



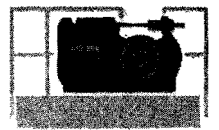
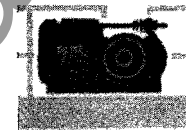
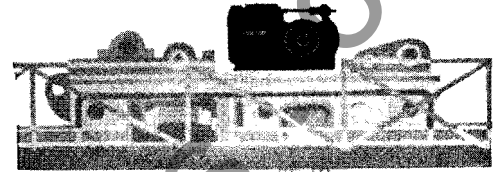
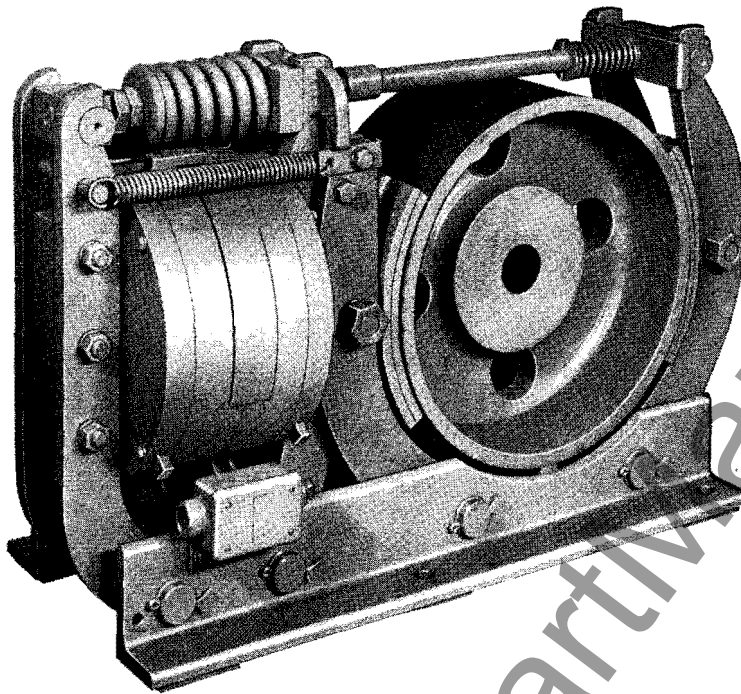
d-c magnetic brakes twin magnet • types TM and TMR

AISE NEMA standards • AISE standard no. 11
115, 230 and 550 volts NEMA pub. no. 1C 1-1959

descriptive
bulletin

5204

page 1



application

Type TM twin magnet d-c magnetic brakes are designed for heavy duty steel mill and crane service but may be used on any application requiring rapid stopping, such as on hoists, conveyors, screwdowns, and ore bridges. Brakes are usually floor mounted with wheel mounted on the shaft extension of the motor, but may be mounted directly on the motor frame by means of an optional brake adapter.

Type TMR static rectifier operated brakes are employed where smooth operation of a direct-current brake is desired from an alternating current supply.

advantages

small overall size: The twin magnet brake meets all AISE standard dimension requirements, yet has the smallest overall size in the industry. It will fit where **any other** shoe brake of equivalent capacity must be replaced.

trouble-free magnet coils: Encapsulation in high temperature resin provides longer coil life.

easy maintenance: Over-the-wheel tie-rod is a simple rugged linkage that is easily accessible, permits all adjustment from the top. Suspended loads, such as on cranes or hoists, can be held during coil replacement when required.

shoe replacement in one step: Easy shoe replacement is made possible by unitized tie-rod-and-spring assembly. Because the assembly removes as a unit, it makes the shoes accessible for lining replacement in one quick step.

December, 1964

supersedes descriptive bulletin 5204, pages 1-4, dated June, 1961
mailed to: E/1115/DB; D/784/DB; C/192/DB



construction

1

2

1 twin magnets

Mechanically independent solenoids can be removed without releasing the brake shoes. Westinghouse design of the twin magnet system results in a real safety feature—if the magnet coil should need replacement while the equipment is under load, for example, while a crane is in the middle of a lift, the magnet assembly can be removed, replaced, or repaired without releasing the braking action or disturbing the torque setting. In an emergency, short-time operation on a single coil is possible.

The resin-encapsulated magnet coil has long life built into it because it is sealed in high temperature resin protecting against dust, water, grease, oil, chemicals, and mechanical impact.

2 shoes

Self-aligning cast-iron brake shoes are lined with long-wearing, lining materials specially selected by Westinghouse research for use on magnetic shoe brakes. Heat and moisture have little effect on the linings—replacement is a quick, simple operation. The interchangeable shoes are single-pivot mounted for self-alignment upon installation. Once the shoes are aligned, the pivot bolts are tightened, holding the shoes in position to prevent the shoe tips from dragging.

3

4

3 tie-rod assembly

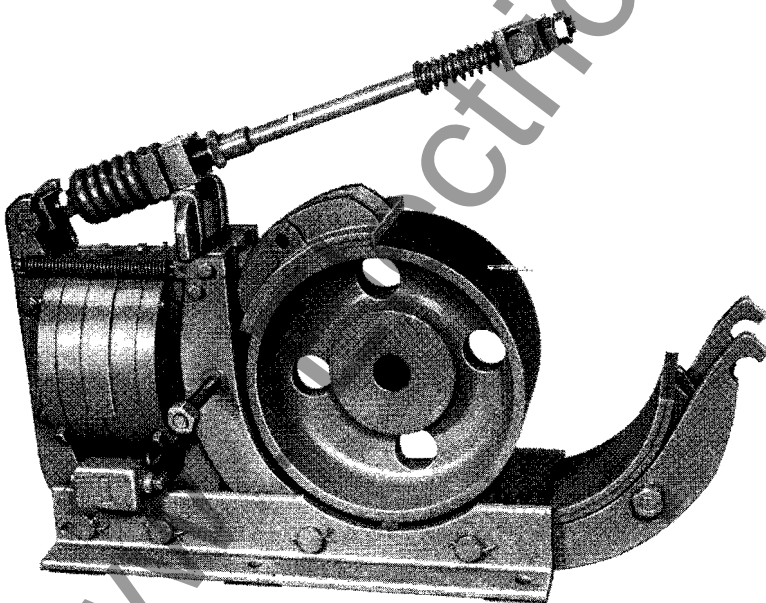
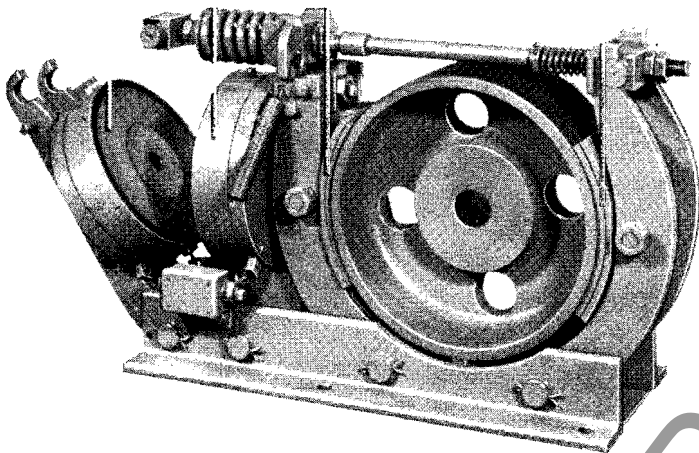
Unitized tie-rod and spring assembly facilitates shoe replacement. The assembly removes as a unit and makes the shoes accessible for lining replacement in one quick step.

Over-the-wheel tie-rod design results in only two easy adjustments from the top to compensate for shoe wear and spring compression.

The brake can be manually released.

4 wheels

High strength iron castings are used for brake wheels, designed for long wear and highest resistance to scoring. Ductile iron wheels are also available when specified. The wheel is easily removed by turning the tie-rod bushing to release the torque, then lifting the tie rod, releasing shoes which allows the wheel to be easily lifted out.



d-c magnetic brakes **twin magnet • types TM and TMR**

AISE NEMA standards
115, 230 and 550 volts

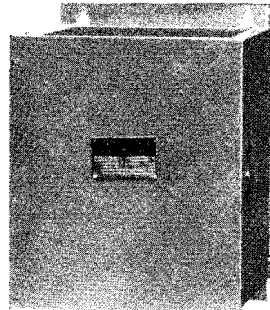
AISE standard no. 11
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descriptive
bulletin

5204

page 3

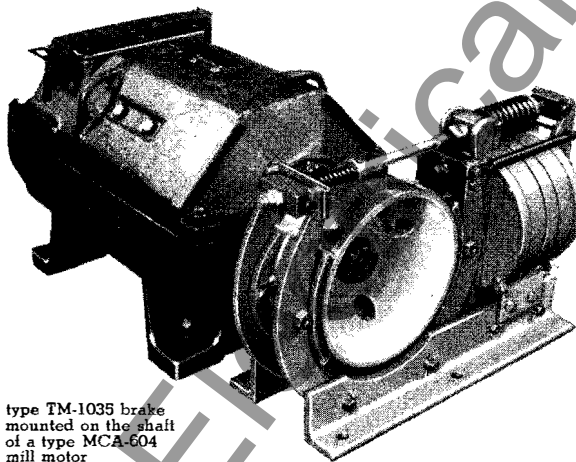
static rectifier for type TMR brakes



The rectifier d-c power supply is mounted separately in a NEMA A type I enclosure. This unit contains a rectifier assembly, primary transformer for 220/440 volts, and an auxiliary forcing relay in the brake coil circuit.

The voltage of the standard shunt coil is 64 volts for continuous rating, and 80 volts for intermittent rating. Coils are forced momentarily at 170 volts for fast response. The power supply automatically inserts resistance in series for low voltage holding and fast setting.

600 series mill motor and brake



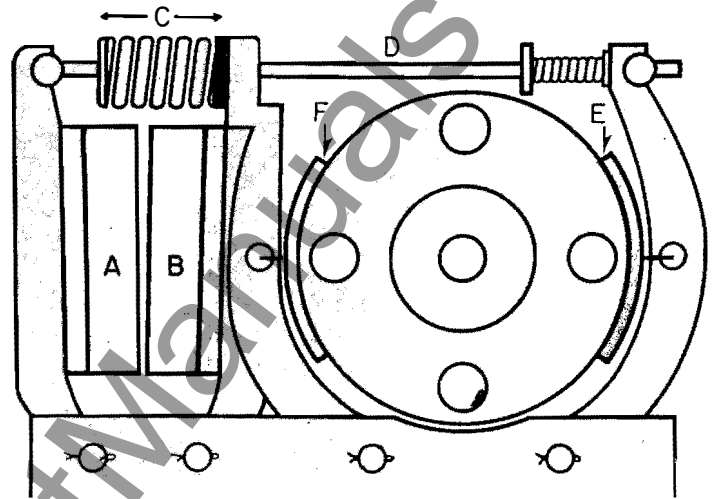
type TM-1035 brake
mounted on the shaft
of a type MCA-604
mill motor

weatherproof enclosures

For outdoor service or where excessive moisture is present, a ventilated drip-proof, weatherproof cover for the brake is recommended. A watertight-dusttight enclosure is also available.

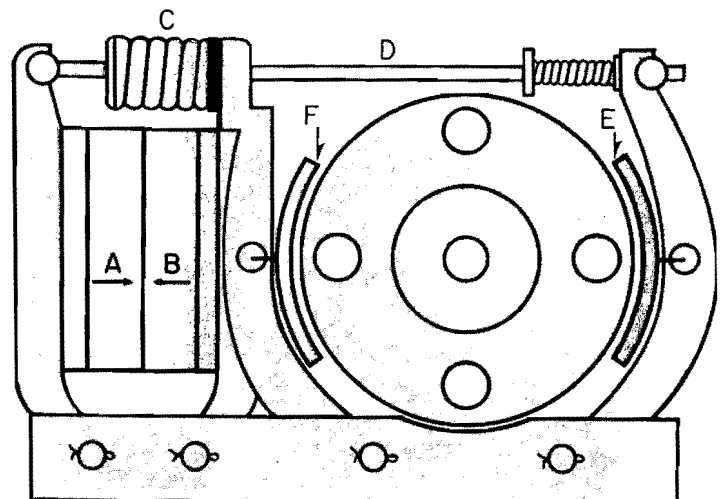
operation

brake set (de-energized)



When the twin magnets (A and B) become de-energized, spring C simultaneously moves tie rod D to the left and magnet B to the right, forcing both brake shoes (E and F) to apply brake torque to the wheel at the same time.

brake released (energized)



When the twin magnets (A and B) are energized, they pull together compressing spring C. This action simultaneously moves tie rod D to the right freeing shoe E. At the same instant, the motion of magnet B to the left frees shoe F.



d-c magnetic brakes
twin magnet • types TM and TMR

9 sizes available

dimensions

AISE standard torque ratings

for series wound motors and standard brakes

brake frame number	motor frame number	maximum torque in lbs ft					
		series motor		series brake		shunt brake	
		1/2 hr	1 hr	1/2 hr	1 hr	1 hr	8 hr
TM 43 ②	...	...	...	25	15	25	15
TM 63 ②	...	...	...	50	40	50	40
TM 83	2	46	29	100	65	100	75
	602	78	49	100	65	100	75
TM 1035	603	116	72	200	130	200	150
	604	166	121	200	130	200	150
TM 1355	606	337	228	550	365	550	400
	608	502	350	550	365	550	400
TM 1665	610	765	525	1000	650	1000	750
TM 1985	612	1220	830	2000	1300	2000	1500
	614	1780	1140	2000	1300	2000	1500
TM 2311	616	2625	1750	4000	2600	4000	3000
	618	3615	2560	4000	2600	4000	3000
TM 3014	620	5550	3900	9000	6000	9000	6750
	622	8460	5790	9000	6000	9000	6750
	624	11800	8210	9000	6000	9000	6750

① Brakes are also available for mill motor frames other than those shown above. See dimension sheet section 5240.

② There are no AISE or NEMA standards covering the TM 43 and TM 63 torque ratings. These torque ratings are Westinghouse standards.

to select the proper brake

1. Determine the time rating of the brake required by the application.
2. Determine the torque of the motor from rating sheets or from the formula:

$$\text{torque in lbs ft} = \frac{\text{rated hp} \times 5250}{\text{speed at full load in rpm}}$$

Select a brake of proper characteristics having at least the required torque rating on the heating cycle selected.

3. Check the braking capacity and the overall dimensions.

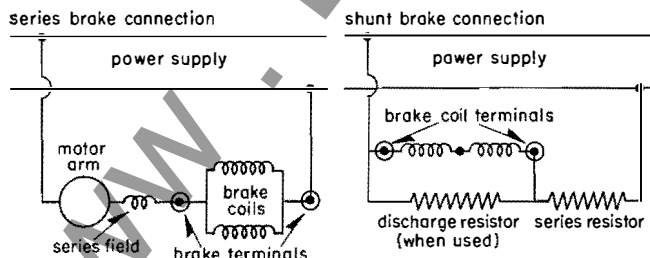
series brakes: When series wound brakes are applied to torque rating for 1 or 1/2 hr duty, to correspond with motor ratings, the brake will release on 40% of full load motor current and remain released on 10% of full load motor current.

When series wound brakes are applied to continuous duty motors and so rated, these brakes will release at 80% of full load motor currents and remain released on 20% or less.

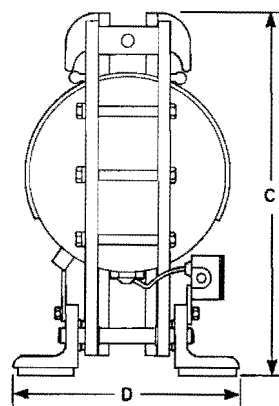
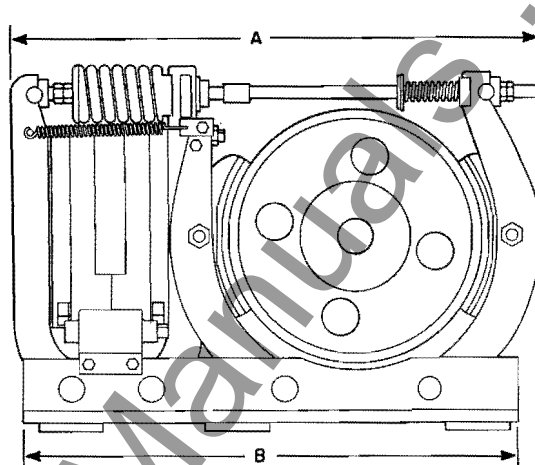
shunt brakes: Shunt wound brakes are designed for 1 or 8 hr as established by AISE standards. These brakes are supplied with class B insulation, and are designed to release at 80% of full line voltage and set when voltage drops to approximately 20% with coils at standard operating temperatures.

resistors for shunt wound brakes: A low voltage coil and a series resistor are used to provide fast operation on shunt wound brakes. When a magnetic controller is ordered on the same order with the brake, these resistors will be mounted on the panel, if so specified on the order.

schematic wiring diagram



Approximate only; do not use for construction purposes.



TM brake frame	dimensions: in inches					
	wheel		A	B	C	D
	dia	face				
43 ②	4 1/2	3 1/8	13 1/16	12 3/4	8 9/16	2
63 ②	6	3 1/8	16 5/8	15 5/8	9 13/16	2
83	8	3 1/4	21 1/8	19 1/4	13 1/8	7 1/2
1035	10	3 3/4	24	22 1/4	15 3/4	7 1/2
1355	13	5 3/4	29 3/4	26 1/4	19	11 7/16
1665	16	6 3/4	33	30 7/8	22 3/4	13 1/8
1985	19	8 3/4	41	36 13/16	25 5/8	15 11/16
2311	23	11 1/4	48 1/8	44 13/16	30 3/8	18 1/2
3014	30	14 1/2	65	60 1/8	40 1/4	22 3/4

note: Conduit box omitted on 1355 through 3014 series brake.

③ TM 43 and TM 63 are single magnet construction and differ slightly in appearance from the TM 83 through TM 3014. However, they offer essentially the same features and benefits as the larger frame sizes.

further information

prices: price list 5220

dimensions: dimension sheet 5240, pages 29 through 39

application: application data 5260

Westinghouse Electric Corporation

Motor and Gearing Division: Buffalo Plant • Buffalo, N. Y. 14240

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