

Colombo Spindle

Refer to the guide that come from PDS with your Colombo Spindle for latest updated instructions. Applies to Colombo Spindles with Delta Electronics, Inc. model series VFD-B 3HP & 5HP variable frequency drives and the PRTalpha and PRSalpha control boxes. If you ordered a 380v/460v Colombo Spindle, be aware that it has a 24v spindle fan which requires a 24v power supply.



WARNING

ELECTRIC SHOCK CAN KILL

Use extreme caution when working near live electrical circuits. Dangerous voltages exist inside the power supply that can cause serious injury or death.


These instructions are intended for use by a licensed electrician.

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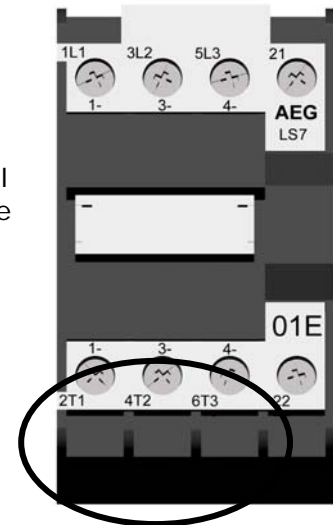
Connecting the Colombo Spindle with Variable Frequency Drive to the ShopBot Control Box

	<p style="text-align: center;">WARNING</p> <p>ELECTRIC SHOCK CAN KILL Use extreme caution when working near live electrical circuits. Dangerous voltages exist inside the power supply that can cause serious injury or death.</p> <p>These instructions are intended for use by a licensed electrician.</p>
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Run power from the ShopBot Control Box to the VFD

Power to the VFD must be connected to the proper contactor in the ShopBot Control Box. This is necessary for the safety systems to work correctly if the Emergency Stop button is pressed. For this installation the Delta VFD supplied by ShopBot has a power cable pre-installed at the factory.

- After the ShopBot Control Box is in place as described in the ShopBot assembly instructions and the VFD is mounted, run the black cable from the VFD to the vacant cord grip in the right side of the Control Box. You will find this under the input power cables.
- Insert the cable from the VFD into the cable clamp, pushing enough wire into the control box to reach the spindle contactor(s) and the ground bus bar.
- Connect to contactor #2 for a single spindle (#1) and contactor #6 for a second spindle (#2). Refer to the "Control Component Placement Diagram" (000943-00) included in the door of the ShopBot Control Box to locate the contactors.
- Connect the Green wire from the VFD power cable to the ground bus bar, located under the main disconnect in the Control Box.
- Connect the line conductors from the VFD to the proper contactor using the following terminals:



3 Phase Spindles

2T1 – Black wire
4T2 – White wire
6T3 – Red wire
Ground – Green wire

Single Phase Spindles

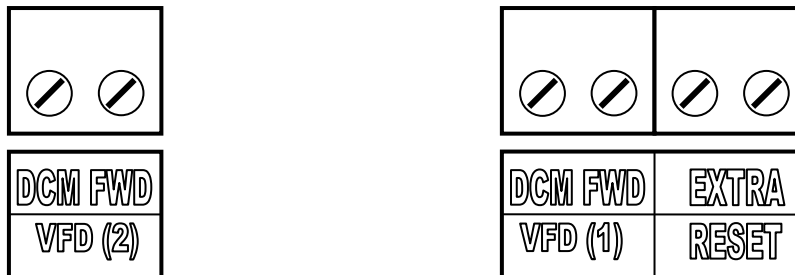
2T1 – Black wire
6T3 – Red wire
Not used – White wire (clip off)
Ground – Green wire

- Tighten cord grip.

Connect the VFD to the Control Box

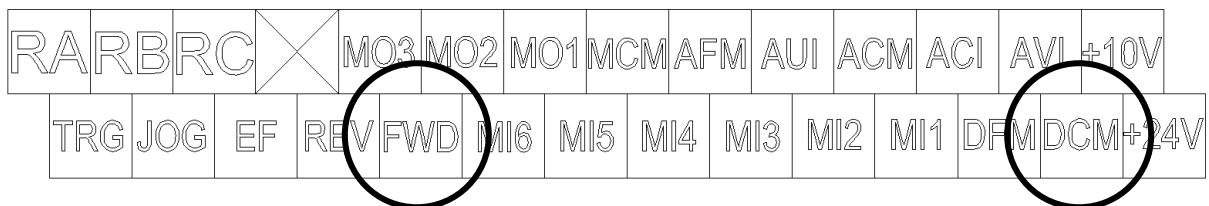
Note: The brown cable may have one of two possible wire combinations. One combination has three wires Black, White, and Red (Red clipped back). The second combination has three wires Black, Green, and Red (Red clipped back). The White and Green are interchangeable.

- Connect the two-conductor cable labeled "VFD", included with the control box, into the VFD terminals on the Control Board labeled "VFD1" (For a second spindle use the terminals labeled "VFD2"). Connect the black wire to the "FWD" terminal and the white (or green) wire to the "DCM" terminal.



On ShopBot Control Board

- Pass the cable through the cable access in the right side of the Control Box.
- Run the cable from the Control Box to the VFD. Make sure the VFD is OFF before proceeding.
- Remove the keypad from the VFD by pulling it straight out.
- Remove the VFD front cover by loosening the screw near the bottom of the face and carefully pulling it off while pushing in the clips on the sides of the cover.
- Insert the cable into the VFD through one of the rubber grommets in the bottom of the VFD.



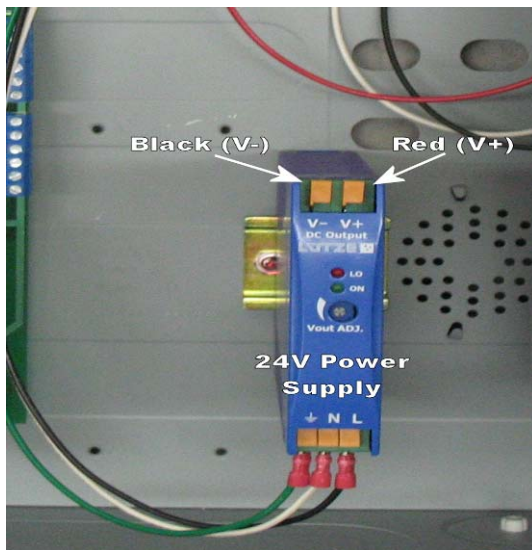
- Connect the Black wire to the "FWD" terminal inside the VFD and the white (or green) wire to the "DCM" terminal. Double up the white (or green) wire with the existing wire in the "DCM" terminal.
- Replace the cover, tightening the front screw and snap the keypad in place.

If you have a 380v/460v Colombo Spindle

A 380v/460v Colombo Spindle has a 24v spindle fan. Connect the wires (2 or more) from the spindle fan to the 24v power supply in the Control Box. All PRSalpha models and PRSstandards released after 9/5/07 come with a 63/24v power supply in the Control Box. The 63v side powers the drivers and the 24v side powers spindle fans and relay boards. If your model does not have a 24v power supply, you will need to add one.

Connect the wires from the fan to the 24v power supply in the control box.

- Locate the 24v power supply already installed in the Control Box.
- Strip back ~ ¼" of insulation from the wires at the loose end of the cable from the fan connection plug.
- Route the cable inside the control box.
- Connect the wires from the fan to corresponding (+) and (-) on the top of power supply.



24V power supply for PRS Standard

Programming the VFD for ShopBot control

In order for the ShopBot Control Box to control the operation of the spindle, the VFD's programming must be changed.



All of the following programs must be changed for the ShopBot Control Box to control the spindle. Change the following programs to the parameters listed below:

Program Number	Parameters
02-01	01
02-02	00
02-04	01
02-05	00

To program the VFD

- Turn the ShopBot Control Box and spindle power **ON**.
- Press the **RESET** button on the left side of the Control Box. This action will turn the **VFD ON**.
- Press the **PROG/DATA** button on the VFD keypad to initiate program mode. This will display the program group number.
- Using the **Up or Down Arrow** keys to change the group number.



- Press **PROG/DATA** again to show the program number.
- Use the **Up or Down Arrow** keys to change the program number.



- Press **PROG/DATA** again to show the program parameters.



- Use the **Up or Down Arrow** keys to change the program parameters.
- After setting a program parameter to the correct value, press **PROG/DATA** again to return the program number.



- To change another program, repeat the above sequence.
- To return to the selection mode, press **MODE**
- Press **MODE** until the “U” is lit to display the PRM setting for the spindle.

The ShopBot is now set up to control the operation of the connected spindle(s). Read the *Ready Reference Guide*, included in the ShopBot Manual, for information on how to operate a spindle using ShopBot commands in a ShopBot part (.sbp) file.


Using the ShopBot Keypad with the Colombo spindle

The ShopBot Control keypad can also be used to run a spindle(s) when you want to warm up the spindle or do diagnostics:

- Open the keypad from the ShopBot Control software using the **[K]** keyboard command.
- Click on **output #1** to run spindle #1 and/or **output #2** to run spindle #2 (light turns green) Note that #1 or #2 can also be activated with the ALT-1 or ALT-2 keystrokes}
- On the Control Box, push the green **START** button to run the spindle.
- Note: when the keypad is closed, the FWD signal from the ShopBot Control Box to the spindle will be cut off and the spindle will stop. The keypad will time out after a few minutes.

Troubleshooting

If the spindle is rotating the wrong direction

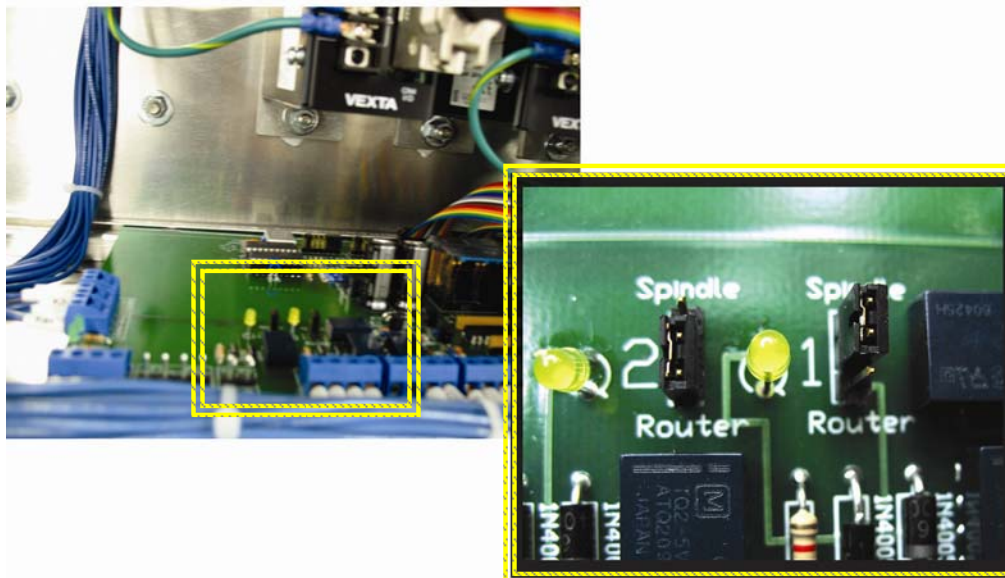
	<p style="text-align: center;">WARNING</p> <p>Spinning the spindle in reverse can cause serious damage to tooling, spindles, and machine which can result in the collet nut loosening and causing tooling failure and personal injury. Do not operate spindle in reverse.</p>
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Check Spindle wiring.

- Disconnect power to control box and VFD.
- Carefully remove the VFD face and disconnect data cable connecting the face to the body.
- Flip wiring (on two legs) going to the spindle. T1 (U), T2 (V), or T3 (W).
- Reconnect data cable and replace the VFD face.

If there is no power to the VFD

- Check that the power disconnect for the spindle is on.
- Check that the spindle/router jumper on the control board is set to the spindle side.



Closeup shows jumper#2 set to router side and jumper#1 set to spindle side.