Electromagnetic brakes

To safely hold loads on reversible inclined and declined conveyors, electromagnetic brakes are used. They operate via rectifiers. The braking force is applied directly to the rotor shaft of the drum motor. When power to the motor is disrupted, the brake will close automatically. Special advantage: Electromagnetic brakes are quiet and operate with low wear.

Technical data

	DM 0080		DM 0113			DM 0138			DM 0165				DM 0217			
Rated torque M [Nm]	0.7	0.7	1.5	1.5	1.5	2.9	2.9	2.9	5.95	5.95	5.95	5.95*	12	5.95*	12	5.95*
Rated power [W]	8	10	16	17	16	25	22	22	33	33	33	33	50	33	50	33
Rated voltage [V DC]	24	104	24	104	207	24	104	207	24	104	207	24	104	104	207	207
Rated current [A]	0.33	0.096	0.66	0.163	0.077	1.0	0.211	0.11	1.38	0.32	0.16	1.38	0.48	0.32	0.24	0.16
DC switching t_1 [ms]	13	13	26	26	26	26	26	26	46	46	46	46	46	60	46	60
AC switching t_1 [ms]	80	80	200	200	200	200	200	200	260	260	260	260	260	500	260	500
Opening delay time t_2 [ms]	20	20	30	30	30	30	30	30	40	40	40	40	40	40	40	60

*Brake for DM 0217 for min. SL = 400 mm

Response time

The brake opening and closing response time can vary substantially depending on the following:

· Oil type and viscosity
· Oil quantity in drum motor
· Ambient temperature
· Internal operating temperature of drum motor
· Switching at input (AC switching) or at output (DC switching)

The difference between AC switching and DC switching is shown in the following table:

	AC switching	DC switching
Closing response time	Slow	Fast
Brake voltage	Approx. 1 V	Approx. 500 V

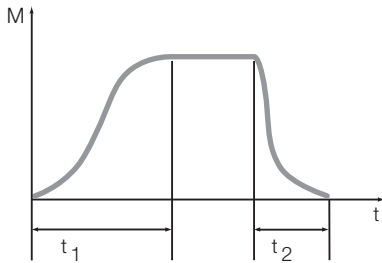**Note**: For DC switching, the switching contacts must be protected against damage from high voltage.

Fig.: Closing and opening response time

t_1 = Closing response time

t_2 = Opening response time

Reduction of braking torque

The rated braking torque is heavily influenced by the operating conditions inside the drum motor (operation in oil at high temperatures) and the ambient temperature. To calculate the holding torque limit on the drum shell, you need to multiply the rated torque of the brake by the gear ratio of the drum motor. For safety reasons, the calculated brake torque has to be at least 25 % higher than the needed load torque.

DL series

DM series

DP series

Application notes