

This is
Crompton Controls

**Installation and Maintenance
Instructions**

**S10 & Smooth-BRAKE
DC Injection Brake Modules**



DC Injection Brake Module Installation and Maintenance Document S10 and Smooth-BRAKE

Warranty

All goods are guaranteed for one year from the date of purchase. This does not affect the statutory rights of the user.

Safety warning Important Safety Information

All electrical equipment for operating on low voltages contain devices which are capable of causing serious or fatal injuries.

Any person involved in installation or maintenance of this equipment should be fully competent to conduct the work.

Such persons should be familiar with the Health and Safety at Work Act, Electricity at Work Regulations and have a working knowledge of the IEE Wiring Regulations.

**If in doubt please contact,
Crompton Controls Ltd Tel: +44 (0)1924 368 251**

General Description of the equipment

Crompton Controls DC injection Braking starters are suitable for controlled stopping of induction motors.

When the machine starter is de energised the brake timer senses the break in supply and applies a DC voltage to the motor windings to provide a controlled braking force for a timed duration.

NOTE:

DC injection braking is a PUWER 98 approved method of stopping AC electric motors and requires the mains supply to be present to operate correctly.

Induction motors

Induction motors can be braked to standstill, by injecting a DC current into the winding, this creates a stationary field and any shaft rotation will produce a braking torque.

Braking from full speed an induction motor behaves as a twice speed generator, the generated currents help to stop the motor and full load braking torque requires a DC current of approx 2 to 2.5 times motor full load current. The DC is produced using a thyristor with controlled half rectification and a diode is connected across the motor to rectify the generated current, without the diode the motor would not brake. The externally applied dc current will rise as the machine brakes to a halt. Motor noise is normal when using phase angle control due to the nature of the unsmoothed dc waveform.

The DC current produces magnetic flux in the motor air gap, current can increase but there is a saturation effect that means flux and braking torque will increase with current up to saturation after which high currents will not produce much extra braking.

Most braking systems provide a voltage to apply to the windings, at standstill the current will be determined by ohms law, $\text{current} = \text{voltage} / \text{winding resistance}$.

Part Numbers

BR011 S10/400

BR016 S10/240

BR021 S10/110

BR025 Smooth-Brake

BR026 Smooth-Brake

Rated operational voltages

400 volt 50Hz 25 Amp brake module

240 volt 50Hz 25 Amp brake module

110 volt 50Hz 25 Amp brake module

400 volt 50Hz 60 Amp brake assembly

400 volt 50Hz 90 Amp brake assembly

BR024 Smooth-Brake Control Module