

This document will provide a quick guide to the set up and operation of the Techno HD Mini and Techno HD Series CNC routers equipped with the NCstudio controller.

The HD Series and HD Mini CNC routers are powered by high precision, stepper motors and controlled by a hand-held NCstudio controller.

HD Series



HD mini



NCstudio Controller



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FORKLIFT GUIDE

I. UNPACKING AND MACHINE IDENTIFICATIONS

All Techno machines are shipped assembled and secured to a wooden pallet.

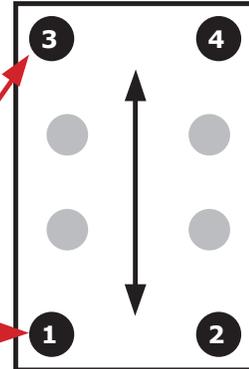
1.1 Unpack all items that shipped with your machine. Check the items against the packing slip to be sure nothing was left out. Notify Techno immediately if you are missing any pieces of your shipment.



Fig. 1.1

- Please note the 4 Forklift Tubes on the front and rear of the machine.
- If required, there are 4 Forklift Tubes on the sides of the machine.

Rear of Machine



Front of Machine

II. MEASURING FORKS AND FORKLIFTING MACHINE

2.1 Forks must be centered in the front of the machine (shown in Fig 2.1).



Fig. 2.1

2.2

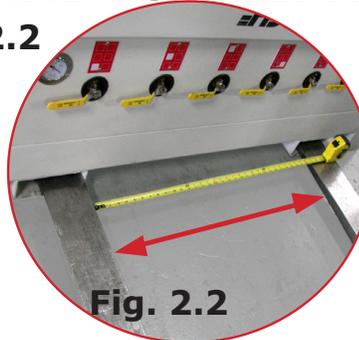


Fig. 2.2

Measure the distance between the forks. (shown in Fig 2.2).

SAFETY WARNING: DO NOT LIFT OR MOVE MACHINE USING GANTRY



For safety and to prevent damage to the machine and cables, **Lift Machine Using Forklift Tubes ONLY**

Depending on machine size – SEE QUOTE FOR MACHINE WEIGHT
NOTE: Forklift capacity must be adequate to safely lift the machine.
It is recommended to have Fork Lift Extensions to better support load.

2.3

Care must be taken not to damage the valves on the front of the machine. Slowly move in close to the machine.



Fig. 2.3

2.4

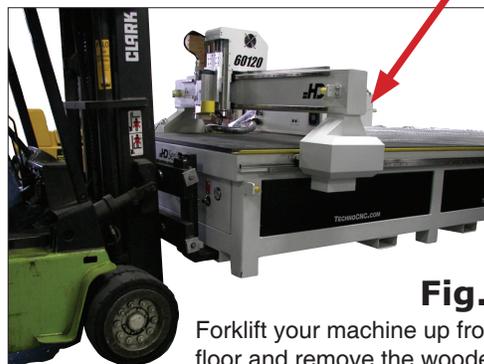


Fig. 2.4

Forklift your machine up from the floor and remove the wooden pallet.

Safety Instructions

READ THESE INSTRUCTIONS THOROUGHLY BEFORE OPERATING MACHINE. DO NOT OPERATE MACHINE IF YOU ARE UNFAMILIAR WITH THESE SAFE OPERATING INSTRUCTIONS. DO NOT OPERATE MACHINE WITHOUT KNOWING WHERE THE EMERGENCY STOP SWITCH IS LOCATED.

WARNING: IMPROPER OR UNSAFE OPERATION OF THE MACHINE WILL RESULT IN PERSONAL INJURY AND/OR DAMAGE TO THE EQUIPMENT.

1. Keep fingers, hands, and all other objects away from machine while power is on.
2. Disconnect power to all system components when not in use, when changing accessories, and before servicing.
3. Do not loosen, remove, or adjust machine parts or cables while power is on.
4. Exercise care with machine controls and around keyboard to avoid unintentional starting.
5. Make sure voltage supplied is appropriate to specifications of components.
6. Machines must be plugged into three-pronged grounded outlets. Do not remove the grounding plug or connect into an ungrounded extension cord.
7. Keep cables and cords away from heat, oil, and sharp edges. Do not overstretch or run them under other objects or over work surfaces.
8. Use proper fixtures and clamps to secure work. Never use hands to secure work.
9. Do not attempt to exceed limits of machine.
10. Do not attempt to use machine for purposes other than what is intended.
11. Use machine only in clean, well-lit areas free from flammable liquids and excessive moisture.
12. Stay alert at all times when operating the machine.
13. Always wear safety goggles.
14. Do not wear loose-fitting clothing when operating machine. Long hair should be protected.
15. Always maintain proper balance and footing when working around the machine.
16. Maintain equipment with care. Keep cutting tools clean and sharp. Lubricate and change accessories when necessary. Cables and cords should be inspected regularly. Keep controls clean and dry.
17. Before using, check for damaged parts. An authorized service center should perform all repairs. Only identical or authorized replacement parts should be used.
18. Remove any adjusting keys and wrenches before turning machine on.
19. Do not operate the machine unattended.
20. Follow all safety instructions and processing instructions in the MSDS for the material being processed.
21. Use proper precautions with dust collection systems to prevent sparks and fire hazards.
22. Make sure to have proper fire extinguishing equipment on hand at all times.

PREVENT FIRE HAZARDS by using the proper feeds, speeds, and tooling while operating your Techno machine. For example, setting feeds and speeds too low and/or using dull tool bits creates friction at the material. The friction generates heat which can result in a fire that can be drawn through the vacuum table or dust collector without warning. Fire hazard from friction heating caused by dull tools is possible when cutting certain materials, especially composite material such as wood composites, MDF and Particleboard.

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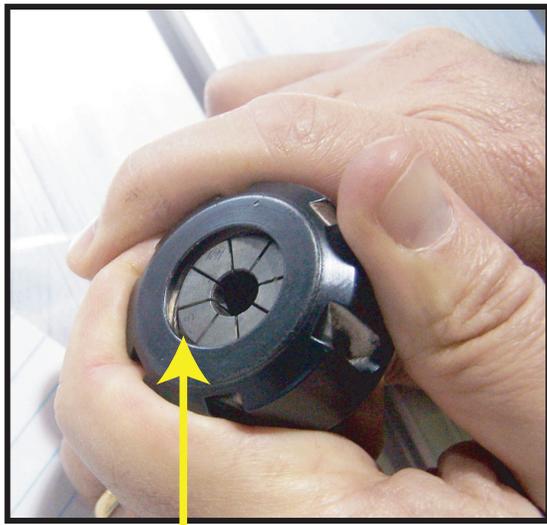


WARNING!
THE SPINDLE WILL BE DAMAGED
IF UNBALANCED EQUIPMENT IS USED.

AIR SUPPLY MUST BE FILTERED AND DRY.

COLLETING GUIDELINES

WRONG!



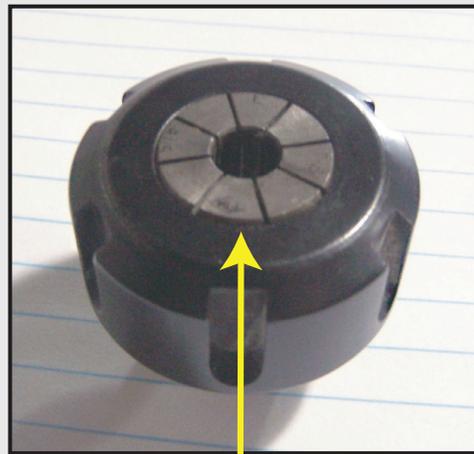
This picture shows an improper assembly. Notice the gap and angle of the collet in relation to the nut. The collet is not flush to the end of the collet nut. Correct this assembly before using.

**DO NOT
PUSH THE
COLLET
INTO THE
SPINDLE AT
ANY TIME!**

Only the proper assembly should be screwed onto the spindle.



RIGHT!



The picture above is how your collet nut assembly should look: the end of the collet is flush with the bottom surface of the collet nut. You will hear and feel a "SNAP" as the collet properly goes into the collet nut. Once it is assembled, then "SCREW" the nut onto the threaded spindle end.

**FOR TOOLCHANGE
AND FIXED COLLET
SPINDLES:**

**ONLY USE TOOLHOLDERS,
COLLET NUTS AND TOOLS
THAT ARE BALANCED TO
MEET OR EXCEED THE MAX
RATED SPEED OF
THE SPINDLE.**



I. TECHNO HD MINI SETUP

Carefully remove the HD Mini from its crate. Be sure to remove the brackets from its four feet as well as anything stowed under the HD mini during shipping.

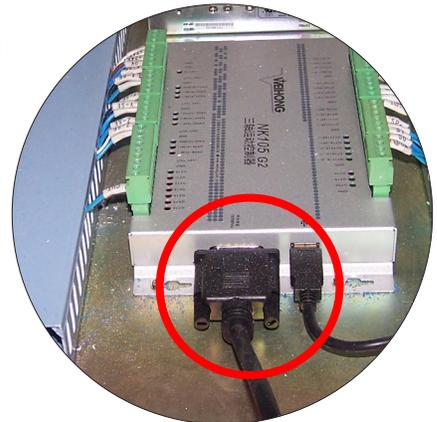
Attached the provided leveling feet to the four legs and adjust accordingly until the table is level.

Remove the front panel of the HD Mini using a M4 allen wrench to install the handheld controller to the machine.

Attached the handheld to the controller (Fig. 1.1) and replace the front panel, carefully routing the handheld wire through the access port.



Fig. 1.1



1.2

The power cable is supplied without a plug. You will need to supply your own plug.

Plug the power cable into the rear of the machine as shown in figure 1.2

Have a suitably qualified person attach the correct plug in compliance with the wiring standards in your area.

The machine must be connected to a 220V, single phase, 15A circuit.

The cable that we supply will be one of two types. It may either be a cable with a brown, blue, and green/yellow wire or a cable with a black, white, and green wire. (Fig 1.3)

Power is connected as follows:

Green or Green/Yellow conductor is always ground .
The two other conductors will be the hot leads.

Fig. 1.2

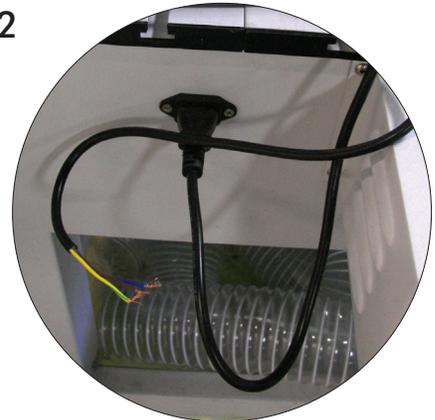
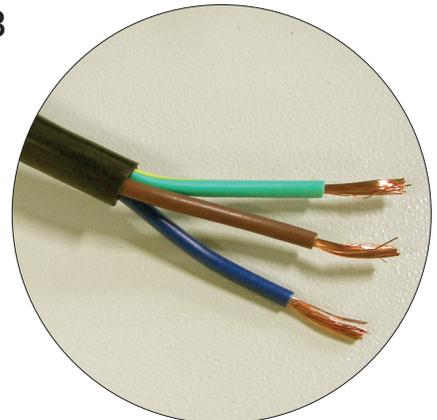


Fig. 1.3



I. Enabling the HD Mini

1.4 Control Panel Functions.

Figure 1.4 shows the machine control panel buttons and functions.

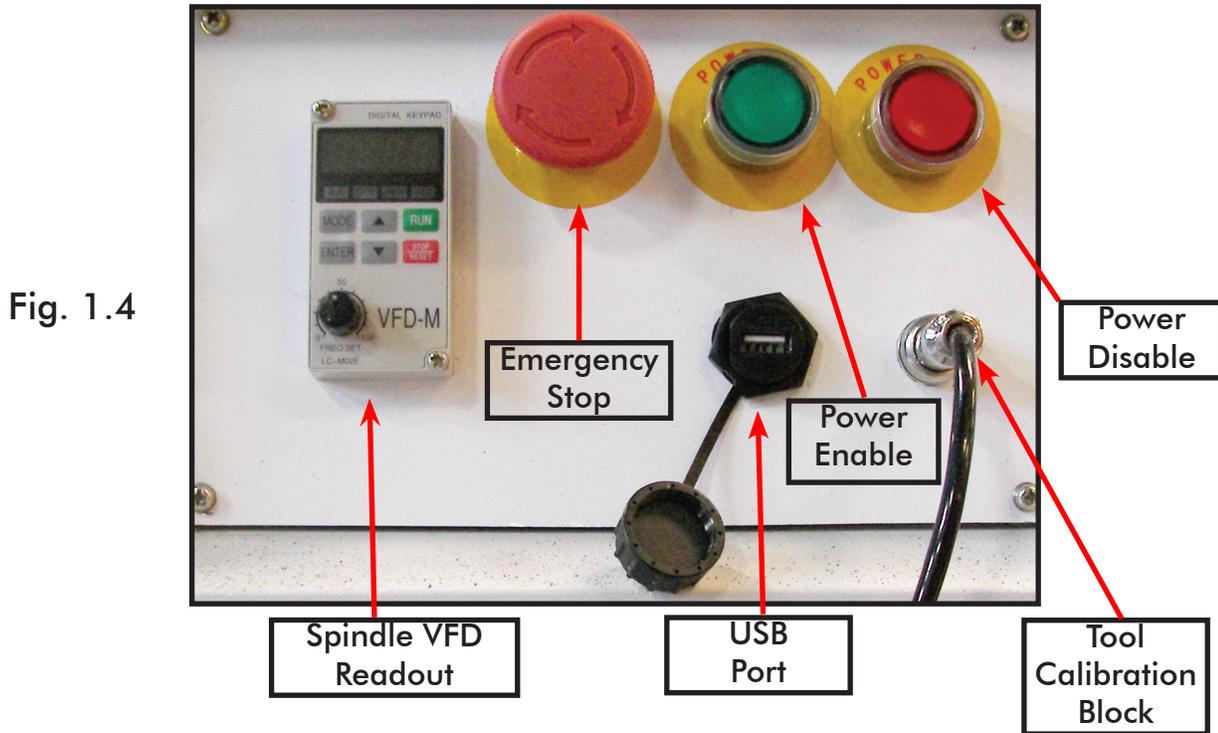


Fig. 1.4

1.5 Enabling The Machine.

When the machine is plugged in, the red POWER button will light up indicating the machine is powered, but motors are not yet powered.

Fig 1.5a

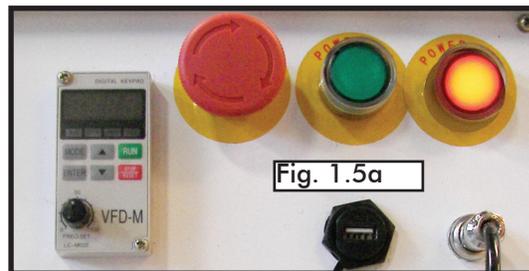


Fig. 1.5a

(Note that the red POWER button will light up if the Emergency Stop is pressed during operation.)

Activate the machine by pressing the green POWER button.

Power is now applied to the machine. The green light will now light up and the red light will go off.

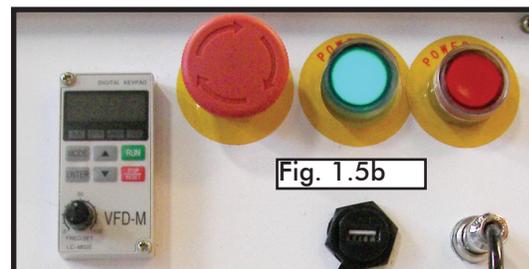


Fig. 1.5b

I. TECHNO HD SERIES QUICK SETUP

The Techno HD Series Router is powered by 220 Volt AC. Unless specially requested, the electronics require 3-phase power.

1.1

The Electronics are housed in the large NEMA enclosure as shown in Figure 1.1. When unpacking the machine avoid twisting the cable carrier that guides the cables to the motors.



Fig. 1.1

1.2

Open the rear of the controller using the provided key located around the emergency stop button.

You will now have access to the electronics that drive the CNC. They will be identical or like depending on the model issued. (shown in Fig. 1.2).

The terminals for the 220 volt connection are located at the bottom of the box (shown in Fig. 1.3)



Fig. 1.2

1.3

Have a suitably qualified person connect the 220V to the shown terminals. Make sure that all local electrical codes are obeyed. For single phase machine, connect power to L1 and L3 only.

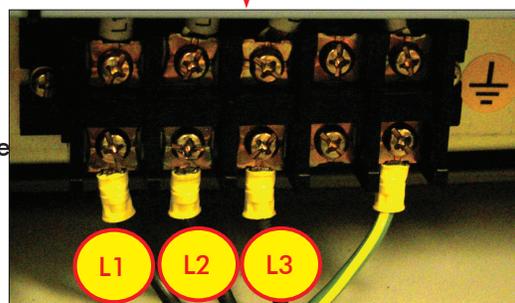


Fig. 1.3

1.4

Unpack the hand-held controller (shown in Fig 1.4) and carefully attach this to the controller board. (shown in Fig 1.5).



Fig. 1.4

1.5

Guide the cable through the hole on the side of the enclosure and attach the hand-held controller to the DB 15 terminal.

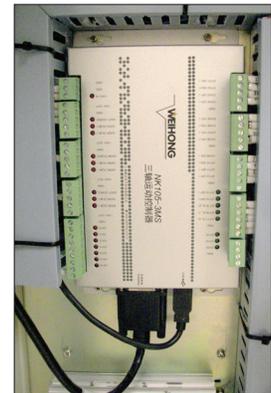


Fig. 1.5

1.6

If the machine has a vacuum hold down pump, there is a matching connector that will plug into the controller box (shown in Fig. 1.6).

Vacuum Starter Connection



Fig. 1.6

I.1 Techno HD Installation

Fig.1.1



Carefully remove the HD from its wood pallet. Be sure to remove the brackets from its four feet as well as anything stowed under the HD during shipping.

Remove all bubble wrap, foam and strapping from the machine.

Attached the provided leveling feet to the six legs and adjust accordingly until the table is level.

1.1

Remove the controller and place it on the floor to the left of the machine.

When unpacking the controller, avoid twisting the cable carrier that guides the cables to the motors.

1.1a

Remove the three brackets used to stabilize the gantry during shipping using a M3 or M4 allen wrench. (Fig. 1.1a)



Fig.1.1a

1.2

Open the back of the controller box (shown in Fig 1.2a) with the key provided. The electronics will now be exposed and components identified in Fig 1.2b.

- A- Controller Board.**
- B- 24Volt PSU.**
- C- Stepper Driver.**
- D- 220Volt In.**



Fig. 1.2a

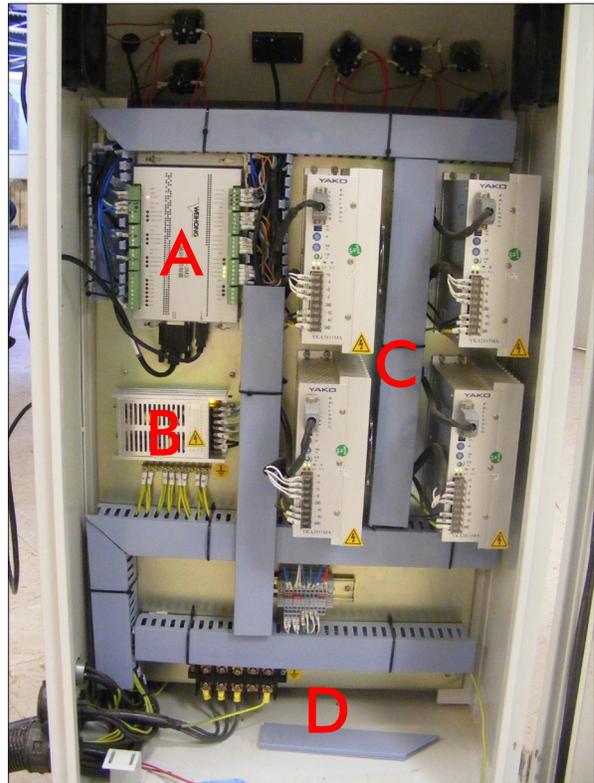


Fig. 1.2b

1.3

Take the black connector coming from the Hand-held controller (fig 1.3a,) and guide it through the hole in the side of the box.

Locate the controller board (fig 1.3b) and attach the block connector as shown by the red arrow.



Fig. 1.3a

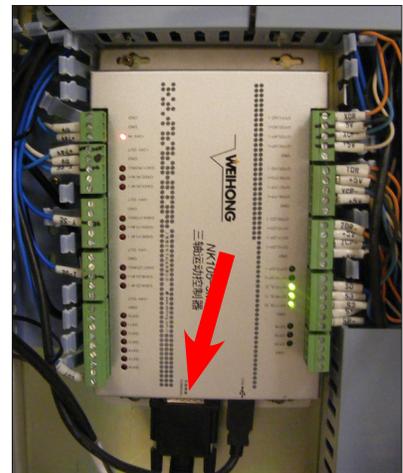


Fig. 1.3b

1.4

Have a qualified electrician attach 220 Volts to the terminal on the bottom of the box (Fig 1.4.) Unless specifically requested by the user, 3 Phase 220 Volt is needed.

If the machine has been modified for single phase operation, then L1, L3 and GND are used, and nothing is attached to L2.

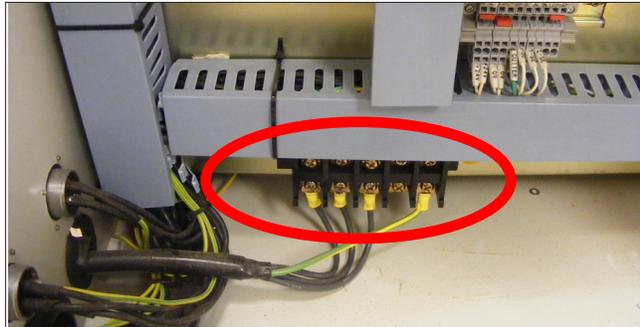


Fig. 1.4

1.5

If the machine has a vacuum table, the Vacuum Pump should be wired to 220V or 440V (depending on what is specified on the Unit,) by a qualified Electrician. (Fig 1.5a)

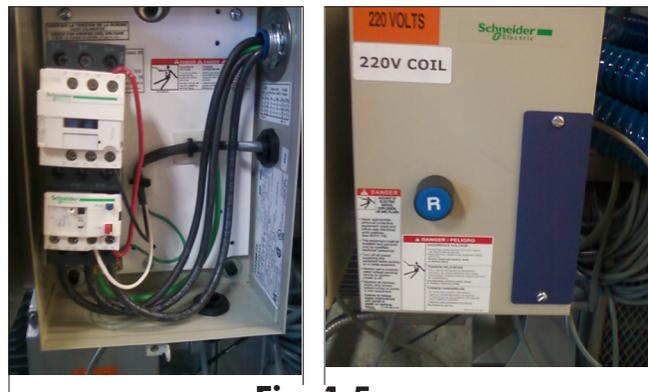


Fig. 1.5a

The starter box will have a round silver connector attached to a grey cable coming out of it, (Fig 1.5b).



Fig. 1.5b

This connector plugs into the socket on the side of the machine, (Fig 1.5c). This cable provides 220 volts to the starter coil to turn on the vacuum.

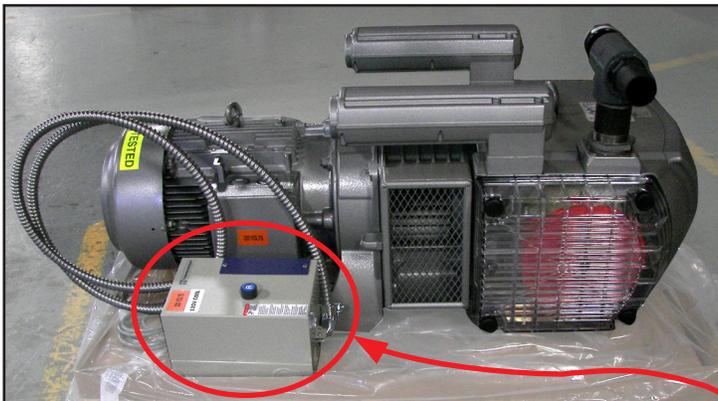


Fig. 1.5c

II. Vacuum Pump Installation



WARNING: Direction of Pump Rotation is critical.
Briefly start Pump and check rotation (arrow on casing).
Exchange phases if rotation is incorrect.
**IF YOU RUN THE PUMP/BLOWER CONTINUOUSLY IN THE
WRONG DIRECTION,
THE VANES WILL BE DAMAGED.**



If a Vacuum Pump/Blower was part of your order, you will have an electrical starter box that looks like this. You should not need to wire the Vacuum Pump/Blower Motor, it has been wired and tested at the factory.

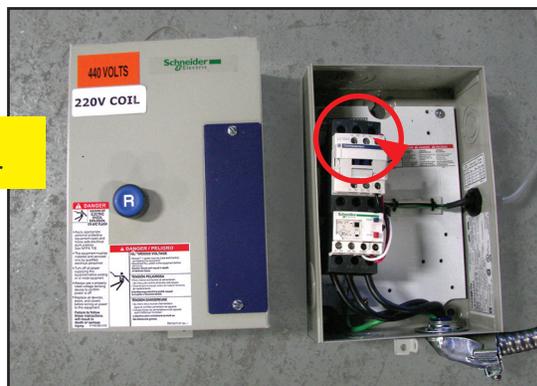


Use the T-Connector to connect the vacuum pump to the vacuum hose under the machine.



Pump/Blower Motor Starter Box & Connector

NOTE:
The cover was removed from Motor Starter.



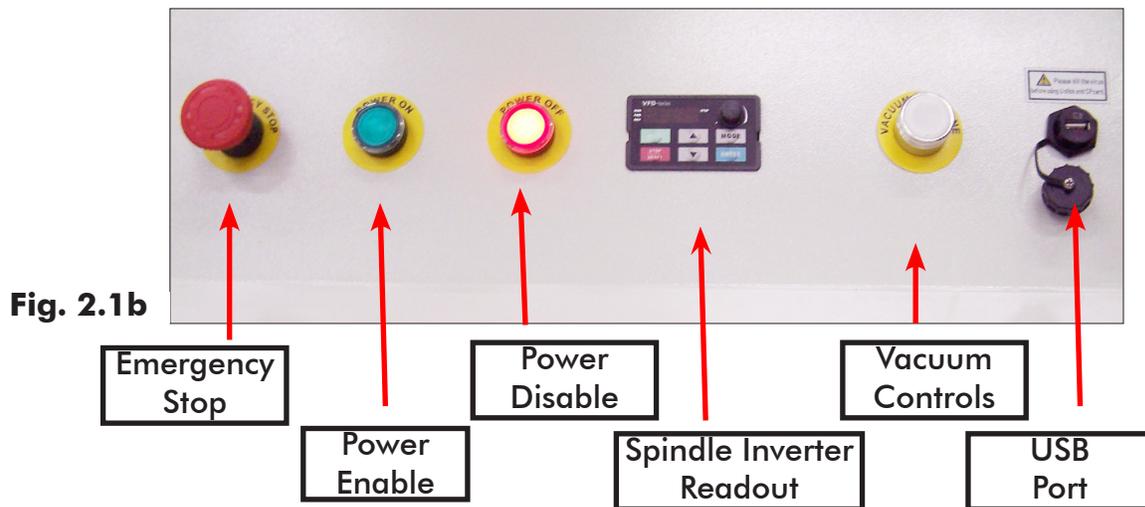
You will need to have the electrician connect AC power (220 or 440VAC) as specified on the unit here to the Motor Starter.

II. Enabling the HD Series

2.1 Control Panel Functions.

Figure 2.1 b shows the buttons and their functions.

IMPORTANT: DOORS MUST BE CLOSED FOR POWER TO ENABLE.



Once the main power switch has been engaged the controller is activated by pressing the green on switch on the front of the controller.

2.2 Powering On

Turn the machine on by turning the main power control switch to the upright position (Fig 2.2a)



(Note that the red POWER button will light up if the Emergency Stop is pressed during operation.)

Fig. 2.2a

Power is now applied to the controller box. The red light will now light up indicating the machine is powered, but motors are not yet enabled. (Fig 2.2b)



Press the green button to apply power to the controller and enable the motors. (Fig 2.2c)

