Calibration Procedure for Syil X3 Spindle Speed

Introduction

This procedure covers a method of calibrating the spindle speed on Syil Factory converted X3 CNC milling machines.

Tools Required

1. Laser Optical Tachometer (Optional)
2. Trim Tool for Potentiometers
3. No 2 Philips Head Screwdriver
4. Lanyard (used to secure the rear cover during this procedure)

Typical Laser Tacho and Potentiometer Trim Tool

Procedure

1. Disconnect power from the machine.

2. If using an optical tachometer, ensure that a small (approx 12 x 12mm) patch of reflective tape is adhered to the spindle. This is used as the contactless "pickup" for the laser tachometer whilst the spindle is rotating.

3. Use the screwdriver to remove the sheet metal cover from the rear of the machine. Secure the rear cover in such a manner as to be safe whilst performing this procedure. I used a stout string lanyard to secure the rear cover to prevent it from damaging cables if it fell.

4. Locate and identify the Spindle Control Board (See Photo Next Page)

5. Locate and identify the High and Low Speed adjustment potentiometers on the Spindle Control Board (See Photo Next Page)

6. Run Mach3 (or whatever controller you use).

7. Ensure that the controller cable is connected between the controlling computer and the Syil Interface Board D25 Connector.

8. Reconnect power to the machine and turn it on.

9. Ensure that the mill is under control of the computer.

10. Press the spindle "Start" button on the Mill Front Panel.

11. From the MDI screen in Mach3 issue the command "M3 S500". The spindle should start rotating clockwise at approximately 500rpm.

12. Use the tachometer to check that the rpm displayed on the front of the machine is close to the rpm display on the tachometer. I am not sure what to adjust if the readings are not the same. Presumably there is another calibration adjustment somewhere on one of the boards within the machine. Fortunately mine was close and did not require adjustment. If some one knows how to adjust this, please email me at chrisjh@bigpond.com.au and I will amend this procedure.

13. Adjust the "Low Speed" Potentiometer identified in Step 5 until the speed on the front panel readout = 500 rpm or as close as possible.

14. Issue the command "S3400" from the MDI screen.

15. Adjust the "High Speed" potentiometer identified in Step 5 so that the Front Panel LCD readout displays 3400 rpm.

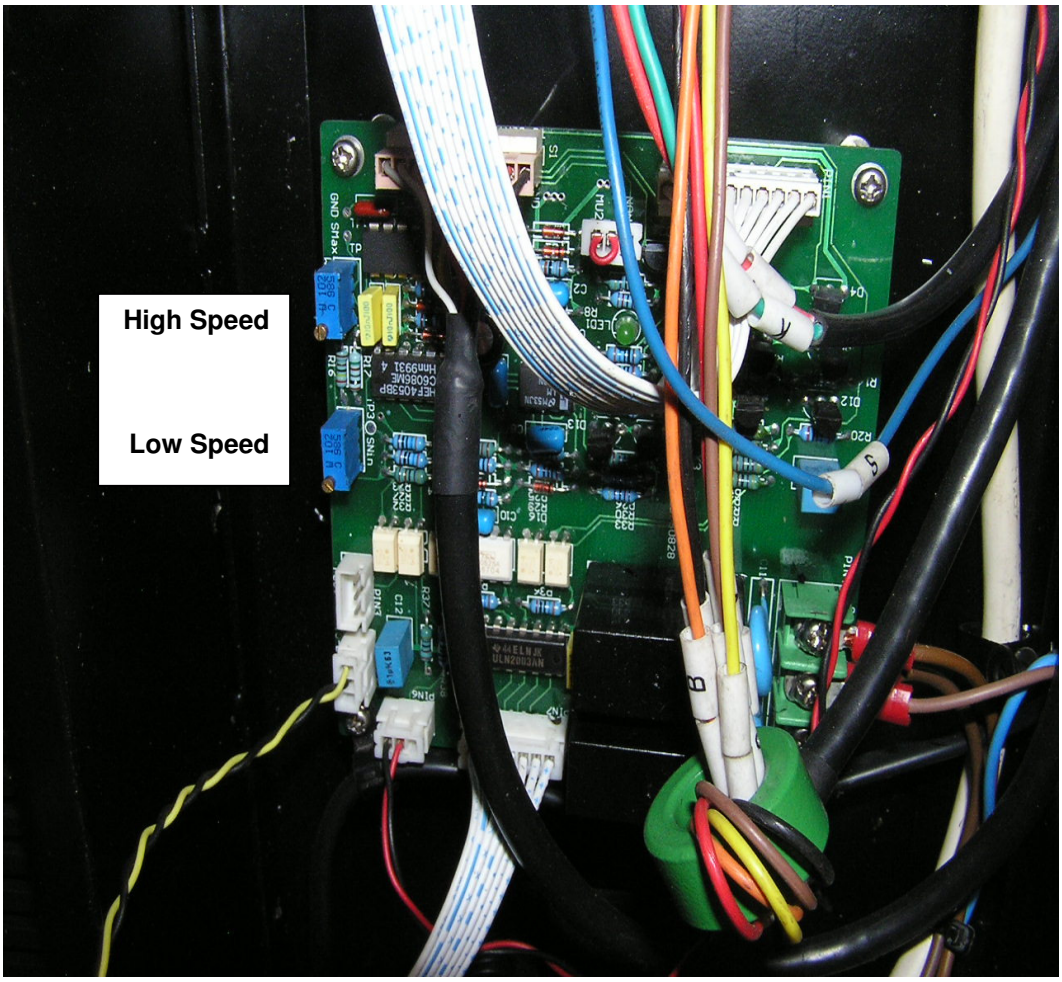
16. Repeat Steps 11, 13, 14 and 15 until the calibration is satisfactory.

17. Turn off the spindle using the "M5" command.

18. Turn off the machine and remove power from the machine.

19. Replace the rear cover removed in Step 3.

20. This completes the procedure.



Location of Hi & Lo Speed Adjustments
Located on Spindle Control Board