Title: Protecting Y Axis Limit Switch

Number: SB0001 **Date:** Saturday, October 22, 2005

Product Identification: PCNC 1100 Milling Machine, Serial Numbers 0003 to 0023

Background:

The limit switch used on the Y axis of the PCNC 1100 is a sealed version and sits in a protected location, but the cable connection used on some of the machines does not incorporate a seal. There is a potential for coolant to follow the electrical cable and enter the switch body. The limit switch uses low voltage signals so there is no electrical risk, however there is a possibility of corrosion and switch failure over time.

Resolution:

The recommended solution is to introduce a drip leg to the cable and seal the point where the cable enters the switch body. The Y axis limit switch is located under the table, on the right side of the saddle. It is mounted on a sheet metal bracket, item #55 in the machine exploded view of the lower portion of the machine, page 10-3 of the manual. The general location is shown in Figure 1

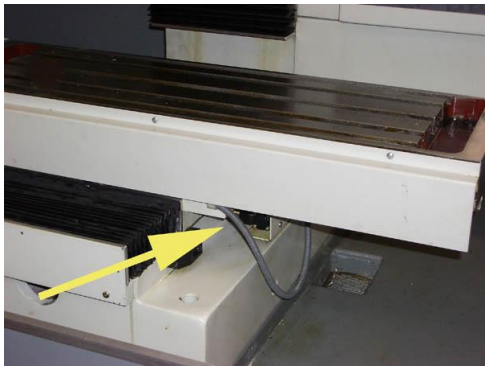

Figure 1 – General Location

If the cable slopes downward as it enters the body of the limit switch, then any coolant that drops onto the cable will follow the cable to the point where it meets the limit switch. This increases the likelihood that the coolant will enter the switch. An example is seen in Figure 2. The preferred arrangement is to have a drip leg. This is a section of the cable that is lower, and then turns up toward the switch body. An example is seen in Figure 3. A drip leg can be created by sliding the cable under the cable clamp, moving it about an inch toward the limit switch. The cable clamp is a few inches away from the limit switch.

Additional protection is afforded by using a silicone sealant around the cable, where it enters the switch body.

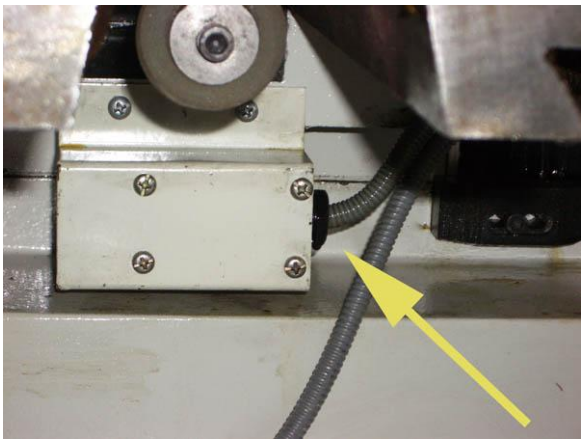

Figure 2 – Cable without drip leg

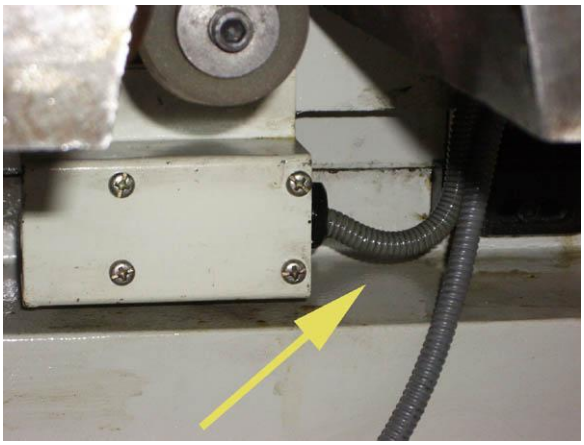

Figure 3 - Cable with drip leg

Since the limit switch is protected against direct coolant flow, the drip leg is the most important portion of this modification. It should also be noted that substituting a cord grip style connector at the limit switch would not afford significant protection. Cord grips can only seal properly on smooth round cables. The cable is spiral wound, with a groove that wraps around the cable.