

Figure A VFD Mounted Inside Protective Box

Important Wiring Instructions to Prevent Accidental Shock:

Note: All wire connections are made only inside the VFD unit and inside electrical boxes. This protects personnel from accidental electrical shock.

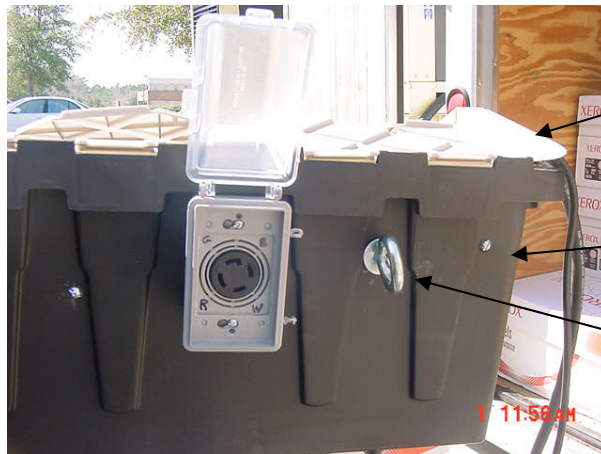
The **only voltage permissible in the protective box is 24 volt DC control voltage** to energize to signal VFD start. All power cords use **standard NEMA plugs and NEMA receptacles**. Plugs are used to energize equipment and receptacles are used to access live power. **A plug should never be in an energized condition unless it is attached to a receptacle**. This convention protects employees from accidental shock.

The green grounding wire is **permanently attached to the metal frame of the VFD** cabinet. It will be attached in the field to a **ground rod** typically found at the point of line power supply. This extra grounding protects against voltage potentials that may exist between metal covers on powered equipment.

Wires that protrude from receptacles into the electrical box are attached with **permanent wire connectors**. This keeps cables from being accidentally pulled loose from internal wire connections inside the electrical box.

Assembly Instructions for Constructing a VFD Control Box for Field Applications

1. All of the parts needed to construct a control box for protection of the VFD and to ensure the safety of personnel who will use the VFD in the field, can be obtained from Home Depot.
2. A solid HPDE plastic storage box (part no. 785130405962) provides adequate space for mounting of the VFD and storage of cables used in making field connections. Make sure to provide a water tight cover for the box by cutting and mounting a piece of plywood over the top of the box (not shown) prior to field deployment. Cut the plywood cover large enough to provide 2" of extra space on each side over the top of the control box to preventing rainwater from seeping inside the box.
3. Cut 2' x 4' - 3/8" plywood to fit bottom and side. Cut the side panel to ensure that the plastic top cover closes freely. Center VFD on plywood; providing a minimum 10" clear distance from VFD to box at bottom. Ensure that there is proper clearance for installation of control box (see above.) The bottom area provides room for storage of cables used with the VFD. Securely attach VFD to plywood using 4 - 1/4" hex screws (part no. 030699084227) to VFD back panel.
4. Attach bottom plywood to box using 6 - 1/4" hex screws. Make sure that holes through box are made in areas where the box and plywood are in direct contact. This ensures structural stability and water tightness. Tighten screws and use a washer to ensure proper compression is achieved to prevent the screws from loosening over time.
5. Install 6 air louvers (part no. 050206191224) using hole saw. Cuts should be on flat part of box with flat side of vent on inside of box. Vents should be secured to the box with #10 screws.



Ensure that top closes when side plywood is installed

Bolt Plywood at flat box/wood interfaces

I-Bolt for installation of security chain in field; scar threads inside box with chisel or drill hole for pin

Figure B Box Showing N1430 30 AMP Receptacle

6. Cut opening trough plywood for wire connection lug and install 10-4 cable (part no 079407114375) to VFD. Cable should be about 30” long to allow it to be secured inside box. Install electrical weather proof receptacle box (part no 03448108930.) and cover . The box should have a ½ hole at the bottom pointing down. This will allow for any water that could enter the box to drain away. Bolt electrical box to the plywood using 2 – 1/4 “ hex screws. Install 10/4 receptacle (7850078557696) with ground at the top of the box. Install weather protective cover (part no 785130405962.)
7. Install standard on-off switch to be used for VFD start signal at side and top of box as shown in Figure A. For larger generator units, a 50 AMP receptacle should be provided.
8. Cut at minimum 10’ feet of 10/4 cable (part no 079407114375) and install NEMA plug (part no 785007855173) at one end. On the other end strip wires back about ¾”. These will be connected to the motor breaker or directly to the motor.

Wiring of VFD

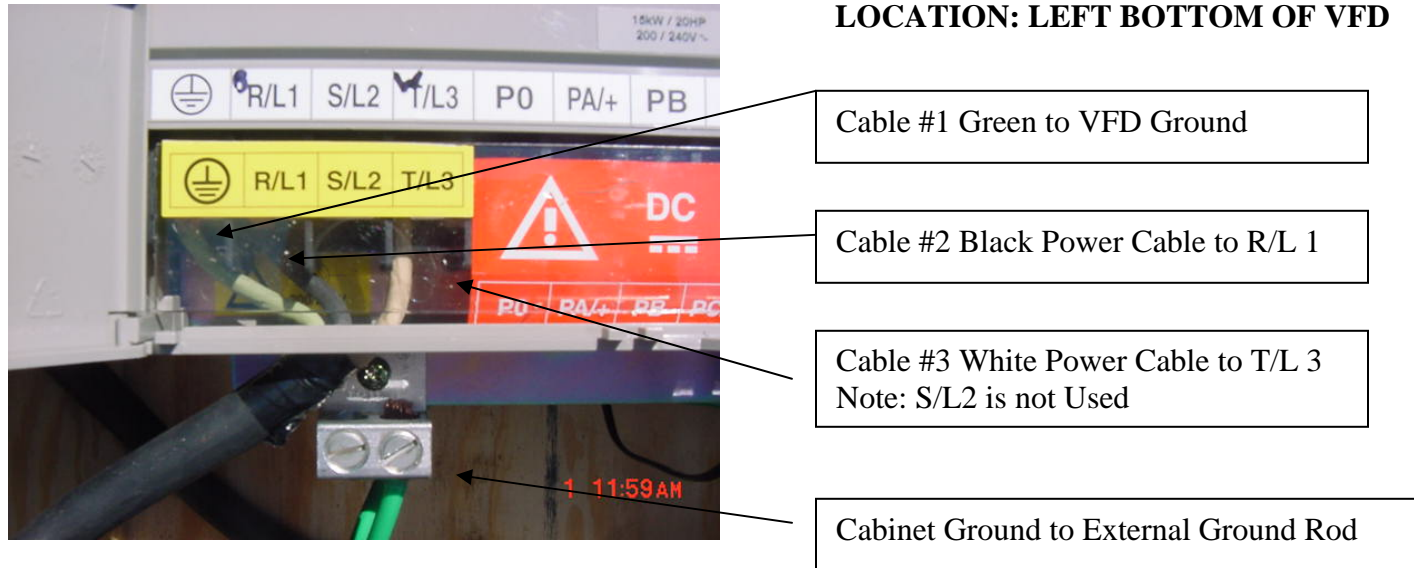


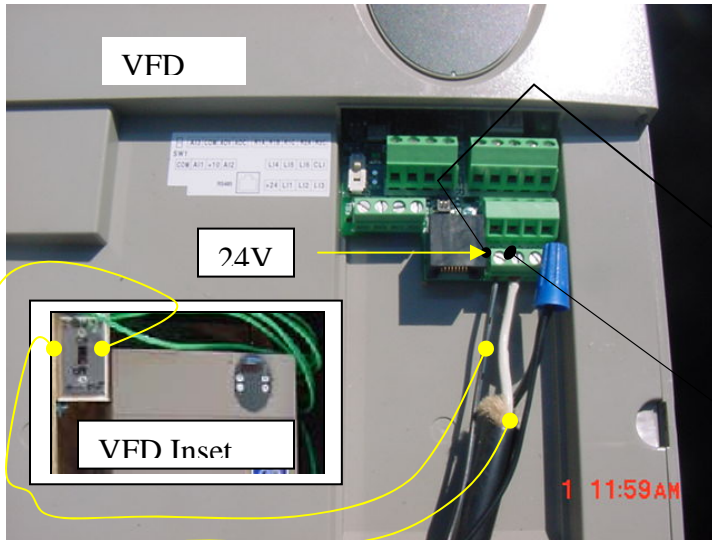
Figure C VFD Incoming 240V Single Phase and External Grounding Connections



LOCATION: RIGHT BOTTOM OF VFD

- U/T1 Black Wire to Motor
- W/T2 Red Wire to Motor
- W/T3 White Wire to Motor
- Green Wire - Ground to Motor

Figure D VFD Outgoing 240V Three Phase and External Grounding Connection



LOCATION: TOP RIGHT VFD With Inset Control Switch Shown

- Note: Start command is initiated to VFD when 24 volts is supplied to Logical Inputs. In direct control (on-off) applications, 24 volts applied to Logical Input 1 (L 11) initiates start command.
- Black Wire- 24V Control Connection to "in" side of switch
- White Connection – 24V Return from energized (on position) to L 11 from switch

Figure E Control Connections Initiating "Run" Command

