



"The Right Control
for your Application"

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SUBJECT: INHIBIT™ AND AUTO INHIBIT OPERATION FOR DC DRIVES®

Inhibit™: The term Inhibit™ was coined by KB Electronics, Inc. several years ago and has since been copied by several competitors. (Since inhibit was not accepted as a registered trademark by the US Patent Office, we have no protection against plagiarism.) The Inhibit™ function is defined as a circuit that will electronically extinguish the output of a DC Drive by closing a set of contacts. The Inhibit™ acts as an electronic switch since the full output of a DC Drive (which can be as high as 16 Amps) can be turned on and off by switching less than one-tenth (1/10) of an Amp. When the Inhibit™ circuit is activated the output voltage goes to zero in about 4 milliseconds. (Note: If the IR Comp is turned up too far, the turnoff time will be increased. In some cases, if the IR Comp is at full CW position the Inhibit™ will not function.) When the Inhibit™ is released the DC Drive returns to the preset voltage over the time period set by the Acceleration trimpot. This produces a smooth, controlled start.

One application where Inhibit™ is useful is when a motor is to be started and stopped using a low power switch or relay. A more important application for Inhibit™ is armature switching. When an armature is disconnected and reconnected to a DC Drive, extremely high current surges develop which can cause premature failure of both motor and DC Drive. (High surge currents will damage the DC Drive's power SCR's, diodes the motor's brushes and commutator. Also, when PM motors are subjected to high surge currents, the field magnets can become demagnetized). Therefore, it is very desirable to utilize the Inhibit™ for the Run/Brake and Forward/Reverse functions. The Inhibit can be activated using a transistor connected directly to terminals I1 and I2.

Auto Inhibit®: Auto Inhibit® was developed by KB and is registered with the US Patent Office. Its function is to automatically Inhibit™ the DC Drive each time the AC line is disconnected without having to physically short the I1 and I2 terminals.

The rationale behind Auto Inhibit® is as follows. When a DC Drive is disconnected from the AC power, it takes time for the power supply and acceleration capacitor to discharge. If the DC Drive is reconnected to the AC line before complete discharge of this circuit takes place, full power is instantly applied to the motor. This causes high surge currents that can damage the DC Drive's power bridge and the motor's commutator and magnets (PM motors only). The Auto Inhibit® circuit discharges the power supply and acceleration capacitors instantly each time the AC line is disconnected. This provides a smooth, controlled start each time the DC Drive is restarted. Auto Inhibit® is accomplished with a sensing circuit, which establishes the presence of the AC line, and a switching circuit that is capable of discharging the capacitors. A DC Drive without Auto Inhibit® becomes highly susceptible to failure due to rapid AC line cycling and momentary power losses.

Sincerely,

Alan Bueller
Vice President Sales