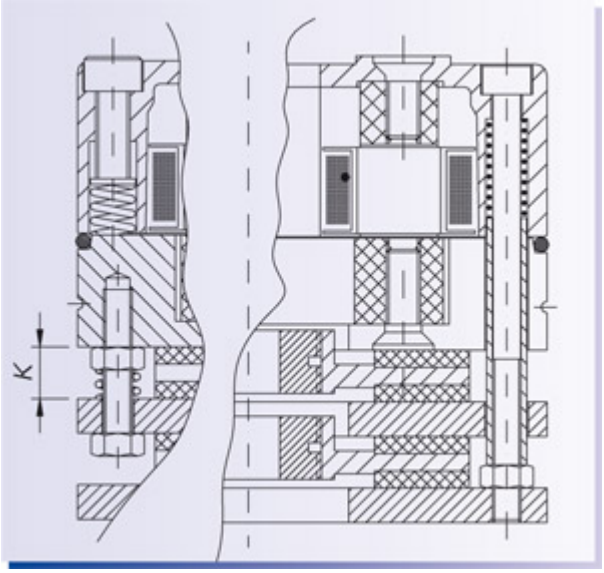
•We suggest to use the friction plate when the flat machined surface available for brake assembling can't be used as braking surface. The friction plate can also be used with the dust seal.

Mounting flange (Fig. 4)

• The mounting flange must be used when no suitable braking surface is available. It can also be used with the dust seal.

Vertical assembly of double disc brake

Carry out the vertical assembling of double disc brake using the device as shown in the drawing. The brake is privided already assembled. When mounting the brake on the motor keep the K value +0,2 higher than disc thickness.



Hand Release Device

We can supply on request a brake hand release device. This is composed by a plastic material, glass loaded device placed on the electromagnet housing, two special bolts with a pin and a spring. The device positioning seat is made on the electromagnet housing, coinciding with the fixing holes for the bolts. The same holes are made also on the armature plate. To carry out the hand release assembling, place the armature plate coinciding with the fixing holes. Then insert the T.E headed washer, the spring in the armature plate and the electromagnet, with the threaded part towards the electromagnet.

Screw with the pin while keeping the aluminium device in vertical position and move the armature plate at a distance of about 0,7÷1 mm from the electromagnet surface. If this operation is not properly carried out, the brake may have a misperformance, such as:

1 If the bolts are too tight on the hand release the brake looses its braking torque, as the armature plate stroke is restricted.

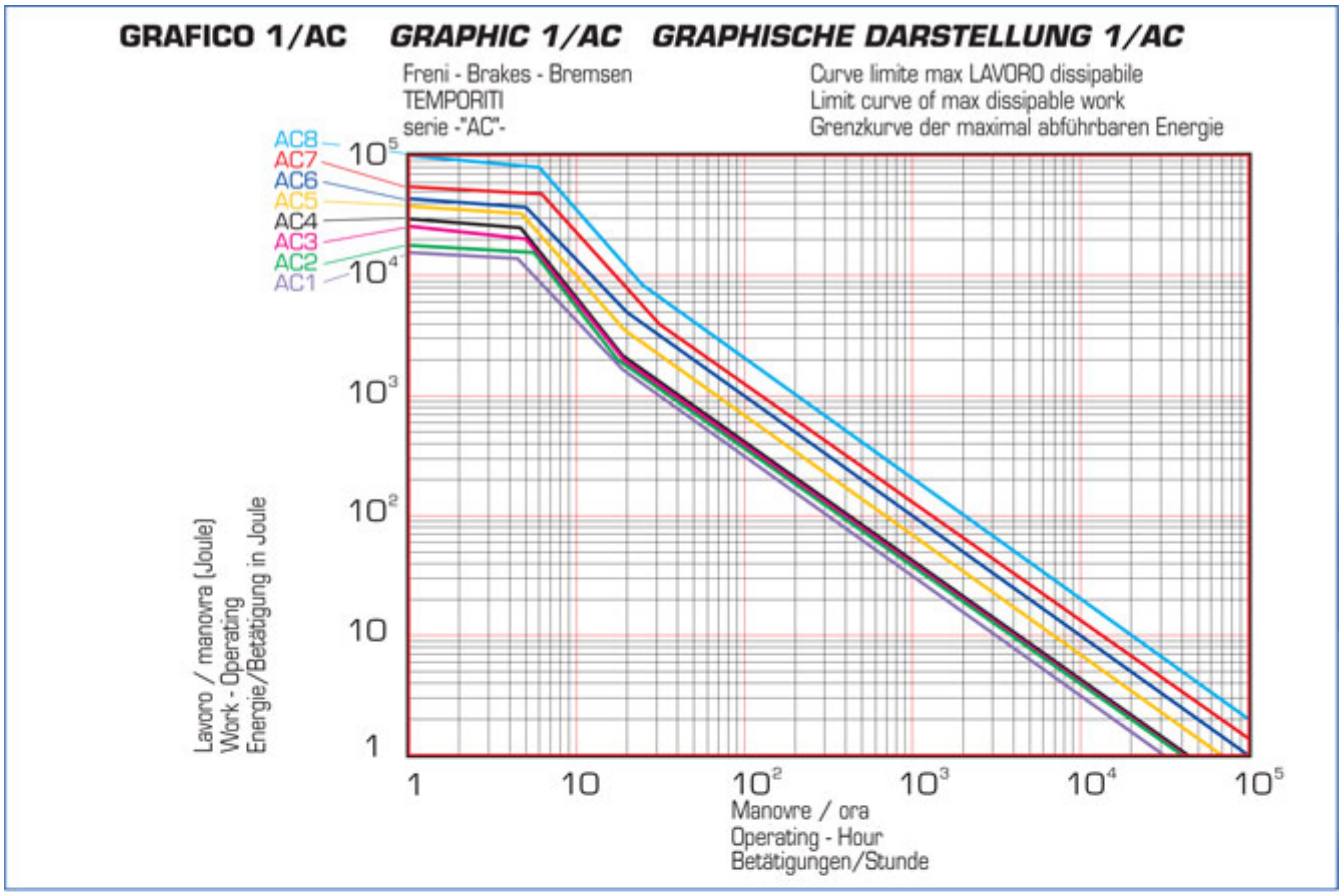
2 If the bolts are too loose on the hand release the system doesn’t work and the hand release might not run properly as the operator is not able to release the brake and increases his strenght on the release level, thus causing its breaking. In order to avoid this misworking see below the max allowed strokes and its related loads.

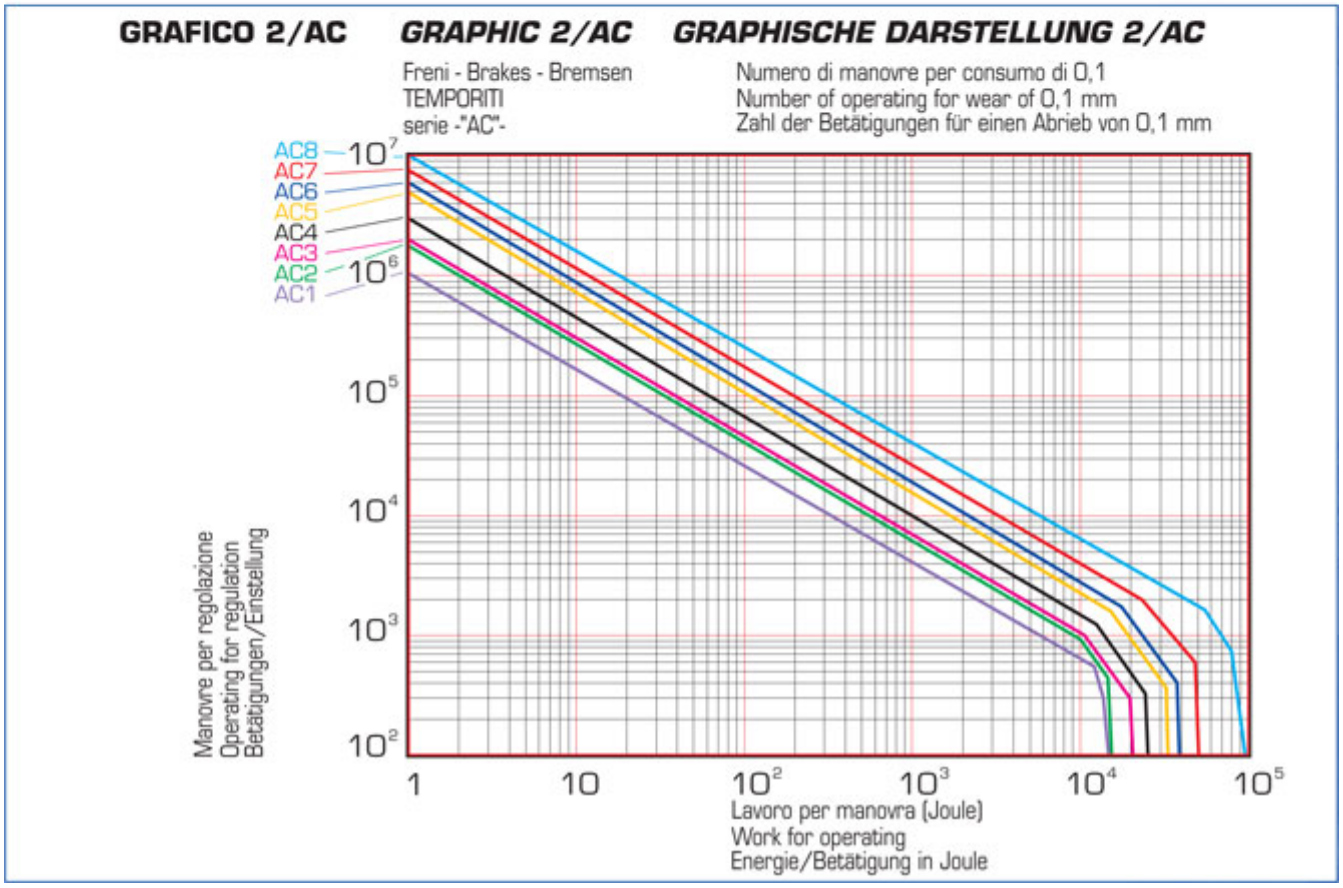
3 With just one bolt too tight the braking torque changes and the friction material wear is not omogeneus.

Tipo Model	Corsa senza sforzo Movement without effort (mm)	Corsa di sgancio Movement of release (mm)	Massimo sforzo sulla leva Max effort on handle (Kg)
K1/AC1	7	15	1.5
K2/AC2	6	10	3.5
K3/AC3	6	8,5	4.5
K4/AC4	6	8,7	4.5
K5/AC5	6	9	11
K6/AC6	8	12.5	12
K7/AC7	8	13.5	17
K7/D/AC7D	9	13.5	17
K8/AC8	9	14.5	19.5
K8/D/AC8D	9	14.5	19.5
K9	9	16.5	25
K9/D	9	16.5	25

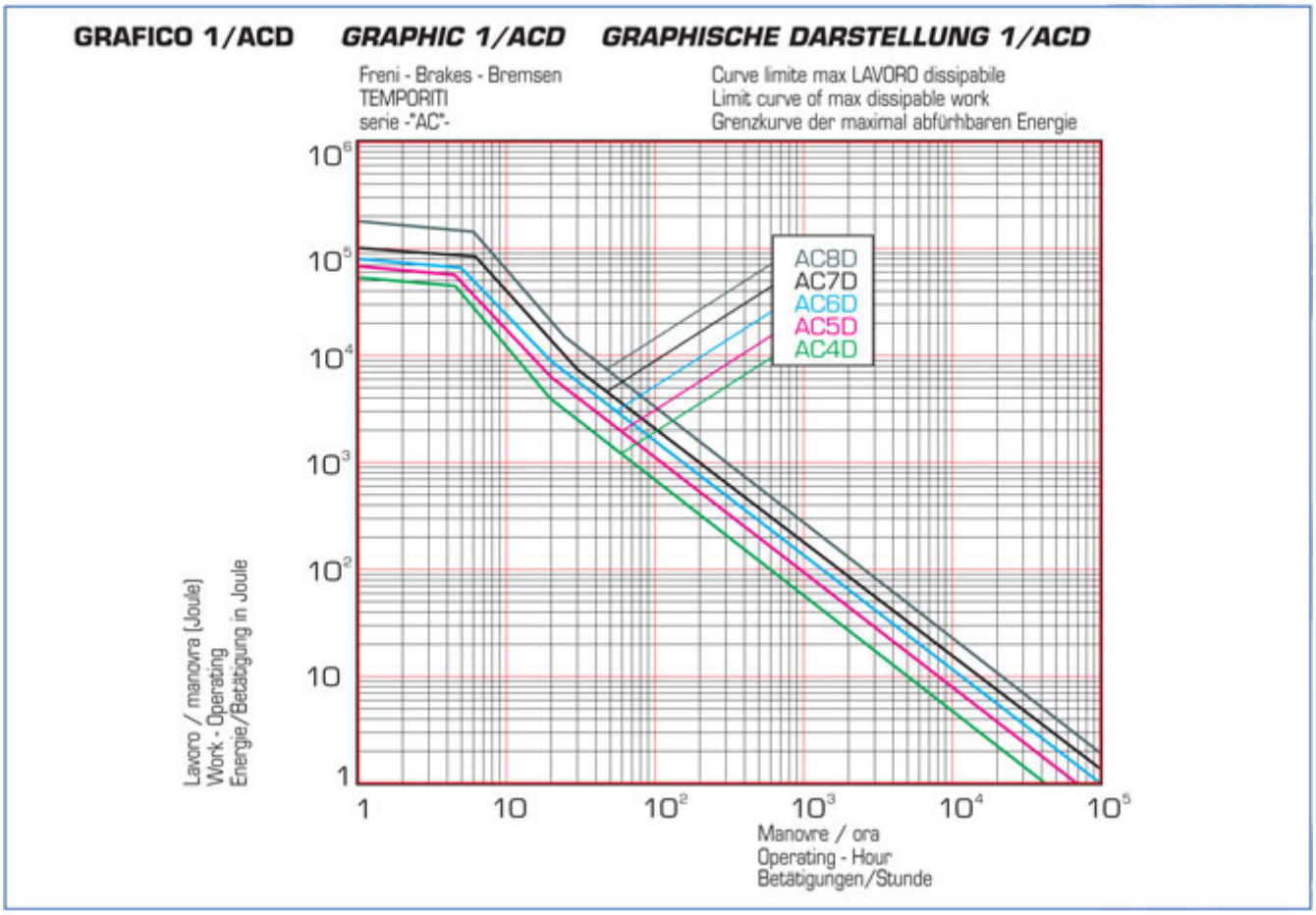
GRAPHICS

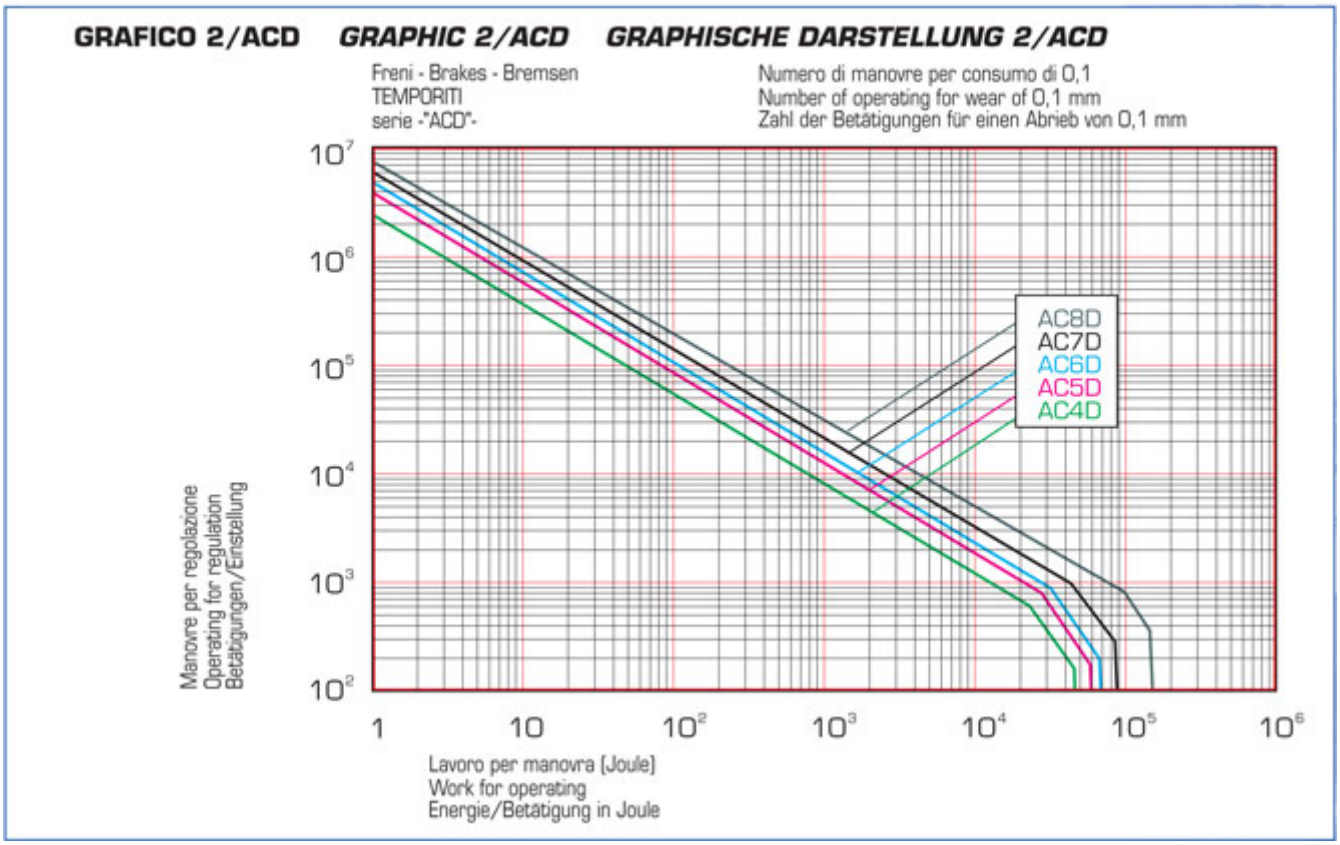
Note: Dissipations show in the graphic are valid only referring RPM indicated in the table.





Note: Dissipations show in the graphic are valid only referring RPM indicated in the table.






Temporiti
s.r.l.
Temporiti S.r.L.
Via E. Mattei,8 - 20010 Mesero (MI) Italy
Ph +39-02-9787331 - Fax +39-02-97289574
Codice fiscale e Partita I.V.A. IT 06182040151
Capitale Sociale Euro 26.000 i.v.
Iscrizione R.E.A. MI-1077587
Reg. Imprese MI n.06182040151