

Date: Monday, August 07, 2000
To: CEC Customer
From: Wayne Locker
Subject: CEMF Faults and Limit Protection for the DSD 412
Futura Brake Parameter Settings
Bulletin: No. 4

Item No. 1

The DSD 412 software labeled **A205_01.abs** uses a different method of calculating CEMF than the older versions of software. Magnetek recommends that the AC input voltage (transformer secondary) to the drive be equal to or higher than, the Full Load DC armature voltage. You should be able to achieve this ratio by re-connecting the taps on the isolation transformer for the recommended AC voltage level (afterwards remember to reset Function # 9, Nom AC Voltage, to the higher setting). If for some reason you cannot reach this voltage (leave it as high as you can), you will have to inspect the following motor field current settings very closely.

1. **Function # 49, Weak Field Current:** This value should be set to achieve rated DC armature voltage at top speed.
2. **Function # 50, Rated Field Current:** This value should be set as per nameplate data but should not be in the saturation range of the field.
3. **Function # 56 and 57, Field Strength Speed and Field Weaken Speed,** respectively. These functions set the speed at which the rated field will weaken to the weak field value (acceleration) and the speed at which the weak field value will strengthen to the rated field value (deceleration). **If the field weakens too late during acceleration or strengthens too early during deceleration the DC armature volts could rise above the software threshold of the CEMF limit and cause a DSD 412 Fault # 407.** The 407 fault will clamp the speed reference to a value that will protect the DSD 412 drive, but the Swift-5000 or Swift Futura controller will generate a # 10 Error (Velocity Error, VEE) causing the car to shut down. The 407 error annunciates the CEMF limit condition, which clamps the speed and at times might introduce some bumps if the drive is going in and out of CEMF limit quickly.

Item No.2

The Futura Brake Board could intermittently fail to pick the brake (by not providing a DC output) if certain parameters are improperly set. The parameters and recommended settings are as follows:

1. **Brake Maximum Voltage, BMV:** This parameter is typically set for 145 or 290 volts AC which is representative of the secondary output of the T2 transformer. **This parameter should be set to the measured voltage level at the output of the T2 transformer.**

Brake Lift Voltage and Brake Re-level Voltage, BLV and BRV respectively: These parameters set the DC voltage level for the brake to lift normally (BLV) and during a re-level (BRV). They must always be set lower than BMV by at least a factor of 0.85. Example: BMV=290, so BLV and BRV must be 246 or lower. BMV=145, so BLV and BRV must be 123 or lower. BLV and BRV must never be greater than the measured T2 secondary voltage, times the factor of 0.85.