

Duplex

ENGINEERING WORKS

A. C. € M. DISC BRAKES



**LARGEST MANUFACTURERS OF ELECTRO
MAGNETIC DISC BRAKES IN INDIA**

DISC BRAKE

Very fast operating solenoid actuated. These are A.C. Disc type spring loaded brakes of failsafe design mounted on the shaft extension of the motor on non driving end, no extra foundation is necessary.

These work as on Electromagnetic Principle and consists 1) Electromagnetic fixed to the end plate, 2) Floating plate on one side of which is fixed on the armature 3) A friction disc with a square hole or internal spline at its centre. 4) Mounting plate 5) Square shaft, or spline shaft. The square piece is fixed on the motor shaft, the friction disc rotates with the motor shaft and it also has an axial movement on the square shaft. Due to the spring pressure the friction disc is held tight between the mounting plate and the floating plate and when the magnet is energised the magnet attracts the floating plate against the spring pressure and the brake is released

These Brakes are used largely on Hoists, Cranes and Winches in Paper, Rubber, Steel, Textile, Cement, Mining Industries and also in Machine Tools, Printing Machinery etc.

SELECTION OF BRAKES

The 'Torque' and 'Time' are the two important deciding factors in selecting the specific size brake if the braking torque is equal to the running torque, the brake will stop the moving mechanism atleast as fast as the time the motor took to bring it to the speed.

In case of cranes, hoists, lifts, etc the brake is provided to hold the mass in the same position when the motor is off, Taking into account some fluctuation in the line voltage the some losses in mechanism, about 1.5 time braking torque should be provided while selecting brakes on above kind of machines, But when instantaneous braking is required, the braking torque should be 2 to 3 times of the running torque. Moment of inertia and frequency of braking are also important factors to be considered.

Formula : Given below is a guide for initial selection in an average application.
 $975 \times \text{kw (of driving motor)}$

RUNNING : $T(\text{kgfm}) = \text{_____}$

TORQUE : R. P. M. (of the shaft on which the brake is to be fitted)

COMPARISON OF D. C. (Normally off) AND SPRING LOADED A.C. or D.C. (Normally on) BRAKES

D. C. BRAKES (Normally off)

- 1 Compact and light in weight.
- 2 No maintenance and Adjustments.
- 3 Consumes negligible power.
- 4 Consumes current only when brake is applied.
- 5 Shaft can pass through brake body
- 6 Starter, Switch, Relay or some other arrangement is required for actuation of brakes,
- 7 Braking is not positive i. e. current fails, brake will not work.
- 8 Used in machine tools, printing bottling, wire drawing, textile, machinery etc.

A. C. or D. C. BRAKES (Normally on)

- 1 Heavy and bulky.
- 2 Requires Adjustments & little maintenance.
- 3 Consumes little more power than equivalent normally off brake.
- 4 Consumes current at all times when machine is running.
- 5 Shaft can go through brake under certain conditions only.
- 6 Brake is connected in parallel with motor and no special devices is required to actuate the brake.
- 7 Even if current fails brake will hold the load and rotating mass as it is hence called fail safe brake.
- 8 Used for Hoists Cranes. Winches, Lifts, etc. (accident prone equipment)