



GROUP

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RDM ENGINEERING

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Operating and Installation Instructions

MODELS SM SERIES
(Safety Applications).

SM 175	For Motors	0-1.75hp	(-1.3kw)
SM 550	For Motors	1.75-5.5hp	(4kw)
SM1000	For Motors	5.5hp-10hp	(7.5kw)
SM1500	For Motors	10hp-15hp	(11kw)
SM2000	For Motors	15hp-20hp	(15kw)
SM3000	For Motors	20hp-30hp	(22kw)

Larger models see separate sheet.



DRIVLOC D.C. INJECTION BRAKING SYSTEMS
FOR A.C. MOTORS.

CAUTION!!
LIVE PARTS INSIDE. INSTALLATION
MUST ONLY BE CARRIED OUT BY A
QUALIFIED ELECTRICIAN.
READ THIS MANUAL FULLY BEFORE
COMMENCING WORK.

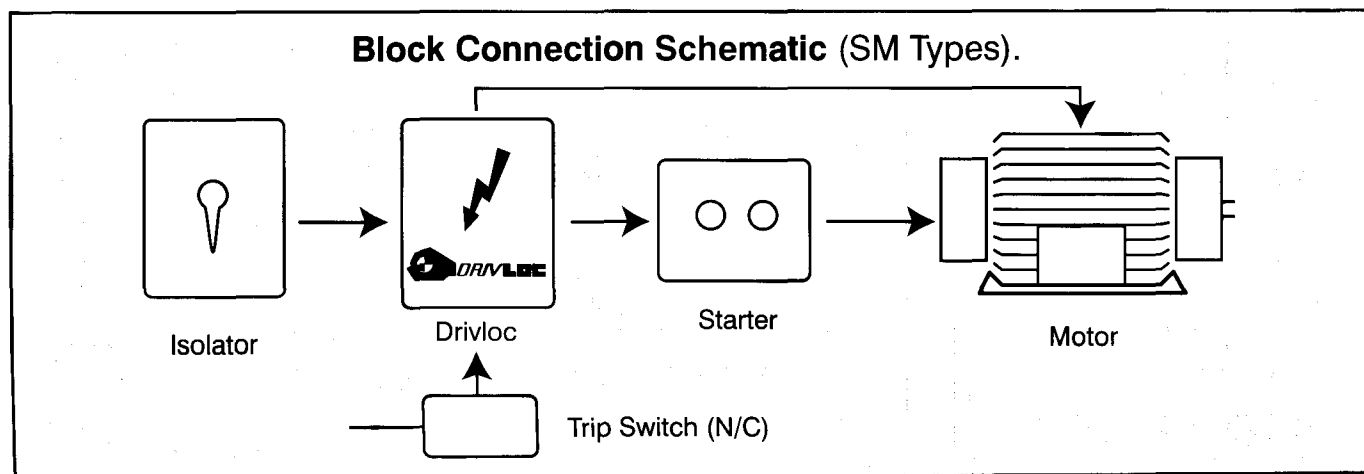
Principle of Operation

Drivloc D.C. Injection Braking Systems are designed to provide rapid reliable braking of A.C. electric motors. On activation (usually by means of a trip switch), a contactor (marked 'A') disconnects the A.C. feed to the motor starter and simultaneously a contactor (marked B) supplies a precisely controlled D.C. voltage to the motor. This D.C. current creates a powerful braking force. The D.C. voltage is electronically produced by a Thyristor/Diode combination and can be accurately adjusted for duration and potential.

Introduction and Description

The Drivloc Unit is built onto a steel back plate, fitted into an IP55 enclosure. The enclosure has fixing holes in the rear, these are exposed for fitting by removing the steel back plate.

The enclosure should be mounted in such a position that easy cable entry, via flexible or solid conduits can be made to both the isolator and starter (or control panel) of the machine. Suitable cable entries may be cut into the base of the enclosure – *with the back plate removed.*



Wiring Instructions

NOTE: To comply with H.S.E. requirements (and to prevent accidental starting of the machine) brakes should be wired in conjunction with a No Volt Release type starter.

CAUTION!! SWITCH OFF MAIN MACHINE ISOLATOR.

Disconnect the output wires from the (existing) isolator to the machine starter.

Reconnect the output wires from the (existing) isolator directly onto the terminals marked 1, 3, 5 on contactor 'A' in the Drivloc panel.

Connect from the terminals marked 2, 4, 6 on contactor 'A' in the Drivloc panel to input terminals (L1, L2, L3) on the machine starter.

Direct-on-line Motors

Connect from the terminals marked 2, 6 on contactor 'B' in the Drivloc panel to any two motor input terminals.

Star-Delta Motors

Remove the link (where fitted) between terminals 1 and 4 on contactor 'B' in the Drivloc panel. Connect from terminals marked 4 and 6 on contactor 'B' to motor terminals A1, B1. Connect from terminals marked 1 and 2 on contactor 'B' to motor terminals A2, B2.

NOTE: Motor terminal markings may vary. Refer to drawing.

Connect spare normally closed volt free contact on Delta contactor in series with Drivloc contactor 'B' coil circuit.

NOTE: Motor terminal markings may vary. Refer to drawing.

All units without built in starters. (For other types see separate sheets).

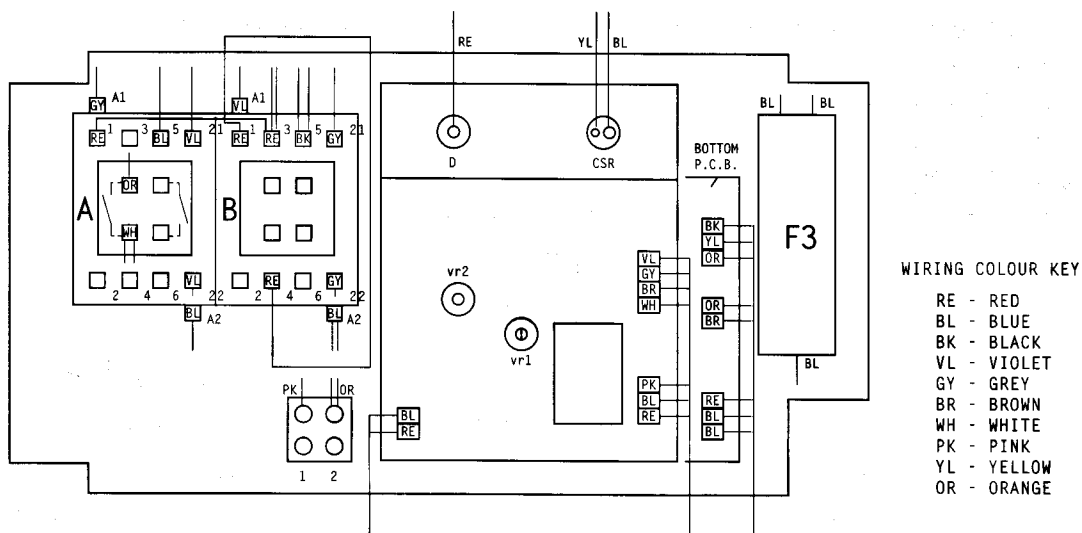
Connect the spare normally open auxiliary contact on contactor 'A' in series with starter stop circuit.

Connect a normally closed trip switch (such as the Drivloc 360° probe) to the terminal block marked 1, 2 in the Drivloc panel.

2HP Motors Upwards

Where possible to provide additional protection for the Drivloc and the machine starter, connect the spare normally open auxiliary contact on contactor 'A' marked in the Drivloc panel in series with the machine starter stop circuit.

Typical Internal Layout (SM Series)



NOTE: ALL A.C. and D.C. power cables should be suitably sized to carry full load motor current.

Setting Up and Commissioning Procedure

CAUTION!!

ALL BRAKE UNITS MUST BE SET UP IN ACCORDANCE WITH THESE PROCEDURES TO ENSURE MAXIMUM EFFICIENCY.

WARNING!!

LIVE PARTS WITHIN THE ENCLOSURE. TAKE EXTREME CARE NOT TO TOUCH ANY DISCRETE COMPONENTS OR THE THYRISTOR HEAT SINK WHEN CARRYING OUT ADJUSTMENTS WITH THE LID REMOVED.

Switch on the Main Isolator

On receipt of your Drivloc Brake Unit the D.C. voltage will be set at its lowest working value (approximately 60 volts D.C.) This voltage must be checked (and adjusted if necessary) by connecting a D.C. voltmeter or multimeter set to D.C. volts onto terminals marked 3 and 5 on contactor 'B' in the Drivloc panel. To adjust the voltage turn potentiometer VR2, this is accessed via the hole in the upper circuit board with a terminal screwdriver (clockwise to increase the voltage).

On initial switch on the D.C. sensing fail safe relay (the small relay on the lower circuit board) should have energised (a 'click' should be heard) if it did not, increase the D.C. voltage until it energises and then reduce the voltage down to 60 volts.

Once this fail safe relay has energised the unit can be checked for operation by firstly pressing the reset button on the Drivloc lid. (Contactor 'A' should energise) and secondly by starting the machine. Operating the trip switch should now activate the brake.

Adjustments

If the braking power is insufficient then the D.C. voltage at terminals 3 and 5 on contactor 'B' should be increased **in steps of 10 volts** until adequate braking performance is achieved. The duration of injection time, adjustable by turning potentiometer VR1 on the upper circuit board with a terminal screwdriver must be adjusted in conjunction with the voltage adjustments to switch off the D.C. injection (contactor 'B') approximately $\frac{1}{2}$ to 1 second after the motor has come to rest.

NOTE: It may be helpful to further increase the injection time during the setting up procedure.

The D.C. injection current generally required to effectively stop a motor is around 2-3 times its full load A.C. rating.

Operating Instructions

Switch on machine isolator, then press the reset button on the front of the brake enclosure. The machine may now be operated in the normal way.

To activate the brake unit (emergency condition) activate the trip switch, the brake unit will now bring the machine rapidly to rest.

Following the braking operation the machine starter de-energised and the D.C. supply is disconnected from the motor. The machine may then be re-started by first pressing the reset button on the brake enclosure and then pressing the machine start button.

NOTE: The unit is fail safe, should a fault occur within the brake (or the D.C. voltage setting be too low - the machine will not start.

ISOLATE THE BRAKE UNIT WHEN THE MACHINE IS NOT IN USE. ALWAYS ALLOW A REASONABLE COOLING TIME BETWEEN EACH OPERATION OF THE D.C. BRAKE.

