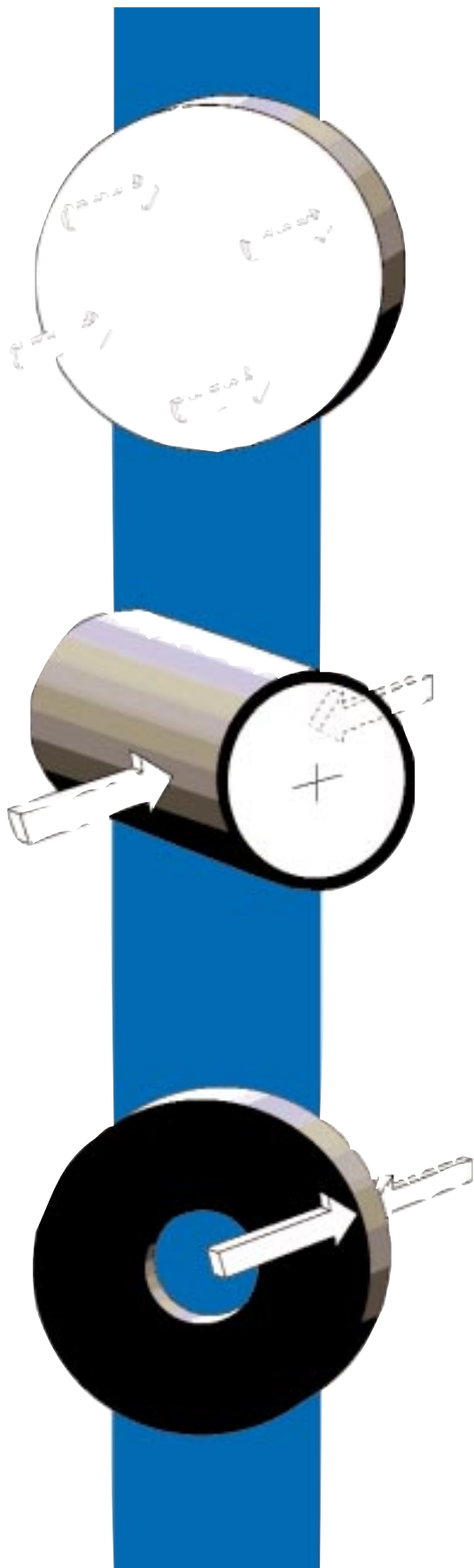




# Brake Standards for Mill Motors

**AISE**  
**Technical Report No. 11**

September 1997



**Documents**

Document Sharing Hub

## FOREWORD

This document was last published by the Association of Iron and Steel Engineers in September 1972 as Standard No. 11, Brake Standards for Mill Motors. That version was specifically for wheel and shoe brakes.

The 1997 edition of Technical Report No. 11 addresses the entire scope of friction brakes that are spring set and includes shoe, caliper disc and motor mounted plate brakes for crane applications. The standard will continue to expand in the future, and as such will strive to meet the industry's need to establish practical parameters for performance, dimensional interchangeability, maintenance practices and product selection for all mill motor applications.

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## 1.0 General

### 1.1 Scope

Technical Report No. 11 addresses the entire scope of friction brakes which are spring set, including shoe, caliper disc and motor mounted plate brakes.

### 1.2 Definitions

Caliper Disc Brakes — Use both sides of an exposed rotating disc as the friction surfaces. Friction pads press axially against the disc.

Electro-Hydraulic or Electro-Mechanical Actuators — Used with either AC or DC motors, with the brake release actuator arranged for connection across a motor or power source.

Heat Checking — Cracking of a friction surface due to a significant temperature gradient resulting from a rapid temperature rise.

Manual Release (NEMA) — A device by which the braking surfaces are manually disengaged without disturbing the torque adjustment

#### Mounting Arrangements (NEMA)

Type I, Floor-Mounted Horizontal Shaft Brake — A brake which is arranged for floor mounting with the wheel located on a shaft which is approximately parallel to the floor and with the brake actuator located at the side of the brake wheel.

Type I-A, Floor-Mounted Horizontal Shaft Brake — Similar to Type I, except that the brake actuator is located either above or below the brake wheel.

Type II, Wall-Mounted Horizontal Shaft Brake — A brake which is arranged for wall mounting with the wheel located on a shaft which is approximately parallel to the floor and to the wall and with the brake actuator located above or below the brake wheel.

Type III, Ceiling-Mounted Horizontal Shaft Brake — A brake which is arranged for ceiling mounting with the wheel located on a shaft which is approximately parallel to the floor and with the brake actuator located at the side of the brake wheel.

Type IV, Wall-Mounted Vertical Shaft Brake — A brake which is arranged for wall mounting with the wheel located on a shaft which is approximately perpendicular to the floor and with the brake actuator located at the side of the brake wheel.

Motor Mounted Plate Brakes — Are enclosed with full circular contact between friction and brake plates.

Owner's Information Sheet (OIS) — Found in AISE Technical Report No. 6, Specification for

Electric Overhead Traveling Cranes for Steel Mill Service.

Parking Brake — A brake that is set after the crane has come to a stop. Primarily used on an outdoor crane to resist movement due to wind.

Release — A term used to describe brake disengagement.

Self Adjusting — A brake which incorporates a mechanism which automatically compensates for lining wear by maintaining a predetermined position relationship between the braking surfaces.

Series Coil Actuated Brakes — Used with DC series motors. The brake release coil is connected in series with the motor power circuit.

Service Brake — A brake used to bring a crane to a complete stop, either with or without the assistance of the motor controls.

Set — A term used to describe brake engagement.

Shoe Brakes — Use the cylindrical outer diameter of the brake wheel as the friction surface. Shoe brakes engage the brake wheel by moving radially inward.

Shunt Coil Actuated Brakes — Used with either DC or AC motors and with the brake release coil arranged for connection across a motor or power source.

Thermal Absorption — Describes the amount of energy that a disc or wheel can absorb while maintaining a steady state temperature at a rated speed and ambient temperature.

Thermal Capacity — Describes the amount of energy that a disc, wheel or plate can absorb, radiate and convect over a given period of time, at a rated speed and known ambient temperature while maintaining a steady state temperature.

## 2.0 Ratings and Dimensions

### 2.1

It is the intent of this standard to establish torque ratings and dimensions for shoe and caliper disc brakes when applied to AISE AC and DC mill motors for the purpose of interchangeability.

### 2.2

The brake and motor combinations listed herein cover the range from 50 to 150% of the 30 minute and 60 minute TENV motor torque ratings. Brake torque ratings will be in accordance with those given below. Ratings are given in Table 1 for 1/2 hour series and 1 hour shunt, 1 hour series and 8 hour shunt coils.