Indramat/Rexroth MKD/MKE Resolver and Digital Board Test Procedures

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REQUIRED HARDWARE

TI-5924 resolver test cable, TI-5040 (rev C) digital board test cable, and TI-5104 8VDC adapter module.

OPERATION

1. Test the resolver and record the alignment in Data Display using the **TI-5924** test cable only. Choose the selection "BRI_I2C_ALN" and the MKD Resolver Feedback option. Make sure the green resolver connector from the motor is plugged into the digital board. This resolver-only cabling setup will also be used to run the motor on the TI-3000JX using the Generic Resolver selection.

2. Read the memory data and program new alignment angles with **TI-5040 (rev C) and TI-5104 module**. Disconnect the green resolver connector from the PCB as shown below. The Memory Test button will read the memory data. The Memory Program allows you to write data and program new alignment angles (electronic alignment) as shown in the video titled TI-5000JX Hiperface and Indramat Electronic Alignment.
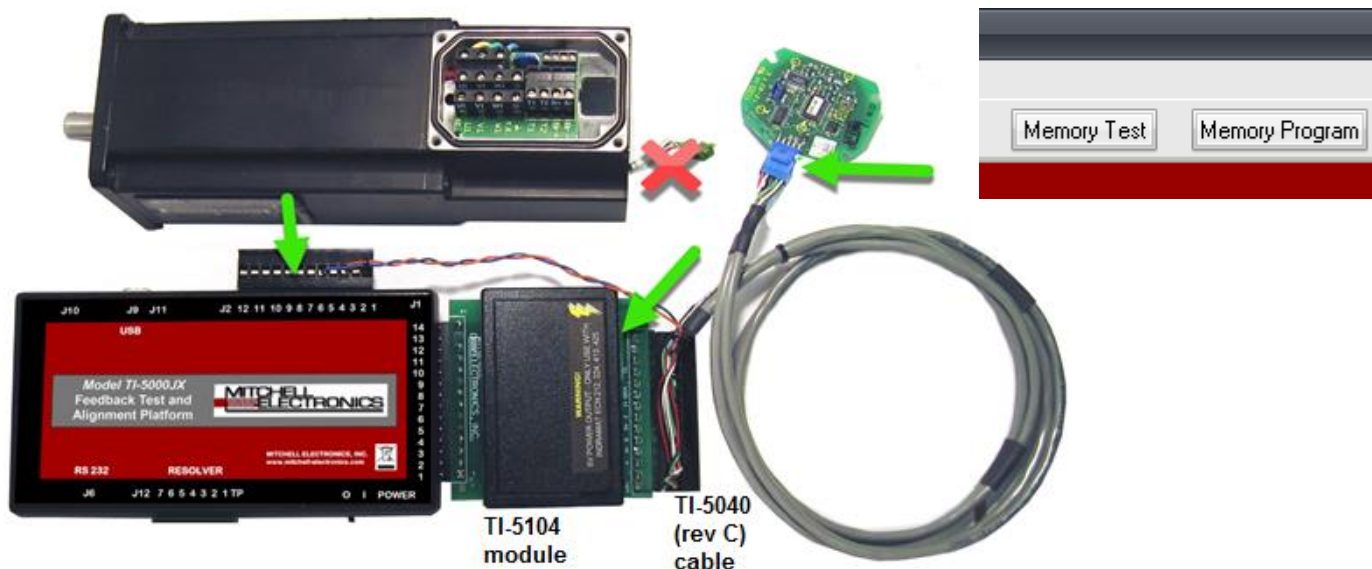
Appendix

BACKGROUND

While many motor brands have a standard alignment, there is no standard alignment position for Indramat digital motors. Do not assume that the next motor you encounter will align in the same position as the last one you worked on. In each case, you must read the alignment from the feedback memory and align to it.

It is best to check this alignment before tearing down the motor and losing the feedback alignment. Checking beforehand will familiarize you with the procedure, give you confidence in your ability to perform the procedure, and tell you whether the motor was aligned properly before you began work on it. If you can confirm the correct alignment before removing the feedback, you should have no problem using the procedure to get back to the correct alignment after repair.

This note focuses on the alignment procedure. For best results, read the Indramat section of the product manual to become thoroughly familiar with the characteristics of the Indramat digital feedback devices and how to use Mitchell Electronics, Inc. products most effectively with them.

INDRAMAT MOTOR DISASSEMBLY

Step by step breakdown of the digital board, multi-turn magnet wheel (model code K), and resolver are shown below. Notice how the magnet wheel is tied directly to the resolver rotor with the same screw. This makes mechanical alignment very difficult on this series, requiring the ability to change the angles in the memory.
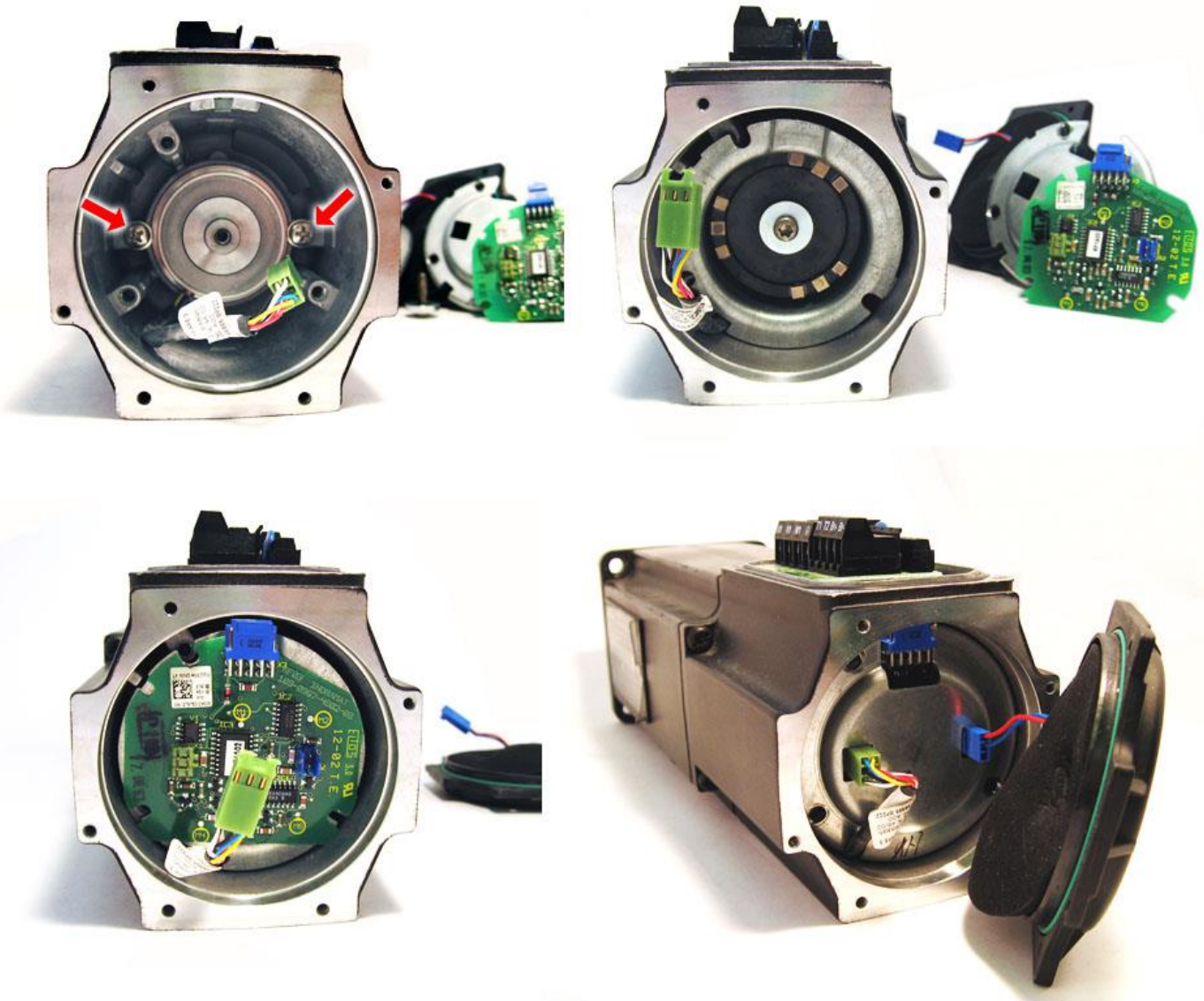
INDRAMAT MOTOR DETAILS

Take note that the motor pictured below has the multi-turn feature, which means it has a battery backup and the multi-turn magnet wheel. The battery should be tested for proper voltage. The battery is only present on multi-turn MKDs (model code K) and is not used on the single-turn types (model code G). The multi-turn PCB will also have 3 black pickup sensors on the back which react to the position of the magnet wheel. The single-turn MKD motors do not have any of these items. Mitchell Electronics, Inc. products currently do not have any support for the multi-turn counting features. Extensive drive testing and customer feedback indicate that the orientation of the multi-turn magnet wheel is *not* important.
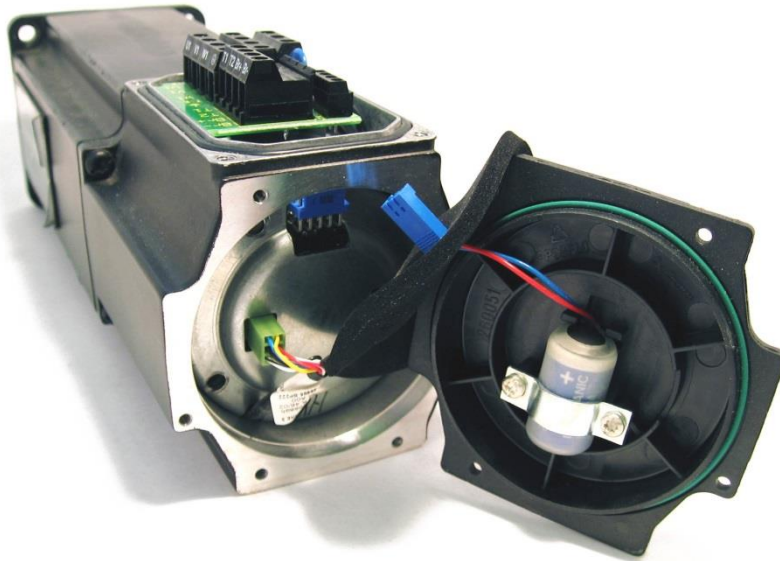
When reconnecting the 6 pin resolver cable to the MKD PCB board, make certain to attach it in the correct direction. The green plug on the resolver cable has two clips which anchor to two green posts on the board. The cable can fit back in either direction but only one way is correct.
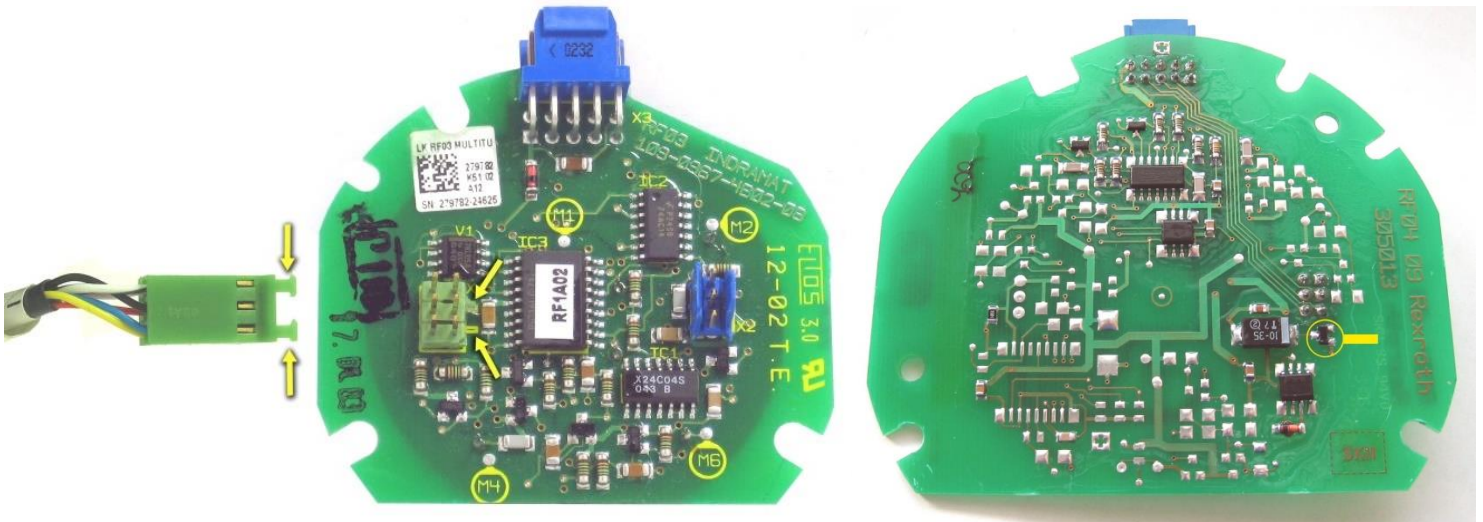
Always power down the board before connecting or disconnecting the feedback cabling and always disconnect the resolver from the PCB before performing a Memory Test to avoid transient voltages on the power supply. Such transients can damage the supply rectifier diode on the board as shown highlighted in yellow.

When the diode is faulty, the board cannot be powered by the AC excitation voltage used by the drive (causing the feedback fault). However, it can still be powered by the DC voltage from the TI-5104 Adapter Module (allowing the successful Memory Test). This can cause the resolver board assembly to show good data during a Memory Test on the Mitchell Electronics, Inc. product, yet show a feedback error on an Indramat drive. If a power supply problem is suspected, the diode should be checked independently.