

A375/A724/A750/A751 – PLUGGING

1. What happens if the tram motor is abruptly reversed (plugged) after running at full speed?
2. **Refer to Fig. 1**

Suppose that Q1P and SCR2 were ON to cause armature terminal A1 to be positive with respect to A2.

To plug in the opposite direction, Q1P/SCR2 are switched OFF, and SCR1 and Q1N are switched ON. Because the armature is still rotating in the previous direction, a very small amount of field current will cause the armature voltage to start increasing, with A1 positive with respect to A2.

Armature plugging current (I_p), as measured by the DCCT, far in excess of demanded current will start to flow from A1, through diode of Q1P, through SCR1 and back to A2. Negative torque is moderate because field current is small. This will cause Q1N to remain OFF until the armature current has dissipated. When the motor is stopped, Q1N will turn ON again, causing a gentle ramp-up (Note: during plugging, the total armature voltage is about 2 volts-volt drops across SCR1 and Q1P diode)

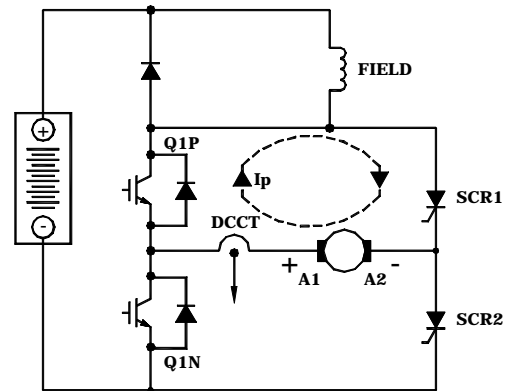


Fig. 1 – Plugging Current