

No. 10 Detector alarm malfunction

I've been out of town for a week and just got back and tried to power up our MK1V-Matrix Controlled Integrex.

I get a No. 10 Detector alarm malfunction and a red light and I can't clear it or home the machine. The X axis is drifting as is the B axis. I pulled open the electrical cabinet and one of the Mitsubishi drives is flashing the normal startup alarms plus a 25 display. I checked the voltage in the backup battery in this drive and it's basically dead at around .3 volts. It takes 3.0 volts or more to store the absolute positioning data for the B axis on an Integrex, so the machine doesn't know the position of the B axis and throws off the alarm.

It turns out the B axis IS indexed by a servomotor that uses absolute positioning. The factory set data is stored through the use of a 3.6 volt lithium battery that's a Toshiba ER6VC119B. It's a Mazak part number D50USA00160 or a Mitsubishi part # C52100. Mazak will tell you that you can ONLY use this battery or the system won't work. Good luck finding a wired lithium battery with a connector locally. I couldn't find one locally and didn't want to be delayed waiting till after the upcoming holiday so I went to Radio shack. Contrary to what Mazak tells you, you really don't need to use their battery. It is important to use a 3.6 volt high capacity lithium cell rated around 2250 ma, rather than a generic one rated closer to 900 ma.

I bought a 3.6volt 2250 ma lithium battery and a single cell battery holder. Cut the connector off the old battery and solder it to the leads of the battery holder. Use some heat shrink to protect the solder joints. Turn off the power to the machine at the disconnect and use some double sided tape to mount the battery to the top of the drive keeping clear of the air vents, and power up the machine. The servo battery alarm 25 should go away on the Mitsubishi Drive amplifier.

You will still have the alarm 10, but you will now be able to home out the machine as you normally would. Home the machine, toggle the maintenance key, and choose the tailstock/B axis home set soft key. Press the B axis home set and the MF1 MF2 keys and poof the alarm will go away as the data is written to the drive. You don't need to cycle the power, but you can if you want and you should note the alarms are gone.

Frankly I'm kind of surprised I haven't seen this issue arise before on a forum since I'd suspect the everyone with an Integrex that's a couple years old should have had this issue at least once. I suppose it's possible I just had a bad battery though... I'm even a bit more surprised that Mazak service doesn't seem to be aware of how to fix such a simple occurrence.

In my preventative maintenance, I'll make it a habit to monitor this battery voltage. Once it gets down to around 3 volts it should be easy to lose the data. At least now I know the fix is as close as the nearest Radio Shack.