TB035 (Rev1) - Isolating Limit Switch Failures on an M15

Overview

This document describes the procedure to be used to isolate limit switch failures on an M15. It is assumed that there is a known failure of the limit switches or wiring up to the point where the limits enter the back panel of the control. It applies to the M15-5 and M15-6 models.

The connection points

There are several points of connection for the limits. The first point of connection is at the limit switch itself. The second point of connection is inside the transformer box, and the third is at the back panel of the control. Internally, there is a connection from the back panel of the control to the motor drive itself.

Where to start

The first step to take is to ensure that the connection points are tight. This means that the limit switch cable at the back of the control panel is checked, as are the connections on the terminal strip located in the transformer box at the bottom. Having checked these connections, run a simple program and see if you can provoke the error by tapping lightly on the limit switches and by moving or shaking the limit switch wiring, if possible. This technique may give clues as to where the problem lies.

Eliminating the switches

To eliminate the limit switch itself as a problem, take the wires that go to it and tie them firmly together. In some cases, this may require that the limit switch housing be disassembled. If errors occur, the problem lies in the wiring. If no errors occur, the switch is faulty. Note that while the wires are shorted, the motor drive will not stop movement if the switch is triggered. Therefore, use caution when moving the table about or running a program without travel limits in effect. ***Do not measure the resistance of the switch contacts when they are opened and closed to determine if the switch works.*** The only time measuring resistance is valid for control troubleshooting purposes is when the resistance indicates that the switch is completely failing to electrically open when the switch is tripped or that the switch is not closing when released.

Isolating the problem at the transformer box

This is often the best place to start if there are no clues as to what may be causing the problem. To perform this test, jump the offending switch or switches inside the transformer box at the terminal switch for a model M15-5 control or prior. See the label inside the transformer box. For an M15-6, the limits are wired into the back panel of the control. In both cases, have a certified electrician examine the control wiring schematics. If the problem goes away, it must have been in the limit switches or the wires coming to the point just jumped.

Document History

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