

**O.E.G. SPRING PRESSURE BRAKE****OPERATING PRINCIPLES****BRAKE SELECTION**

The choice of the brake depends mainly on the moment of inertia to be braked, the number of interventions/hour, the duty severity and the necessary idle times.

A first selection of the type of brake shall be made according to the type of application.

The table below shows the main features of the various types of O.E.G. spring-pressure safety brakes.

BRAKE TYPE	FEATURES
MS/FM	High number of interventions, high insertion speed, compact execution, easy assembly of accessories.
FM	High number of interventions, smooth braking, compact execution, easy assembly of accessories.
MLCC	Very small dimensions, high braking work, economic construction.
PCC	Small dimensions, economic, average duty.
SMS	High braking torque, high intervention speed, suitable for very heavy duty.
SDDMS	Very high braking torque, high intervention speed, very heavy duty.
SMSVO	Progressive start and braking, heavy duty.

Once the type of brake is selected, choose the size, according to:

- 1.Braking torque and idle time
- 2.Thermal load due to braking work
- 3.Braking work between two adjustment intervals



SYMBOLS USED IN CALCULATIONS:

M_F = Rated braking torque [Nm]
 M_L = Load momentum [Nm]
 M_E = Driving shaft momentum [Nm]
 M_N = Needed braking torque [Nm]
 n = Number of shaft revs [min^{-1}]
 P = Shaft Power [Kw]
 J = Inertia momentum to be braked [Kgm^2]
 t_1 = Brake release time [s]
 t_2 = Braking torque rise time [s]
 t_a = Sop timehaft s [s]
 Z = number of interventions per hour [min^{-1}]
 W = Braking work [J]
 W_{MAX} = Maximum work [J]
 W_2 = Braking work between two adjustment [MJ]

1. Selection according to the braking torque

After calculating the moment of inertia of the moving masses reduced to the shaft to be braked, and given the number of revs/min. and the idle time t_a in seconds, it results:

$$M_N = \frac{J \cdot n}{9,554 (t_a - t_2)} \cdot M_L$$

where $+M_L$ = descending loads
 $-M_L$ = normal braking or rising loads

Choose the brake so that:

$$M_F \geq K \cdot M_N$$

Where K = safety coefficient depending on the type of duty, equal to 1.....3.

Should only the driving power P be known, the driving moment being:

$$M_E = 9,554 \frac{P}{n}$$

the brake shall be chosen so that:

$$M_F \geq 2M_E$$



2. Dissipated heat verification

At each cycle, the energy of the moving masses turns into heat:

$$W = \frac{J \cdot n^2}{182,5} \cdot \frac{M_F}{M_F \pm M_L}$$

where, for the load ML moment, the following considerations apply:

- ML= descending load

+ML= normal braking or rising load

Knowing the value of the braking work W , the estimated number of braking/hour should be less than the maximum admissible number of cycles/hour Z for the type of brake chosen, specified on the relative diagram.

Or, knowing the number of interventions Z , the corresponding braking work W_{MAX} shall be higher than that actually calculated.

3. Braking work that can be carried out between two adjustments

Given the moment of inertia of the moving masses reduced to the shaft to be braked, after calculating the work for a single braking W , the number of admissible braking N for the interval between two adjustments:

$$N = \frac{W_2}{W}$$

where W_2 is the value given in the table for each O.E.G. brake.