Title: Anomalous Deceleration After Encountering a Software Overtravel Limit.

Purpose:

To describe a solution to a problem which can cause an axis to move erratically after encountering a software end of travel limit.

Revisions Affected

This bulletin applies to MotionBASIC® version 2.2b and all earlier versions.

Description:

In the affected versions of MotionBASIC®, the axis firmware fails to properly clear a variable associated with the acceleration and/or deceleration portion of the motion profile when a software end of travel is detected while the motion is accelerating or decelerating. As a result, when the axis completes its response to the end of travel and has stopped, it will execute an anomalous motion in the same direction that it was traveling. The distance and time duration of the motion will depend on the parameters of the original motion and is not easily predictable.

If the program does not include an error handler, the program will drop to direct mode a few milliseconds after the software limit is exceeded. MotionBASIC® will then execute an implied HALT AXIS.LIST@ USING DCL.ERR@. This HALT will stop the anomalous motion using a deceleration set by DCL.ERR@.

If the program does include an error handler, the anomalous motion will continue until it is complete or until a HALT statement is encountered. If a HALT statement is encountered, the motion will be stopped using the deceleration rate commanded in the HALT statement.

Solution:

If your program does not include an error handler, make sure that DCL.ERR@ is high enough to stop the axis in an acceptable distance should a software end of travel be exceeded.

If your program does include an error handler, make sure the error handler also includes a HALT statement with an appropriate deceleration rate that will be executed quickly after encountering a software end of travel.
Note: if you enter your error handler with MotionBASIC® Trace feature turned on, it will increase the time delay between the software overtravel being encountered and the error handler executing the HALT statement. This will increase the excess distance traveled. This problem will be corrected in a future release of MotionBASIC®.