

The drive may be seeing the motor acting as a generator and feeding a voltage back into the drive and increasing the DC Bus voltage. Depending on the application, this regeneration may be avoided by increasing the decel time on ramp to stop on the inverter. Otherwise, Dynamic Braking may be needed.

Useful Definitions:

Regeneration: The characteristic of a motor when the rotor's synchronous frequency is greater than the applied frequency.

Dynamic Braking: A system of electric braking in which the motor, when used as a generator, converts the kinetic energy of the load into electric energy dissipated in resistors, in doing so, exerts a retarding force on the load. Dynamic braking uses an internal transistor to switch the DC bus voltage across an externally mounted resistor. Resistors are usually placed across the DC bus to dissipate the power returned.

- OV trip levels for all drives that apply to this FAQ?

Example:

- OV fault occurs at 800 VDC or 565 VAC on 460V models.
- OV fault occurs at 400 VDC or 283 VAC on 230V models.
- OV fault occurs at 1000VDC or 707VAC on 575V models.

To measure bus voltage, meter across DC bus terminals + bus to - bus

- **Possible causes with braking circuit installed**

- Open resistor
- Defective braking transistor
- Braking torque requirement exceeds drives braking circuit capacity. (decel too fast for load etc.)
- If the turn-on level is improper, overvoltage may be experienced.
- Verify the DC Bus indication from the drive(U1-07) is within 20 volts of that as measured with a multimeter (obviously, the closer the indication the better, but 20 volts should be OK).

- Verify the braking module is turning on at the proper level (oscilloscope is preferred):

<u>Jumper setting</u>	<u>Turn-on Level</u>
230	380V +/- 3V
220	365V +/- 3V
208	345V +/- 3V
200	330V +/- 3V
460	760V +/- 6V
440	730V +/- 6V
415	690V +/- 6V
400	660V +/- 6V
380	630V +/- 6V

Verify the braking resistor capacity can dissipate the necessary energy absorbed from the load. This must be done with an oscilloscope. Place the O-scope across the resistor. When decelerating, voltage will appear across the resistor (this indicates the CDBR module has turned on). When voltage appears across the resistor, it should immediately start to decrease (voltage should decrease). If the voltage continues to rise and/or hold steady while DB is on, the DB capacity may be insufficient to achieve the desired deceleration rate. An additional resistor and CDBR module may be necessary.

- Is the "DB On" LED illuminating at the time of a trip?
- Are dual CDBR braking modules setup and wired properly (one as master and one as a slave) per the braking manual.
- Is stall prevention during decel disabled? It should only be disabled when braking circuit is not installed

- **Possible causes when braking circuit is NOT installed:**
 - Parameter Stall Prevention during decel disabled w/o braking circuit installed.
 - High line condition: Explain what AC line condition causes an OV trip on 230V ,575V models
- **Overall possible causes**
 - Poor motor parameter tuning
 - Noisy encoder feedback in closed loop control causing unstable output waveform.