

# E2- ROUTER INTERFACE BOX Rev. 1

## User manual Rev. 1



### 1. Overview

This unit provides speed control on a router, on/off on router and vacuum or coolant, connector for limits & home, built in safety charge pump, and buffering of all I/Os.

It is designed to go between an existing controller and the PC. So wiring is very simple. This way you can add the feature with our having to rewire the control that is working Ok.

## 2. Features

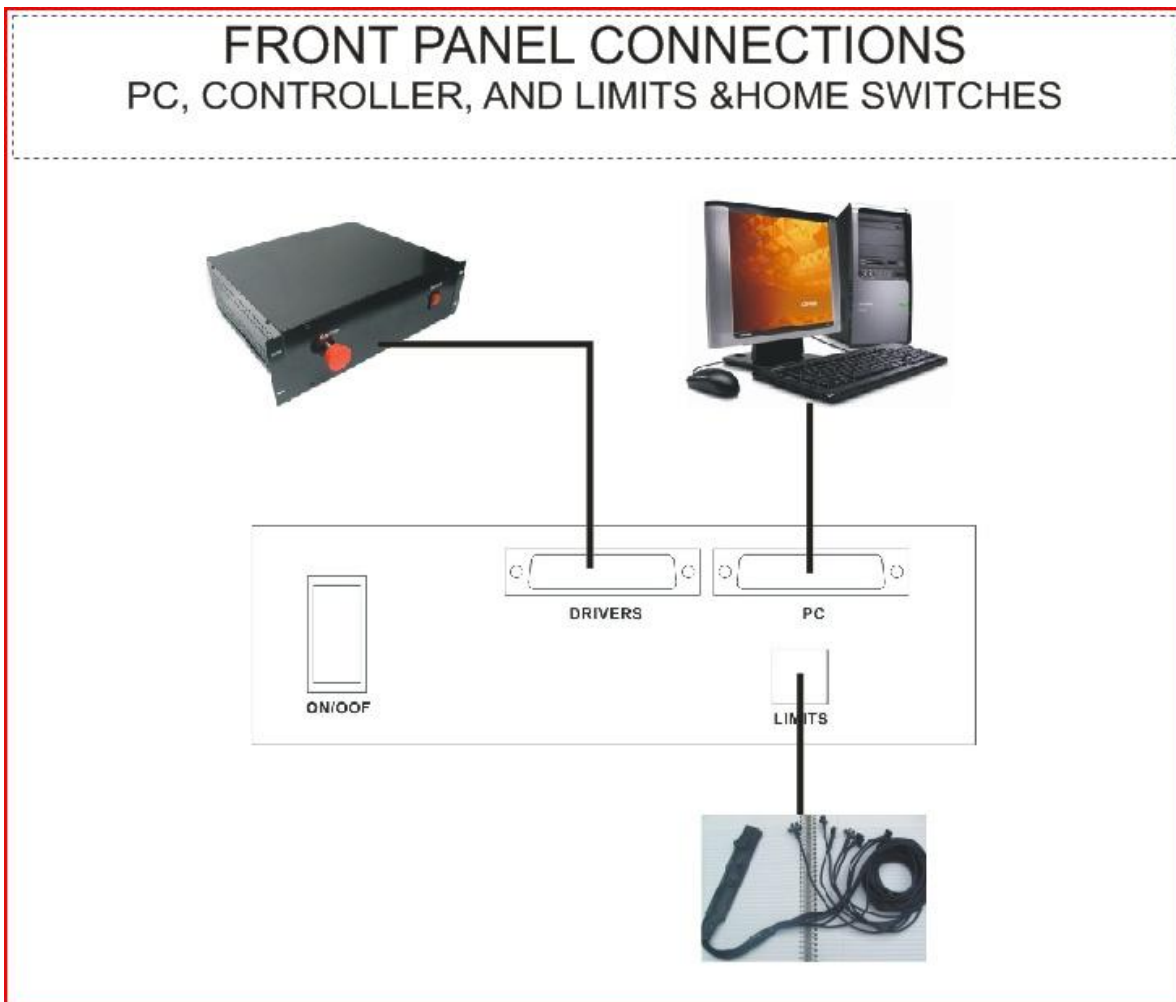
- **IEEE 1284 Standard compatible.** Includes the circuitry recommended by the IEEE 1284 Level 1 standards for bidirectional parallel communications between personal computers and peripherals.
- **DB25 connector to connect the stepper motor driver board.** This connectors uses only pins 2-9.
- **Microcontroller based SCHP.** This board comes with a microcontroller that allows the implementation of a complex algorithm for sampling and analyzing the SCHP signal.
- **AC plugs for router and vacuum or coolant pump.**
- **Speed Control Signal Can Be PWM or 0-25HZ Pulse Stream.** Speed Control can go from 30 to 100% of the router's rated speed.
- **Works with 110 or 220VAC at 60 or 50 HZ.**
- **For 2.5HP or 1800 Watt Routers.**
- **Buffered inputs and outputs.** Outputs are buffered through the use of high speed and high current buffers allowing the card to output the signals without using the power from the parallel port. It can take the +3.3 or +5vdc signal from the parallel port and deliver solid +5vdc at 24 milliamps.
- **Connector for Limit and Home Switches.** A [C16 – Index & Home Board](#) or a custom cable with switches or sensors can be connected.
- **Works directly with popular CNC hardware and software.** Such as GeckoDrive G540, Xylotex, HobbyCNC, Rockcliff, or Rutex, and parallel port control software, such as mach2, Linux EMC, TurboCNC, CNCPlayer, CNCZeus and others. (Not all tested).
- **All TTL 5VDC signals.** Interface directly with parallel port interface products and other CNC4PC cards. 5VDC (TTL) cards are very common among automation devices.

### 3. Specifications.

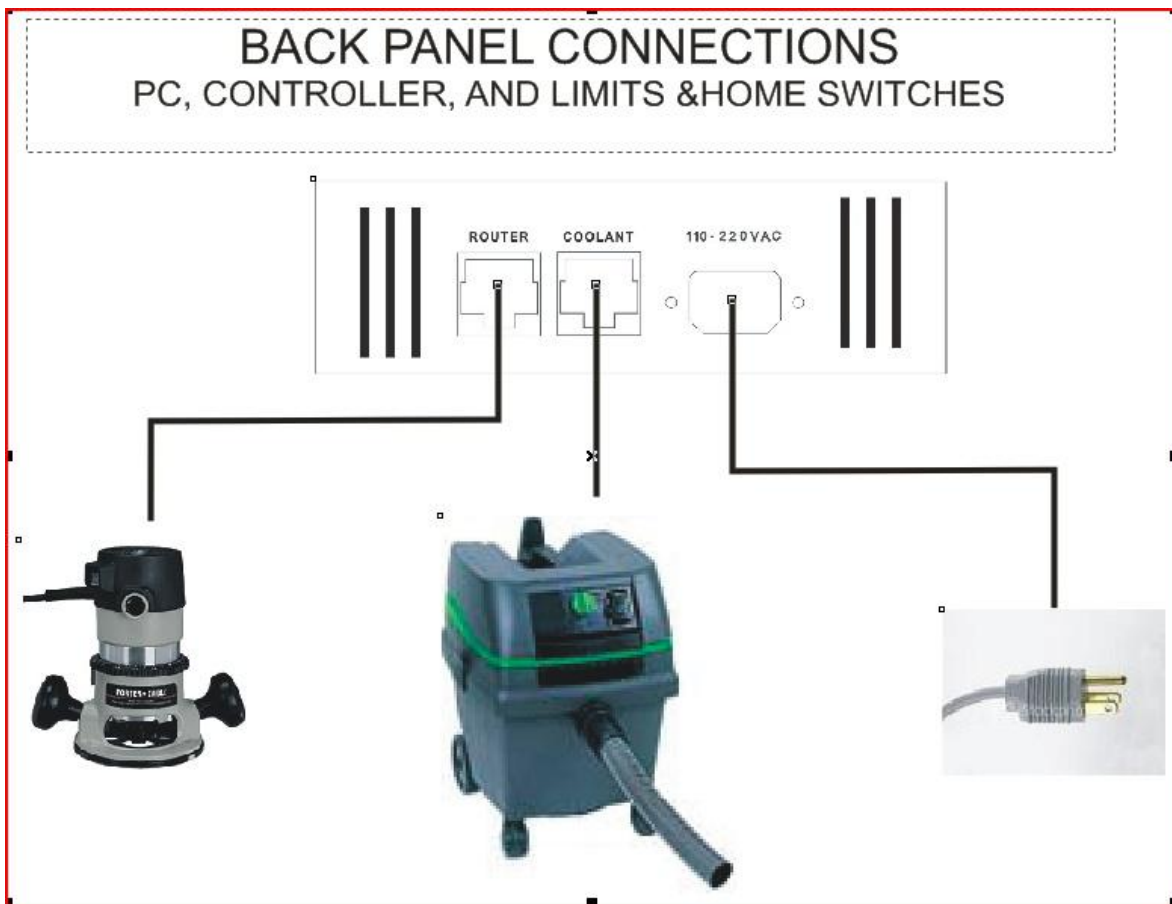
This box is based on the [C33 – Router Multifunction Interface Board](#). For specifics, please check the board's manual:  
[http://cnc4pc.com/Tech\\_Docs/C33R1\\_1\\_User\\_Manual.pdf](http://cnc4pc.com/Tech_Docs/C33R1_1_User_Manual.pdf).

### 4. Configuration Steps:

#### 1. Connect the cable as shown below:



**Fig. 1.**



**Fig. 2.**

## 5. Configure the Safety Charge Pump:

For configuring the **Safety Charge Pump** in **Mach X**: Use the dialog window *Config / Ports and pins / Output Signals*. Enable the *Charge Pump* output and assign it to pin 17. Press the *apply* button.

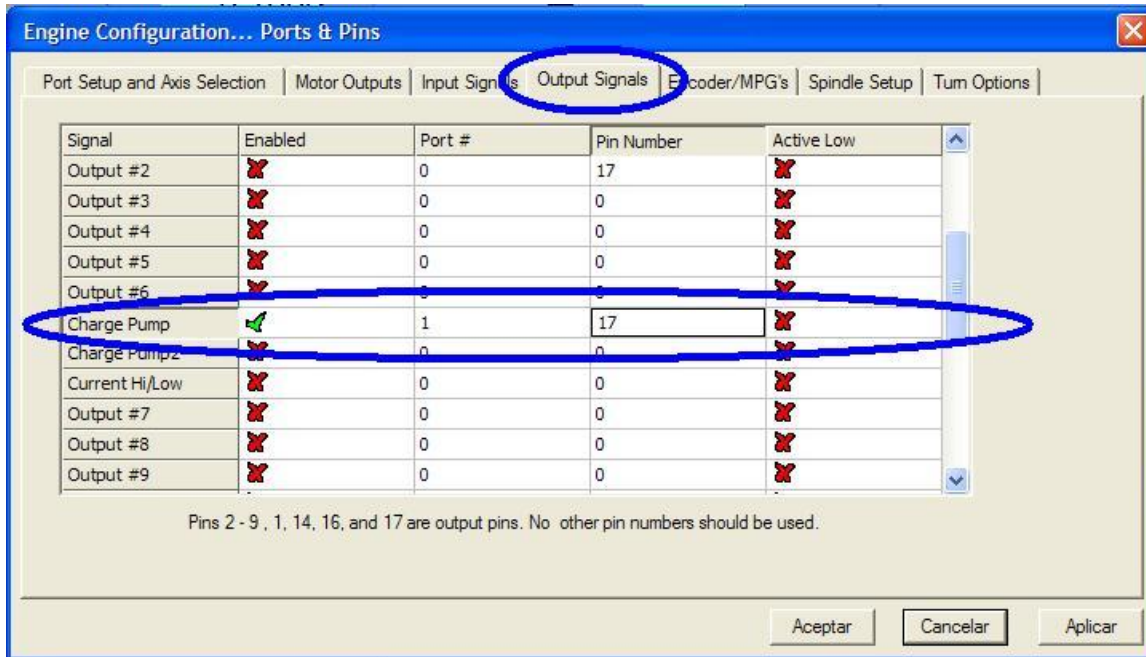
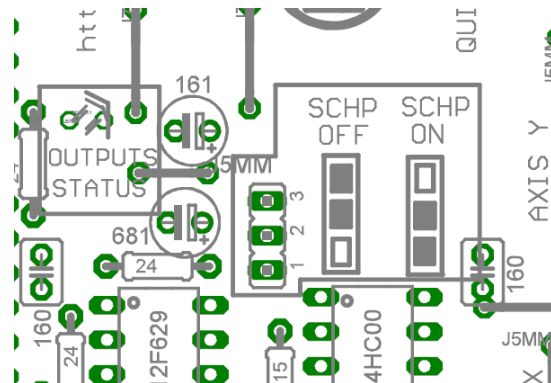


Fig. 3. Charge Pump configuration

### Selecting the SCHP operation mode.

The Safety Charge Pump can be activated or deactivated by moving the jumper position.



## 6. Configure the Relays:

Assign two outputs to pins 1 and 16. Pin 1 controls the router and pins 16 controls the coolant.. Use the dialog window *Config / Ports and pins / Output Signals*. Enable the two outputs and assign them to pins 1 and 16. Press the *apply* button.

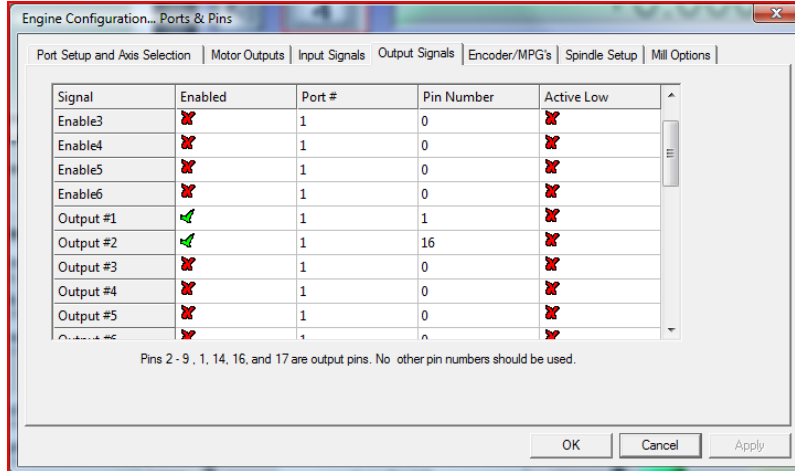


Fig. 4

Assign the two outputs to the Spindle and Flood Relay. Use the dialog window *Config / Ports and pins / Spindle Setup*. Make sure you uncheck the “disable relays” box and assign the outputs to each relay. Press the *apply* button.

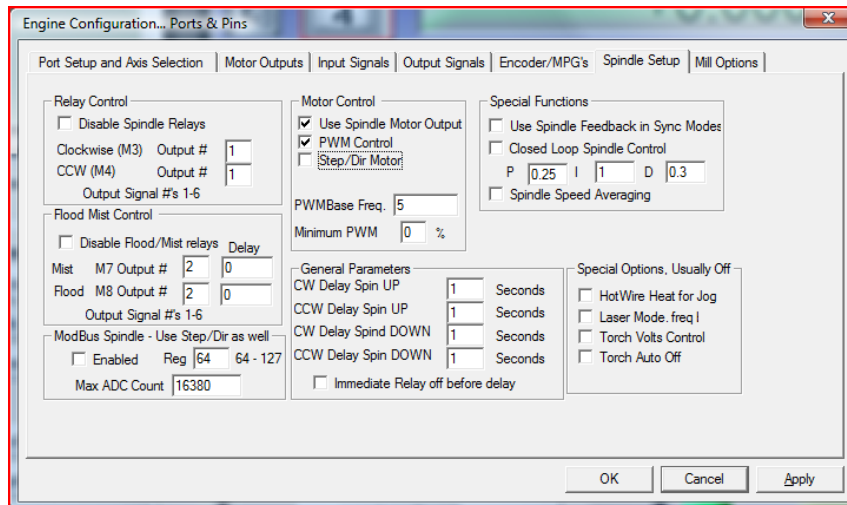
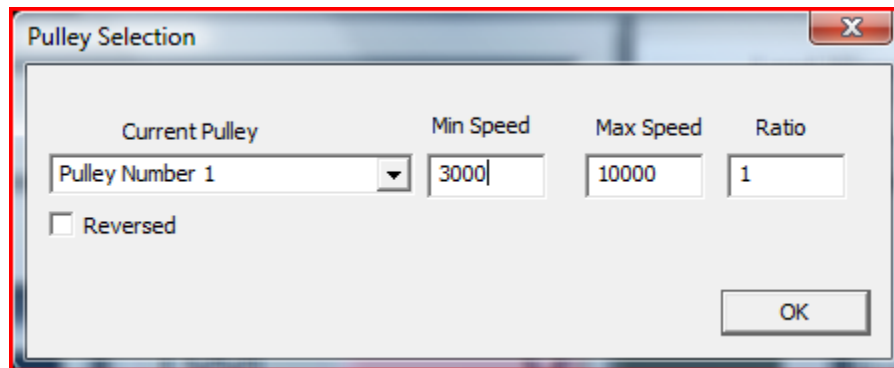


Fig. 5



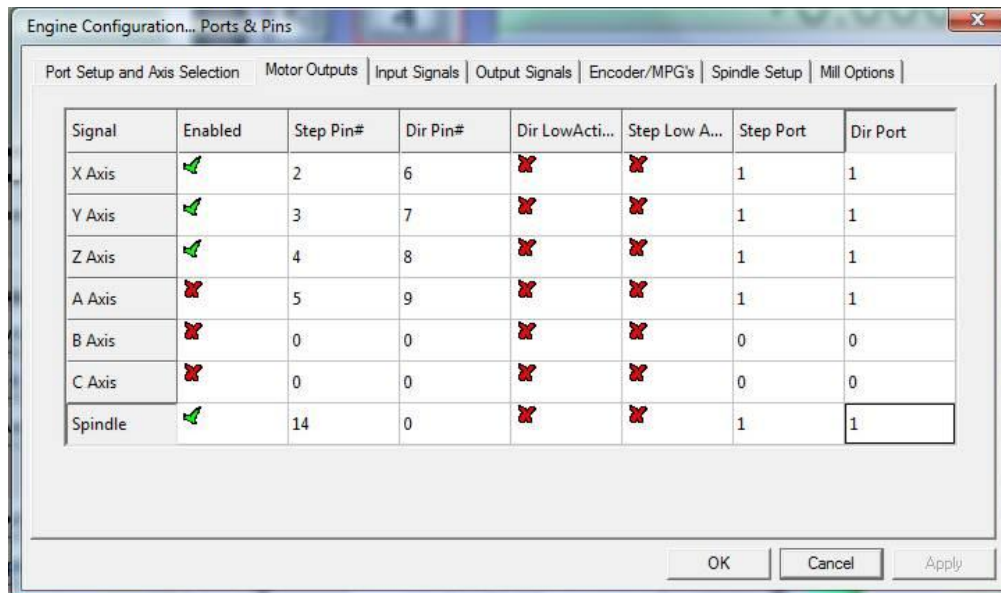
## 7. Configure the Speed Control:

**Set the speeds that you expect for the spindle.** Use the dialog window *Config / Spindle Pulleys*. Remember that the min speed is 30% de value of the max speed. If the router has a speed control knob, make sure to set it to the max speed. Press the *apply* button.

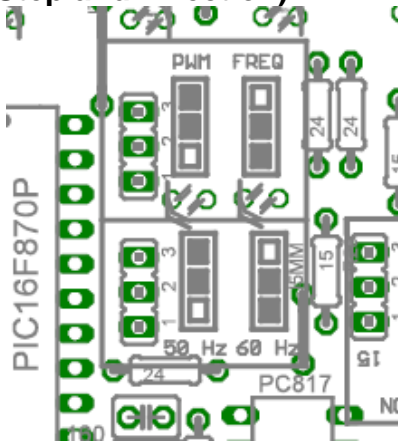


**Fig. 6**

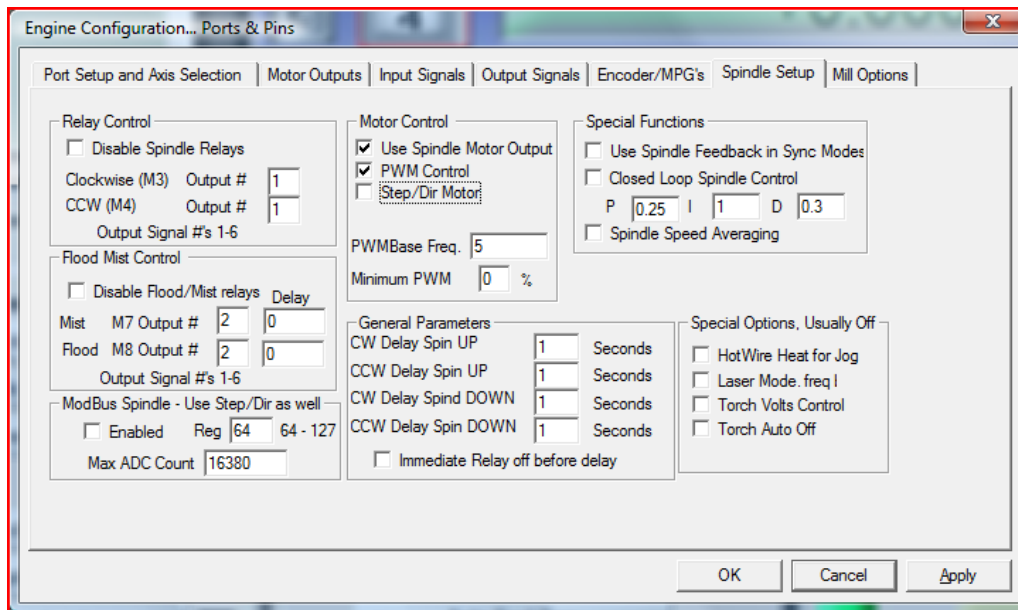
**Set pin 14 for sending the pulse stream.** Use the dialog *Config / Motor Outputs*. Enable the spindle and assign pin 14 for step.



Set the frequency the box is going to work on (50 or 60Hz) and the desired control method (PWM or Step and Direction).



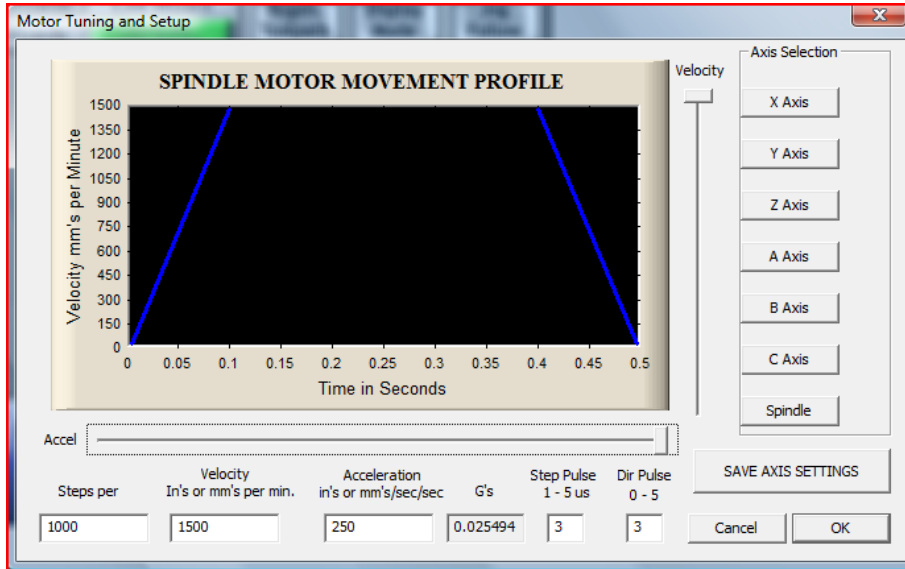
The spindle can be controlled with PWM or Step and Direction. Use the dialog window *Config / Ports and pins / Spindle Setup*. Under Motor Control select PWM or Step and Direction. Instructions will be given for both control methods. Just make sure whatever you select in the control software must match the jumper position on the board. Press the *apply* button.



Set the jumper to select the appropriate control method, it can be PWM or step. If using PWM play with different PWM Base frequencies, to up to 10,000. Leave the one that works better for the setup.



If using step and direction tune the spindle to go at max speed. Use the dialog window *Config / Motor Tuning / Spindle*. Set velocity and acceleration to the maximum value. Step length to 3..



### Wiring the Limits:

LIMIT SWITCHS CONNECTOR		
RJ45 PIN	DESCRIPTION	CONTROLLER PINS
1	GND	
2	Z HOME/LIMIT	Port 1 Pin 11
3	Y HOME/LIMIT	Port 1 Pin 12
4	X HOME/LIMIT	Port 1 Pin 13
5	NOT USED	
6	NOT USED	
7	5V	
8	NOT USED	

#### Disclaimer:

Use caution. CNC machines could be dangerous machines. DUNCAN USA, LLC or Arturo Duncan are not liable for any accidents resulting from the improper use of these devices. The C33 is not fail-safe device, and it should not be used in life support systems or in other devices where its failure or possible erratic operation could cause property damage, bodily injury or loss of life.