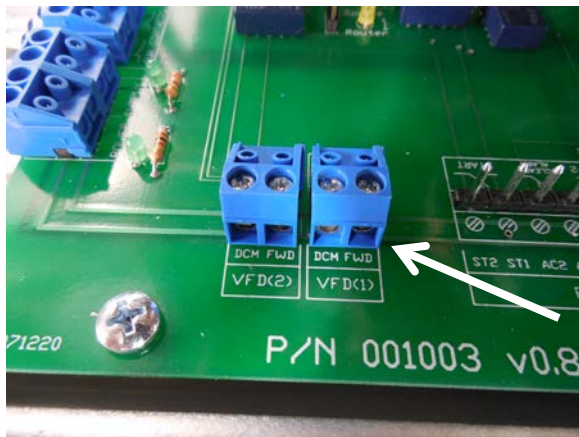


# ATC Retrofit Installation (Electrical)

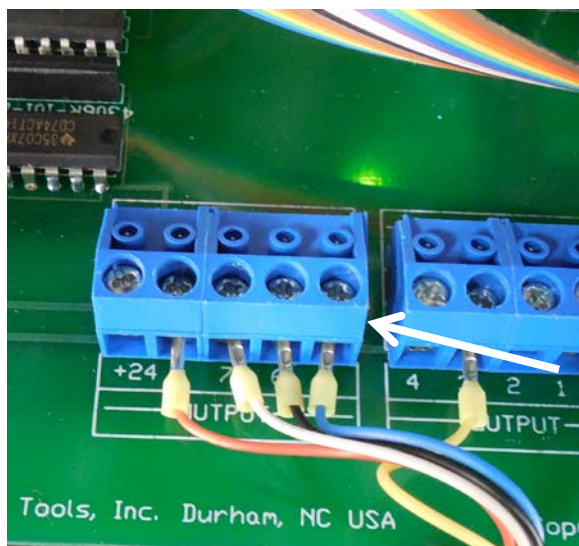
This portion of the installation will cover the electrical system, wire routing, and the hook-up requirements for the ShopBot control board 001003: versions 0.7 and 0.8.

## Installing the ATC interface board

The wiring harness that comes attached to the ATC interface board will need to be connected to the control board. This will require that the existing connection be removed and reinstalled into the new terminal blocks of the new harness. **It is recommended that the old connections be labeled before removing so that they can be placed back in the correct positions once the new wiring harness is in place.**

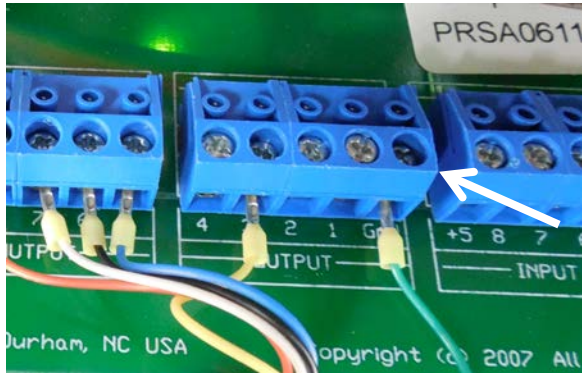


Remove the two pin terminal block from the control board marked "VFD(1)" and replace it with the two pin terminal block on the wiring harness.



Tip: Terminal blocks are placed on straight pins soldered to the board. In order to remove them, simply apply force straight up to lift them off of the pins.

Remove the five pin terminal block from the portion of the control board marked with the following outputs: +24V, 8, 7, 6, and 5. Replace it with the left most five pin terminal block on the wiring harness.



Remove the five pin terminal block from the portion of the control board marked with the following outputs: 4, 3, 2, 1, and Gnd. Replace it with the middle five pin terminal block on the wiring harness.



Remove the five pin terminal block from the portion of the control board marked with the following inputs: 4, 3, 2, 1, and Gnd. Replace it with the right most five pin terminal block on the wiring harness.

Insert all the previous connections into the newly installed wiring harness.

## The emergency stop switch and the three button pendant

The three button pendant and the separate E-stop are bundled together for shipping. Both must be attached in order for the E-stop and the three button pendant to function. Order of attachment does not matter.



The ShopBot three button pendant allows you to place the reset, start, and extra emergency stop buttons at a convenient location away from the PRSAlpha control box. It has been prewired so that hooking it up to your PRSAlpha control box consists of simply plugging the terminal block into the control board. Your PRSAlpha control box may differ slightly from pictures in the manual depending on which model you have. If you have a three button pendant, your PRSAlpha control box will not have start/reset buttons.



The separate emergency stop switch also comes fitted with a terminal block that plugs into the control board. Power for the router or spindle is routed through the PRSAlpha control box safety controls so that activating the E-stop by hitting the red button will stop the movement of the carriages and stop the router or spindle. We suggest mounting this to the gantry on your machine in an easy-to-access location.

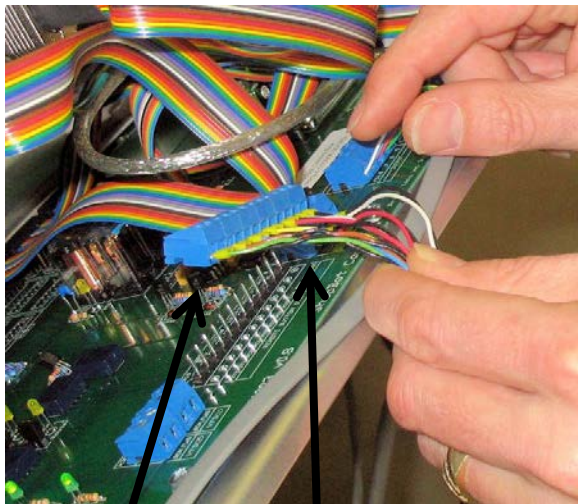
Note: If you try to run the ShopBot without the E-stop connected, input “4” will be triggered and the ShopBot control software will not allow the ShopBot to move.

## Installation

Run the cables from the three button pendant and the separate E-stop switch into the PRSalpha control box through the Roxtec opening and plug in the terminal blocks.

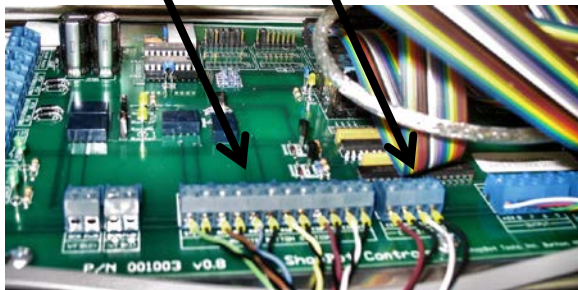


This is the PRSalpha control board before the terminal block from the three button pendant is attached. Note that the terminal block for the separate E-stop is also not attached yet.



The terminal block from the separate E-stop has been plugged in and the three button pendant block is being positioned.

Three button pendant    E-stop

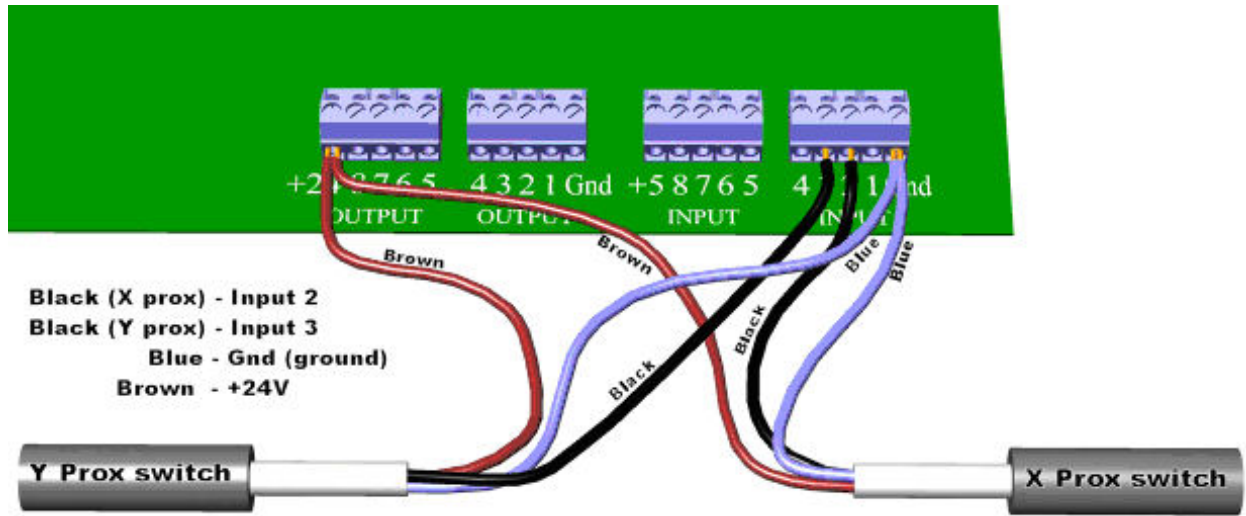


Terminal blocks from the three button pendant and from the separate E-stop in place.



## Connect cables from the proximity switch and Z zero plate

Before starting, mark the X & Y axis proximity switch, the Z zero plate, and the fixed Z zero plate on the ends that will go into the control box. This will make things much simpler when connecting the cables to the control box. Run the cables from the Y axis proximity switch and the Z zero plate through the E-chain and to the back of the machine. From here, collect the X axis and fixed Z zero plate cables (4 cables total) and route them through the Roxtec opening in the side of PRSAlpha control box.

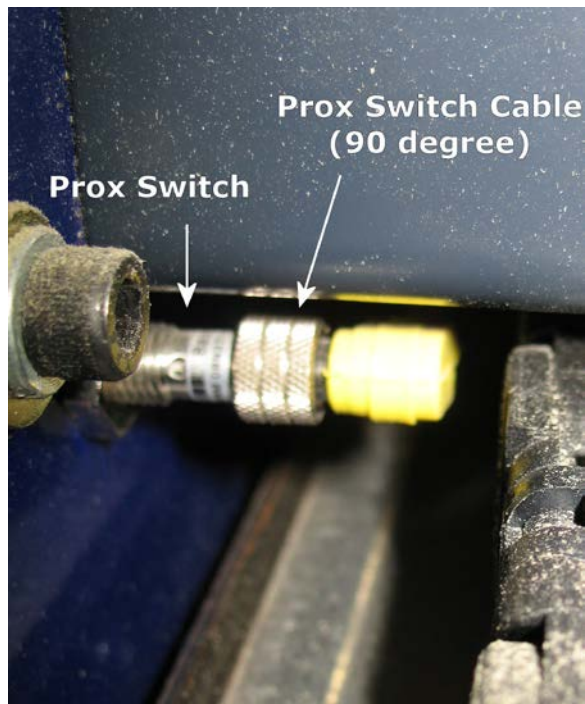


Inside the PRSAlpha control box, take the proximity switch cable for the X axis and place its black wire into input “2” on the blue terminal block on the control board. Then take the proximity switch cable for the Y axis and place its black wire into input “3” on the same blue terminal block on the control board. The blue wires from both of the switches are placed in “Gnd.” The brown wires from both of the switches will be placed in the “+24V” position on the blue output terminal block. Note that the terminal blocks can be removed to make wire insertion easier.

Please note that when the PRSAlpha Control Box is powered up, a red LED in the body of the proximity switch will stay lit until it is triggered by coming near a target.

Now, connect the Z zero plate and the fixed Z zero plate mounted to the machine. Both of these cables will be wired into the same input since they perform similar functions. The only difference is that the fixed Z zero plate will only have a single black wire. The black wires from both the fixed and Z zero plate go into the input “1” terminal and the green wires goes into a ground terminal (“Gnd”; you can use either the one on the input terminal block or the one on the output block). The red wire goes to +5 (it is only used by the digitizing probe). This wire is connected to this plug because the Z zero plate and digitizing probe use the same connector.

## Connecting the Z axis proximity switch



Locate the proximity switch on the back side of the Z axis. This is located just under the Z axis motor. Using the 90 degree proximity switch cable, plug the cable onto the back of the proximity switch and screw the connection tight with the thumb screw. This cable will be pre-wired and marked as Z axis proximity and cooling air, route through the Y axis E-chain and into the control box. Ensure there is proper clearance between the switch and E-chain to prevent interference during movement.



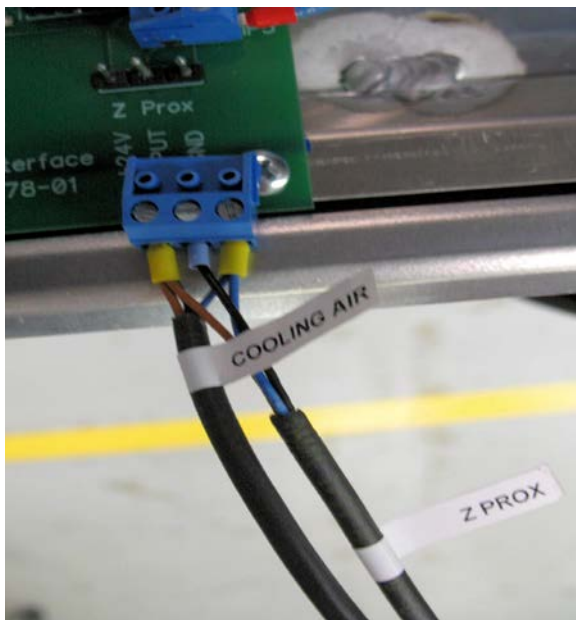
Inside the control box, route the proximity cable to the lower edge of the ATC interface board. Connect the blue three pin terminal block to the location marked "Z Prox."

Note: The "+24V" and "GND" will be attached to this terminal block when attaching the solenoids cooling air in later sections.

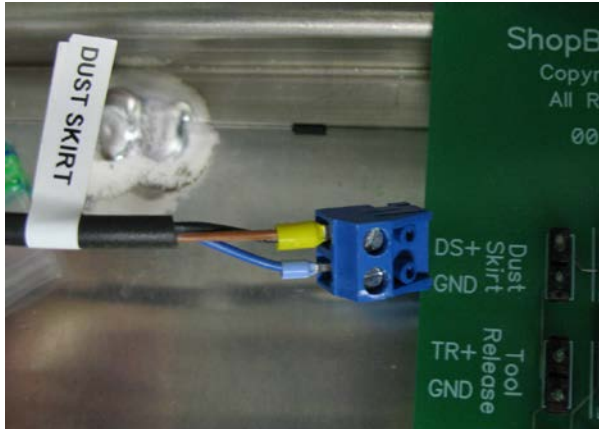
## Connecting the solenoids



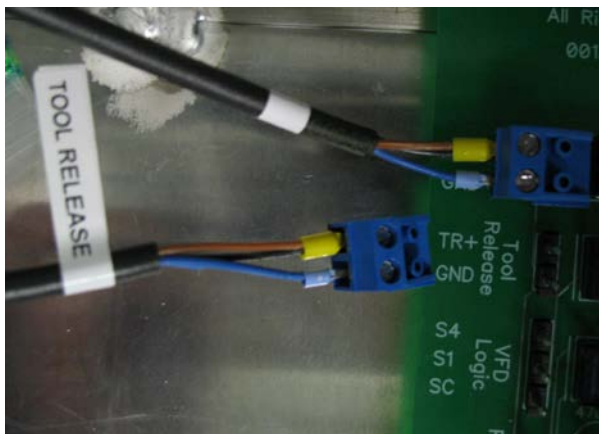
Locate the row of solenoids mounted on the upper Y axis E-chain bracket. Connect them with the appropriately marked cables provided. After you connect the solenoid with its matching cable, route these cables through the Y axis E-chain and into the control box.



Bring the cable marked “cooling air” into the control box. Route the cooling air cable to the lower edge of the ATC interface board. Since there is not a dedicated location for this connection on the board, we are going to share the connection from the Z proximity switch. Connect the blue wire from the cooling air cable into “GND” and the black wire to “+24.”



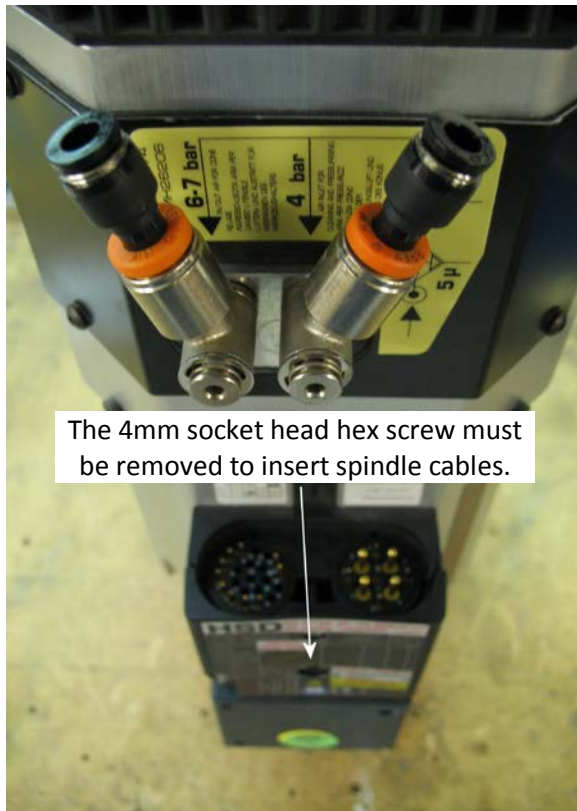
Bring the cable marked “dust skirt” into the control box. Route the dust skirt cable to the ATC interface board. Then connect the blue three pin terminal block to the location marked “dust skirt.”



Bring the cable marked “tool release” into the control box. Route the tool release cable to the ATC interface board. Connect the blue three pin terminal block to the location marked “tool release.”



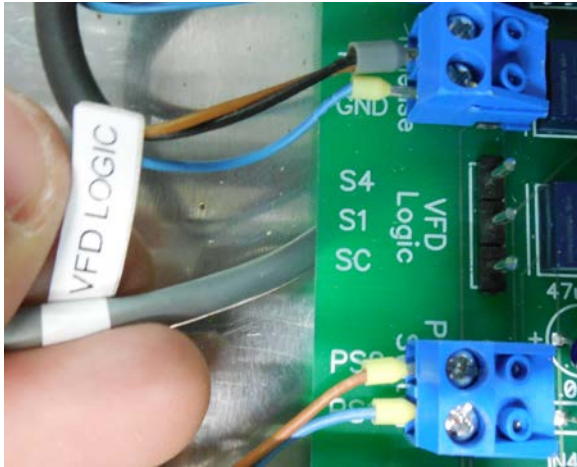
## Connecting the spindle



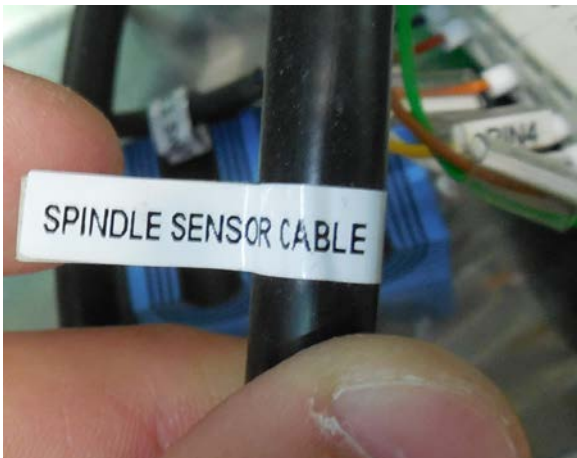
Locate the spindle cables. Remove the small socket head screw from the front face of the spindle's plug (4mm hex wrench needed).



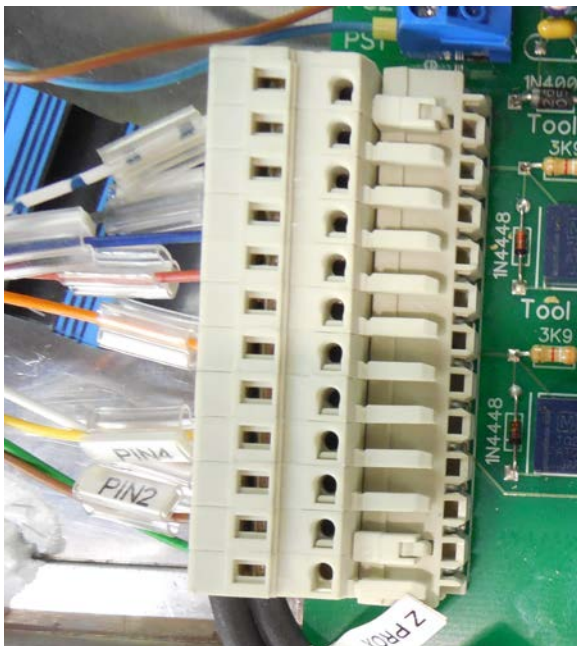
Plug the cables into the mating plug of the HSD spindle and secure the socket head screw so that the plugs are locked in place. Route the cabling from the spindle through the Y axis E-chain into the control box and over to the left side of the ATC interface board. The spindle cable should already have the terminal blocks ready for installation from ShopBot.



Connect the small blue terminal block to the location marked "VFD Logic."



The other long connector should be labelled as the spindle sensor cable. This is a male Wago connector and will connect into the corresponding female piece on the ATC board.

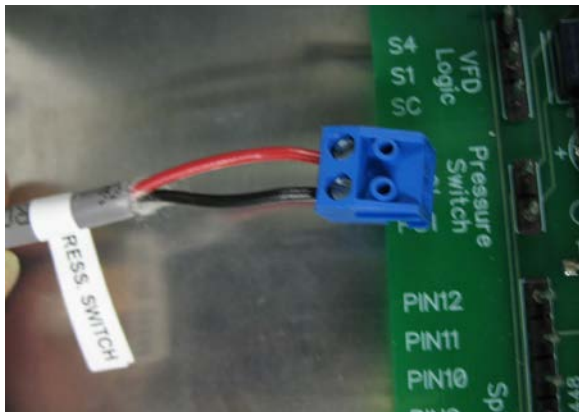


Find the female Wago on the board where it is printed as "Spindle Sensor Cable." Then, connect the male Wago connector into the ATC interface board.

## Connecting the pressure switch



The pressure switch is located on the primary air regulator where your compressed air input attaches to the tool. You will use the threaded pressure switch cable to attach to wire coming out of the pressure switch. Route the other end with the two pin terminal block into the control box.



Inside the control box, route the pressure switch cable to the ATC interface board. Connect the blue two pin terminal block to the location marked "pressure switch."