

BRAKE SELECTION GUIDE

How to choose a Dings brake for your application

BR-0005
Eff 9/15

1. DETERMINE TORQUE REQUIREMENT

There are two types of situations in which a brake may be used: **Non-Overhauling** load and **Overhauling** load. In the case of a non-overhauling load, gravitational forces do not change the energy in the system and the internal friction of the system is sufficient to hold the load, i.e. an external means is not required to maintain system stability after it has stopped. Examples of this situation would include grinders, horizontal conveyors, etc. To calculate the torque required in a non-overhauling load situation, refer to the formula below. For overhauling loads, refer to Technical Data in the brake catalog, publication BK4700.

Service factor of application (SF)

- 1.0 SF - Minimum service factor for non-critical applications or soft stop (longer stop time)
- 1.4 SF - Typical service factor used for most standard applications
- 2.0 SF - Use when extra torque is required to ensure adequate holding.
 - These brakes would also have a faster stop time and thus put more shock into the system.

To calculate torque for a non-overhauling application:

$$T_S = \frac{5252 \times P}{N} \times SF$$

Where,	
T_S	= Static torque, lb-ft
P	= Motor horsepower, hp
N	= Motor full load speed, rpm
SF	= Service Factor
5252	= Constant

2. DETERMINE BRAKE MOUNTING

Attached to Motor

- a. Attach "end mount" brake - mounted to non-drive end of motor
 - Determine NEMA frame size required
 - Determine motor shaft diameter on non-drive end
 - Determine TEFC or TENV application
- b. Attach double C-face coupler brake to drive end of motor, to couple to a C-face reducer
 - Determine NEMA frame size required
 - Determine motor shaft diameter on drive end and gear reducer quill bore diameter

Self-Standing Brake

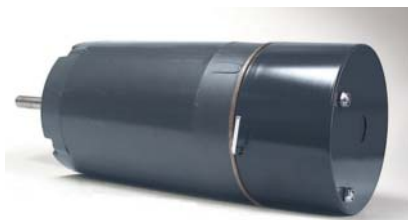
- a. Brake is mounted to motor using a foot mounting bracket if there is not a C-face available
- b. Foot mounted, double shafted brake



End Mount Brake mounted to TEFC motor



Double C-Face Coupler



End Mount Brake mounted to TENV motor



Double Shafted Foot Mounted



Brake with Optional Foot Mounting Bracket

3. DETERMINE ENCLOSURE TYPE

NEMA 2 / IP41

Intended for general purpose indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.

NEMA 4 / IP56

Intended for general purpose indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, & hose directed water; to be undamaged by the formation of ice on the enclosure.

NEMA 4X / IP56 with BISSC (Baking Industry Sanitation Standards Committee) Certification

Type 4X enclosures are intended for general purpose indoor and outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, and hose-directed water; and to be undamaged by the formation of ice on the enclosure.

NEMA 4 / IP56 Marine, Maritime, Navy - for Harsh Environments:

Maritime Brakes - Designed for shipboard & dockside applications that are exposed to water and seawater.

Marine Brakes - Designed for shipboard & Coast Guard applications that are exposed to seawater. Compliant with IEEE 45 (IEEE 45 Nameplate must be requested).

Navy Brakes - Built in accordance with MIL-B-16392 specifications.

HAZARDOUS LOCATION

Dings hazardous location brakes are UL listed for use in Division 1, Class I, Groups C & D and Division 1, Class II, Groups E, F & G locations. Refer to:

<http://www.ul.com/global/eng/pages/offerings/services/hazardous-locations/techsummary/>

for more information regarding hazardous locations.

4. DETERMINE MOUNTING POSITION

Horizontal or Vertical Over or Vertical Under Motor

5. DETERMINE VOLTAGE REQUIREMENTS

Common/Standard Voltages:

115/230VAC-1Ph-60Hz

575VAC-3Ph-60Hz

230/460VAC-3Ph-60Hz

Other voltages available

6. SPECIAL APPLICATIONS - BRAKE OPTIONS

Options can be added to the standard brakes to meet your application requirements. The most common options are listed here; other options are available. It is recommended that special or demanding applications be discussed with a Dings representative to ensure that all aspects of the application are considered.

Requirements	Suggested Options	Description
Special mounting	Motor frame adaptor	Adapting to larger or smaller motor frame
	Foot mounting bracket	Floor mounting bracket if no c face is available
	Vertical mounting above or below motor	Motor shaft is vertical, brake mounts above or below motor
Internal corrosion resistance	Internal space heater	Helps dissipate moisture due to cold or humid conditions
	Stainless steel stationary disc	Provides extra corrosion resistance
	External breather	Prevents ingress of moisture in humid conditions
Sea/salt water dockside and ship applications	Marine finish and plating	Military paint and special plating for protection against severe weather conditions
	Harsh environment	Special paint and plating for severe weather conditions; intended for non-military offshore applications
Heavy duty high cycle/shock applications	Heavy duty friction discs and hardened hub	Metal disc center provides extra tooth support
	High tensile studs	Studs are made from high strength steel
High inertia loads	Heavy duty friction discs and hardened hub	Metal disc center provides extra tooth support
High humidity	Fungal protection	Anti-fungal coating on electrical coils
	Internal space heater	Special resistor helps dissipate moisture in brakes
	External breather	Prevents ingress of moisture in humid conditions
High temperature	Class "H" insulation	High temperature coil wire insulation for extra thermal protection
Tach / Encoder Mounting	Tach machining	Machined face on brake cover allows mounting of tachometer
	Through shaft	Hole in brake cover allows motor shaft to continue through the brake enclosure
	"Smart" brake	Internally mounted encoder provides feedback on motor positioning and speed
Brake monitoring	Manual release indicator switch	Indicates if brake is manually released
	Electrical release indicator switch	Indicates if brake is electrically released
	Wear indicator	Indicates when brake requires air gap adjustment