Motor Control Resistors

MCR

APPLICATION

The purpose of a motor control resistor is to control the speed and torque of AC and DC motors. The resistors can adjust the speed and torque by limiting the in-rush current to predetermined values. In wound rotor motors the resistors are wye connected to the rotor; In squirrel cage motors the resistors are connected in the line with the motor leads; In DC series wound motors the resistors are connected in line with the armature and in Star-Delta motors the resistors are connected in the windings.

The additional resistance is increased or decreased in steps to prespecified levels through the use of contactors that short sections of the resistor in sequence.

The most important parameters in the design of a motor control resistor are the ohmic value, the current capacity and the duty cycle required. For low ohmic values and high currents stamped steel welded grids are used most of the time; for high ohmic values and low currents wirewound resistors and for intermediate values edgewound ribbon resistors.

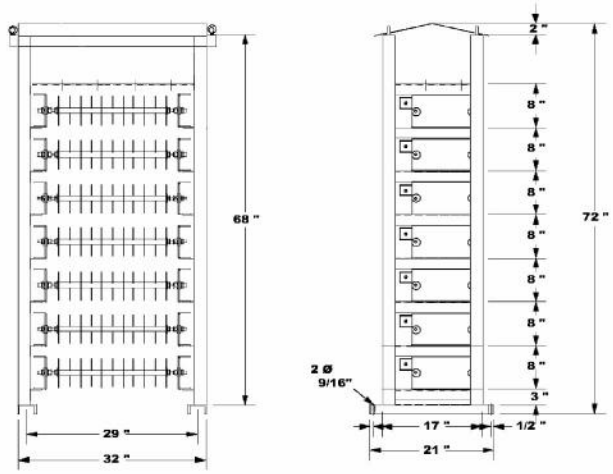
The total ohmic value of the resistor is divided into several steps to allow for a smooth acceleration of the load or to provide multiple speeds as required by the particular application.

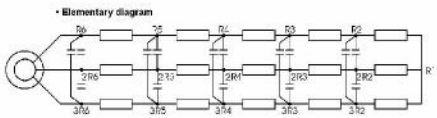
In general ther will always be one more speed level than resistor steps because the maximum speed is achieved with all the steps cut out. An exception ocurrs when a permanent slip resistor is required to reduce internal heating of the motor.

To enable manufacturers to test resistors under the same conditions NEMA has set up resistor classes based on duty and type of application.

ADVANTAGES

- Limit torque and speed of wound rotor motors to safe levels.
- Soft-starting of AC squirrel cage motors.
- Keep motor voltages within safe levels.
- Reduce overheating.
- Reduce wasted time during braking.
- Increase life of the equipment.
- Improved service reliability.





MegaResistors

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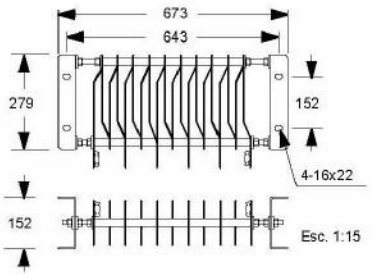
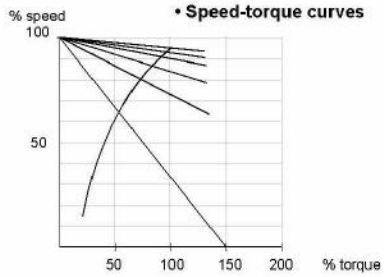
FEATURES

- Very wide range of power and resistance ratings.
- Optional stainless steel and anodized aluminum frame and covers for corrosive atmospheres.
- Corrosion resistant hardware.
- Silver plated connectors and internal connections for positive contact and reduced oxidation.
- Corrosion resistant elements.
- Double insulation to ground.
- Special mounting fixtures to absorb thermal expansions and contractions.
- High-temperature, humidity-resistant insulators.
- Optional NEMA 3R (outdoor) and NEMA 4 (completely enclosed) enclosures .
- Rating, design, manufacturing and testing according to ANSI/IEEE-32 reaff. 1991 Standards.
- 24 month guarantee.

• Frame dimensions



• Speed-torque curves



MODEL AND SUFFIX CODES

Models:

For AC Wound Rotor Induction Motors:

MCR-AW-*type-voltage-current-NEMA-HP-steps* where ***type*** is: H for hoist or T for travel; voltage and current are the motor's secundary voltage and current; NEMA is the NEMA class; HP is the motor's horsepower; and steps is the number of speeds required minus one.

For AC Squirrel Cage Motors:

MCR-AS-*voltage-current-HP-steps* where voltage and current are the motor's primary voltage and current; HP is the motor's horsepower and steps is the number of speeds required minus one.

For DC Series Wound Motors:

MCR-DW-*type-voltage-current-NEMA-HP-steps* where ***type*** is: H for hoist or T for travel; voltage and current are the motor's secundary voltage and current; NEMA is the NEMA class; HP is the motor's horsepower and steps is the number of speeds required minus one.

For Star (Wye)-Delta Starting Motors:

MCR-YD-*voltage-current-HP* where voltage and current are the line's voltage and current and HP is the motor's horsepower.

Suffix codes:

/SS: Stainless steel enclosure
/AL: Aluminum enclosure
/N3R: NEMA3R (outdoor use) enclosure
/N4: NEMA4 completely closed enclosure
/HA: High altitude

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