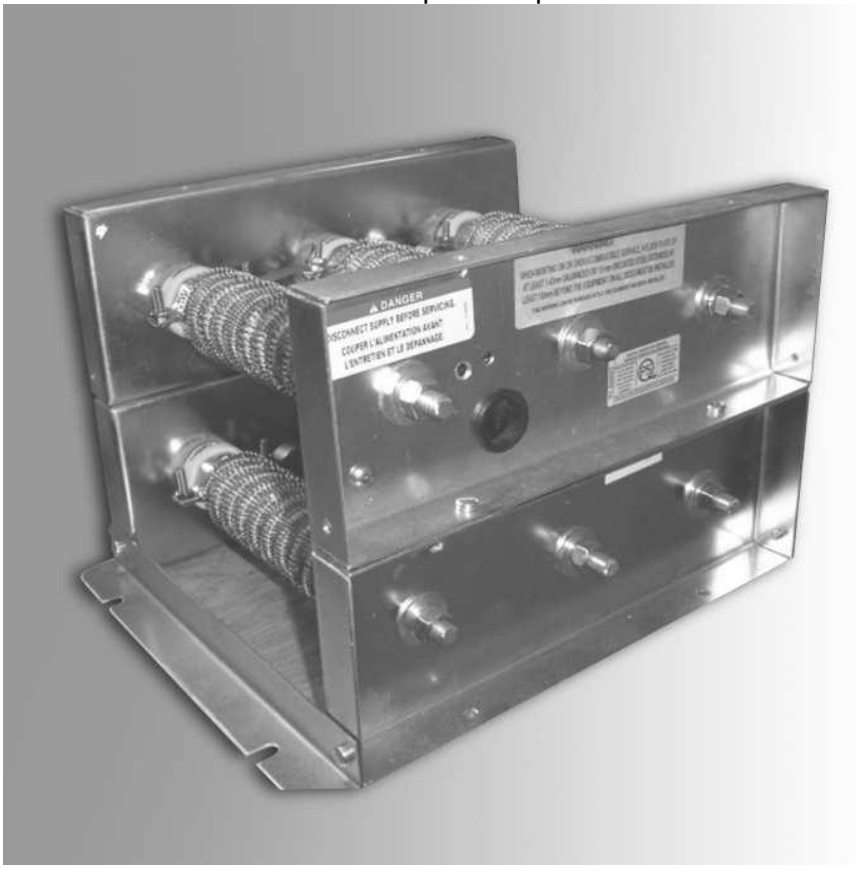
Dynamic Braking Resistors

The purpose of a dynamic braking resistor is to slow down or to quickly stop a motor by draining excess voltage and keeping it within safe tolerances. This can help to lower the wear and tear of friction braking components, enable faster braking and eliminate the risk of a runaway due to overheating.

When removed from a power supply, most DC motors will act as electrical generators due to their permanent magnets. If a resistor is then connected as a load,the energy produced by the rotational inertia of the DC motor will be disipated by the resistor slowing down the motor. While AC motors do not have permanent magnets in their rotors, they do have an induced magnetic field created by the rotating magnetic field in the stator. The energy lost in the stator will backfeed into the variable frequency drive (VFD), which will rise the voltage on the DC bus in the VFD. The greater the difference between the output of the VFD and the rotor's actual speed, the more energy will be fed into the VFD. If the VFD tries to brake the motor too quickly, the voltage will rise too much and damage the VFD. Most VFDs will shut down as a safety feature before this happens, and the motor will coast to a stop by friction alone. With appropiately sized braking resistors the motor can be stopped much more quickly withouth raising the voltage to unsafe levels.

Braking resistors with smaller ohmic values will help motors stop faster but will also dissipate more heat. This will require the use of more mass in the resistor or a heatsink to keep its temperature within a safe limit.



Some of the advantages obtained by the use of Dynamic Braking Resistors are:

- Faster braking of DC and AC motors.
- Lower wear and tear of friction braking components.
- Keep motor voltages within safe levels.
- Eliminate risk of a runaway due to overheated friction brakes in some motors.
- Reduce wasted time during braking.
- Increase life of the equipment.
- Improved service reliability.

Features:

- Very wide range of power and resistance ratings.
- Galvanized Steel or Satin Coated Steel enclosures.
- Optional stainless steel or anodized aluminum frame and covers for corrosive atmospheres.
- Stainless steel nuts and bolts.
- Stainless Steel and Silver plated connectors and internal connections for positive contact and reduced oxidation.
- Optional Indoor-outdoor service with removable covers and ventilated bottom screen for protection against the entrance of rodents, birds or accidental contact by personnel.
- Continuous wirewound, edgewound and stamped corrosion resistant elements.
- Designed to absorb thermal expansions and contractions.
- High-temperature, ceramic insulators.
- Optional normally open or normally closed thermal switches.
- Optional NEMA 4 (completely enclosed) enclosures.
- Optional junction box with terminal block.
- Rating, design, manufacturing and testing according to IEEE, NEMA and CSA standards.
- 24 month guarantee.

Our models are named as follows:

DBRpower-resistance where *power* is the number of kilowatts that can be continuously dissipated by the resistor without exceeding the temperature limits set by the standards and *resistance* is the required ohmic value for the resistor., i.e. DBR20-4.5 (20 KW continuous and 4.5 ohms)

Notes:

For overhouling load dynamic braking resistors to calculate the equivalent continuous watts for a given motor multiply the motor HP by 746 to obtain the motor wattage, then multiply the result by the duty cycle (i.e. 0.2 for 20% duty cycle).

For deceleration dynamic braking resistors divide the previous result by two.

The following suffix codes can be added to the model name to denote special features:

/NC: Normally closed thermal switch
/NO: Normally open thermal switch
/SS: Stainless steel enclosure
/AL: Aluminum enclosure
/N3R: NEMA3R (outdoor use) enclosure
/N4: NEMA4 completely closed enclosure
/Am: where A is the altitude when higher than 2000 meters above sea level (i.e. 3000m)