



Spindle Operation: The spindle is gated off by Q5 and Q6 which form a logical OR function. Note that Q5 and Q6 must be off for the spindle to operate.

Q6 is controlled by the Spindle On/Off switch on the operator panel. Turning the switch to On will activate U3 opto circuit 3 and pull the base to ground via D13 Cathode. Note if the -15V is lost, Q6 will turn on via bias provided by 12V and RA4 pink through D6.

Q5 operation is controlled via the Local/Program mode of the operator panel in conjunction with the Spindle On/Off signal from the Machine Control board (J2, pin 2 of this spindle control board). In Program Mode, the Selector switch on the operator panel is selected to Program. This will provide ground to Pin2 of J5 and provide base current to Q11, but note that Q11 emitter must pull to ground to power the opto LED in U3 (section 2). This ground is provided by the Spindle On/Off signal from J2, pin2. This signal is from the Machine Dist. Board and is active low.

In local mode, pin J5-3 is grounded by the operator panel Program/Local switch. Note that this directly pulls the base of Q11 to ground. With this pin directly connected to ground, the emitter of Q11 is at 0.7V above ground and this is sufficient to turn on the opto of U3 section 2. This unusual control eliminates the need for D15 Cathode being grounded.