VFD REPLACEMENT

TO REDUCE THE RISK OF FIRE, ELECTRIC SHOCK, OR INJURY TO PERSONS, OBSERVE THE FOLLOWING:

⚠ **WARNING: ELECTRICAL SHOCK HAZARD. Disconnect the power supply before installation, service, or maintenance. Failure to do so may result in serious injury or death.**

⚠ **WARNING: Before servicing or cleaning unit, switch power off at service panel and lock the service disconnecting means to prevent power from being switched on accidentally. When the service disconnecting means cannot be locked, securely fasten a prominent warning device, such as a tag, to the service panel.**

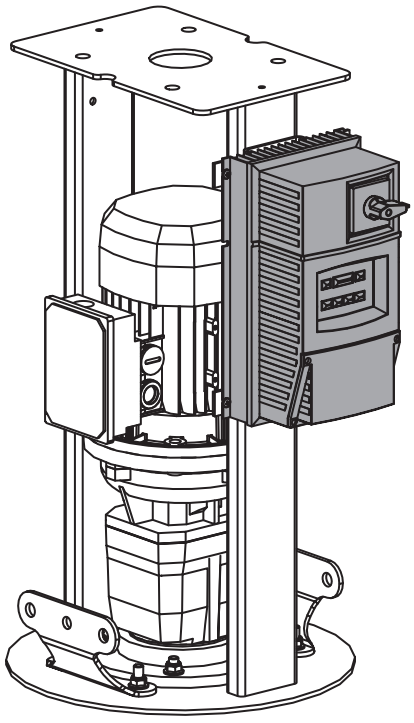
⚠ **WARNING: When service or replacement of a component in the fan requires the removal or disconnection of a safety device, the safety device is to be reinstalled or remounted as previously installed.**

⚠ **WARNING: The fan VFD contains high voltage capacitors which take time to discharge after removal of mains supply. Before working on the VFD, ensure isolation of main supply from line inputs at the VFD or fan controller's disconnect. Wait three minutes for capacitors to discharge to safe voltage levels. Failure to do so may result in personal injury or death. Darkened display LEDs are not an indication of safe voltage levels.**

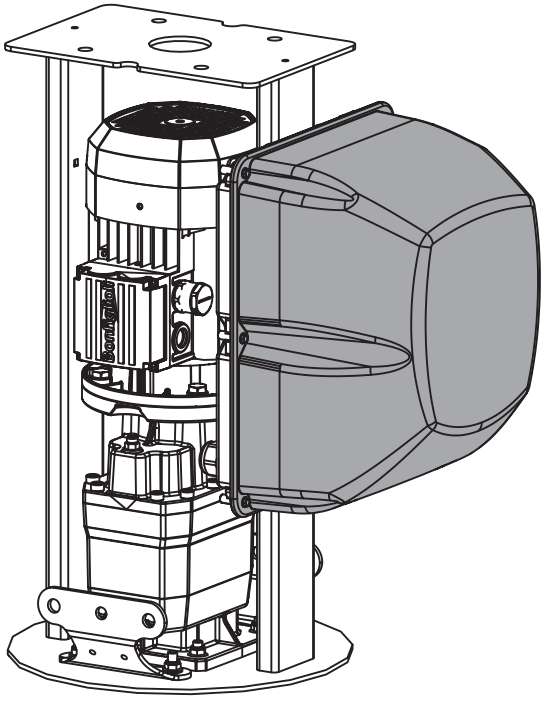
⚠ **CAUTION: The Big Ass Fans product warranty will not cover equipment damage or failure that is caused by improper installation or use.**

The following instructions are for replacing either a Lenze SMVector VFD (older generation fans) or a Delta MS300 VFD with a new Delta MS300 VFD.

Lenze SMVector VFD



Delta MS300 VFD



Your VFD appearance and fan motor appearance may differ slightly from the images in these instructions. Some VFD wires/cables and internal VFD assembly components are not shown in these instructions for visual clarity.

1. Disconnect power wiring and CAT5 control cable

Disconnect fan's AC power wiring at ceiling. Remove SMVector VFD wiring cover (four screws, *Fig. 1.1*) or MS300 VFD cover (six screws, *Fig. 1.2*). Discard cover and screws.

Fig. 1.1: SMVector VFD

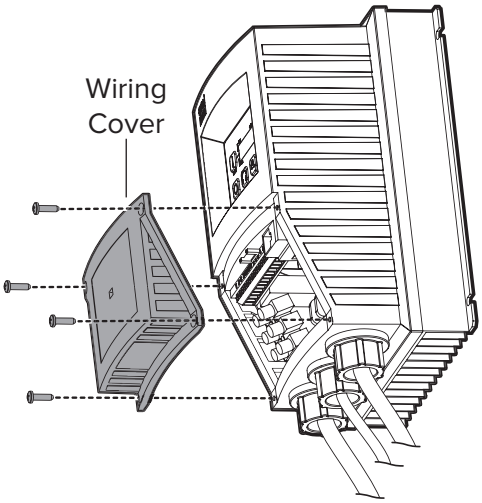
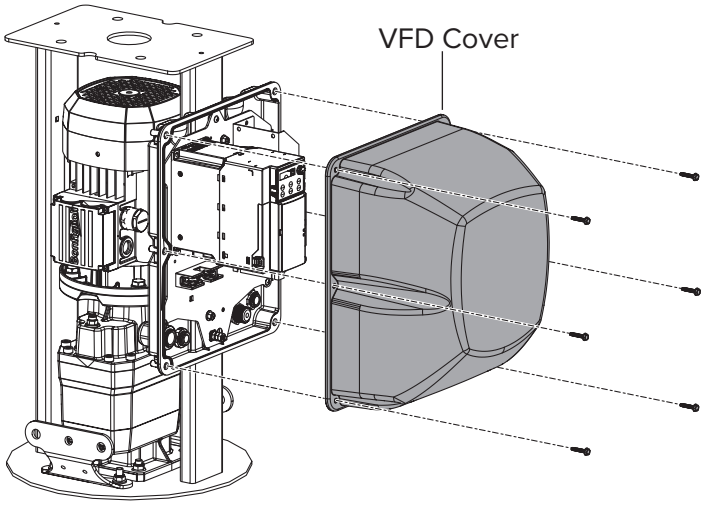


Fig. 1.2: MS300 VFD



SMVector VFDs: Disconnect CAT5 control cable wires and fire relay wires (if applicable) from VFD terminals (VFD not illustrated below).

MS300 VFDs: Disconnect CAT5 control cable from jack on back of VFD and discard cord grip (*Fig. 1.3*). If applicable, disconnect fire relay wires from VFD terminals and remove wiring from cord grip on back of VFD (*Fig. 1.4*).

Fig. 1.3: MS300 VFD

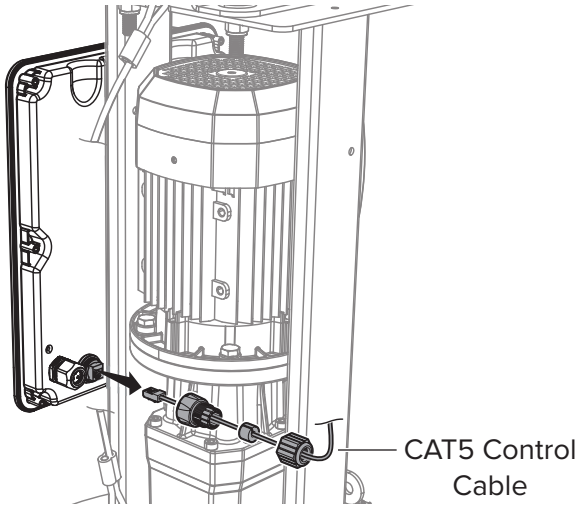
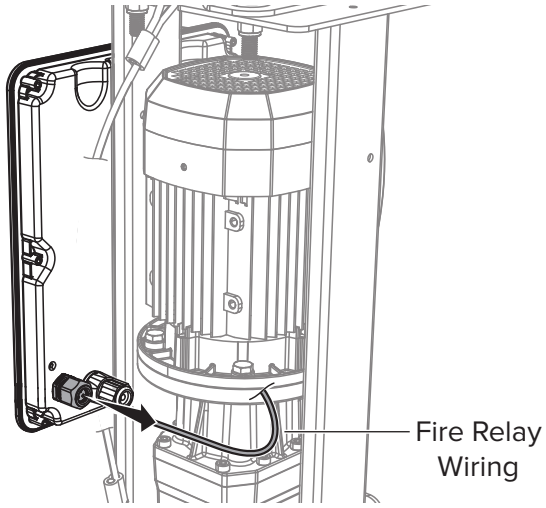


Fig. 1.4: MS300 VFD



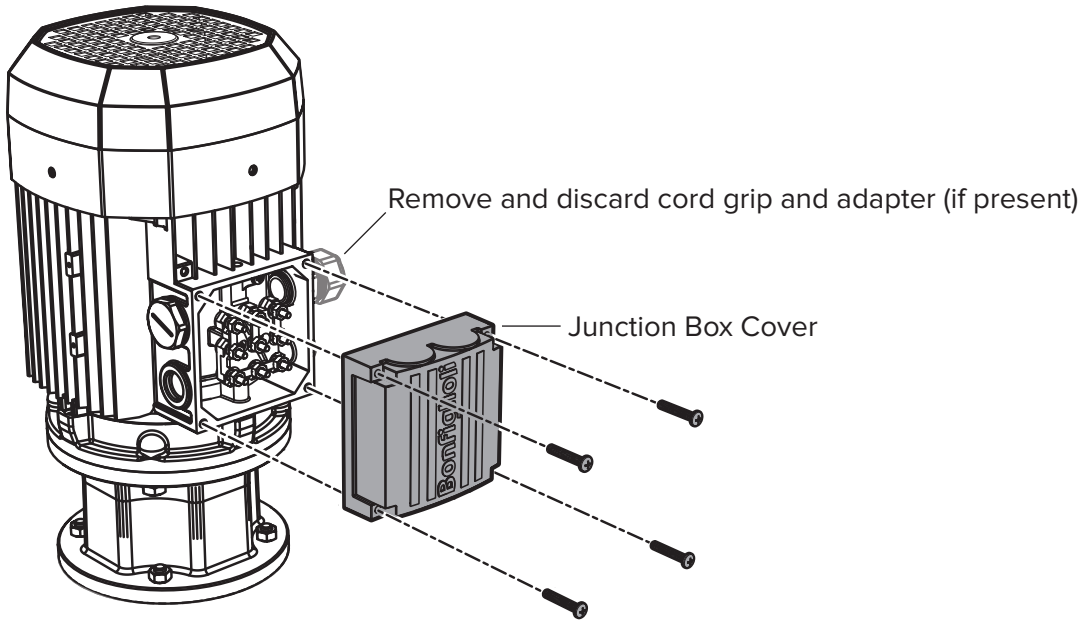
2. Disconnect motor output wiring

Remove motor junction box cover (*Fig. 2*). Save the four screws for cover reinstallation.

Disconnect VFD's motor output wires from motor. Save the motor terminal block nuts and ground screw for wire reinstallation. Remove and discard cord grip and adapter, if present (*Fig. 2*).

Motor appearance may differ slightly from the images in these instructions.

Fig. 2



3a. Replace VFD (SMVector VFDs)

Remove and discard the VFD and its four mounting screws and nuts (*Fig. 3a.1*), and then remove and discard the two VFD mounting brackets and the two bracket screws and nuts (*Fig. 3a.2*).

Fig. 3a.1

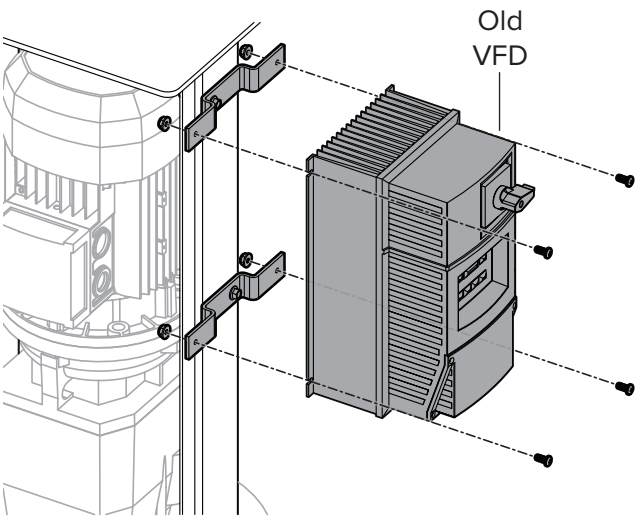
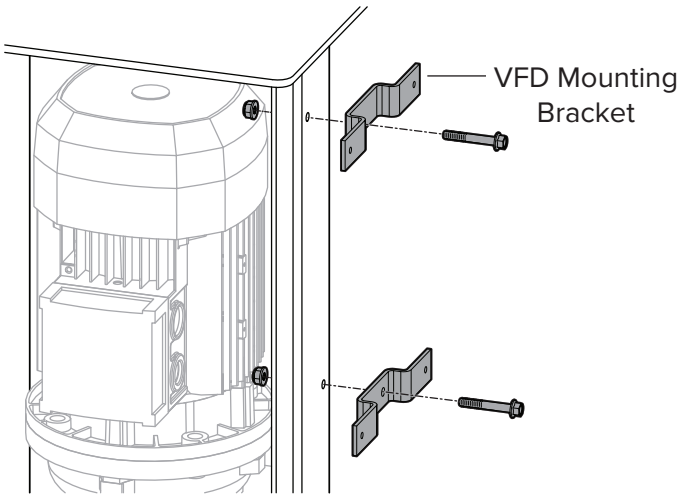


Fig. 3a.2



When you are facing the motor junction box, the new VFD should be installed on the **right side of the motor frame**. Install provided VFD mounting bracket to **right side of motor frame** with the provided hardware (*Fig. 3a.3*), and then install new MS300 VFD to mounting bracket with the provided hardware (*Fig. 3a.4*).

Fig. 3a.3

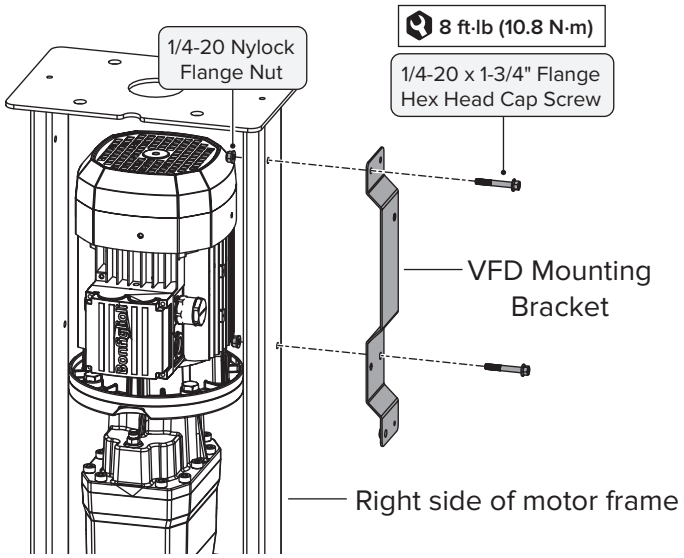
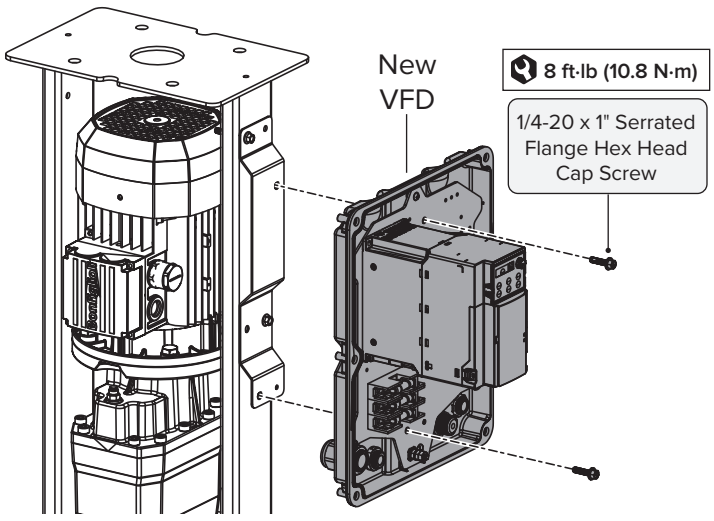


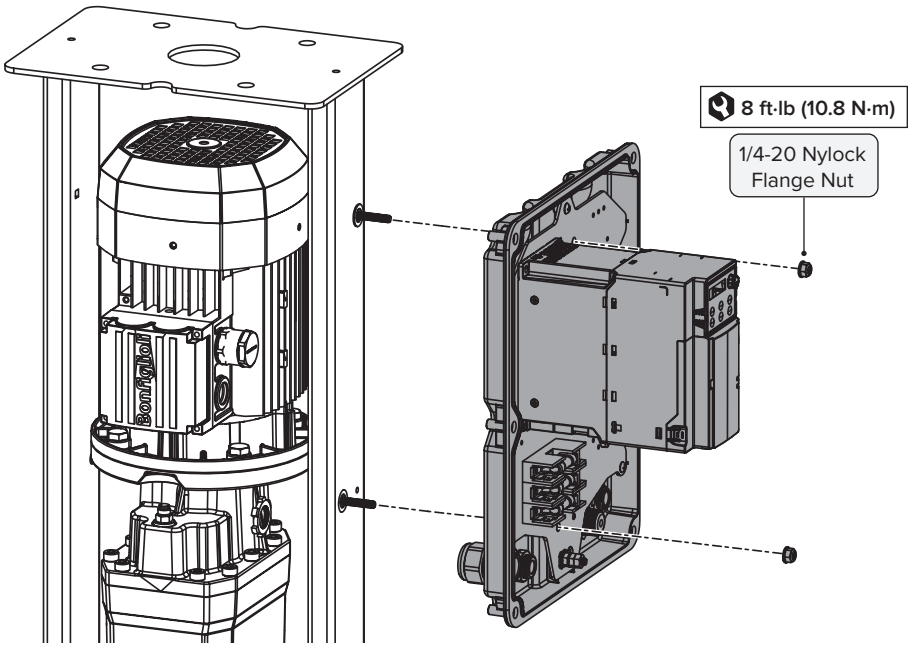
Fig. 3a.4



3b. Replace VFD (MS300 VFDs)

Remove and discard the VFD and its two mounting nuts, and then install the new VFD to the two screws on the motor frame with the provided nuts (*Fig. 3b*).

Fig. 3b



4. Connect and route CAT5 control cable and power cable

Insert CAT5 control cable into jack on back of VFD (*Fig. 4.1*). Route control cable and power cable from VFD into motor frame, up through extension tube, and out of upper mount (*Fig. 4.2, Fig. 4.3*). Route other end of control cable to wall control installation location (if not already routed).

Fig. 4.1: CAT5 Control Cable to VFD

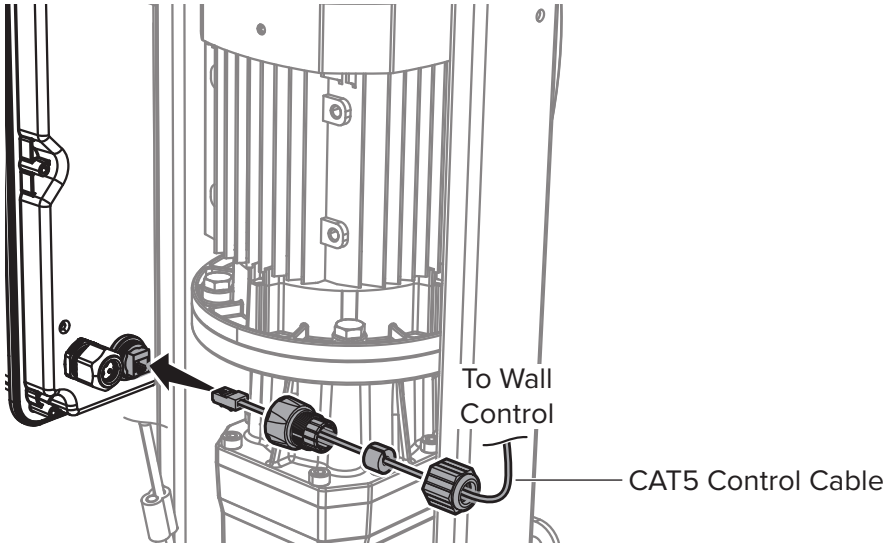


Fig. 4.2: CAT5 Control Cable Routing

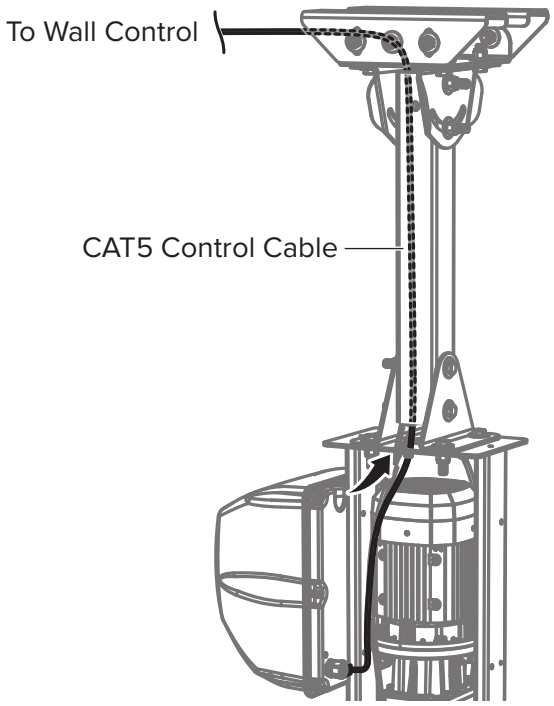
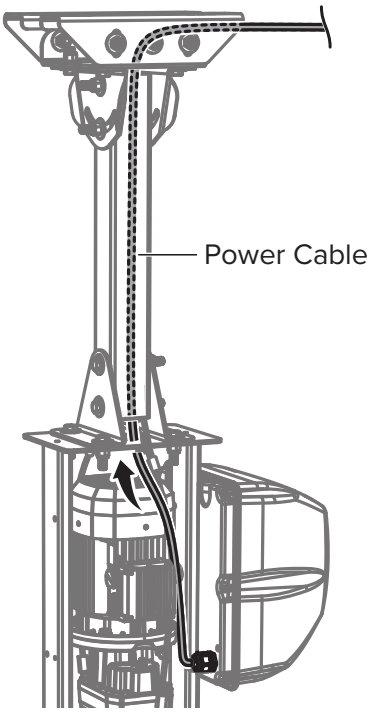


Fig. 4.3: Power Cable Routing



5. Connect power cable to supply power

Single Phase (L1 + L2 + PE)

Supply Power	VFD Power Cable
L1/AC Line	Black or Brown
L2/AC Line	White or Blue
Earth/PE	Green or Green/Yellow

Single Phase (L1 + N + PE)

Supply Power	VFD Power Cable
L1/AC Line	Black or Brown
AC Neutral	White or Blue
Earth/PE	Green or Green/Yellow

Three-Phase (L1 + L2 + L3 + PE)

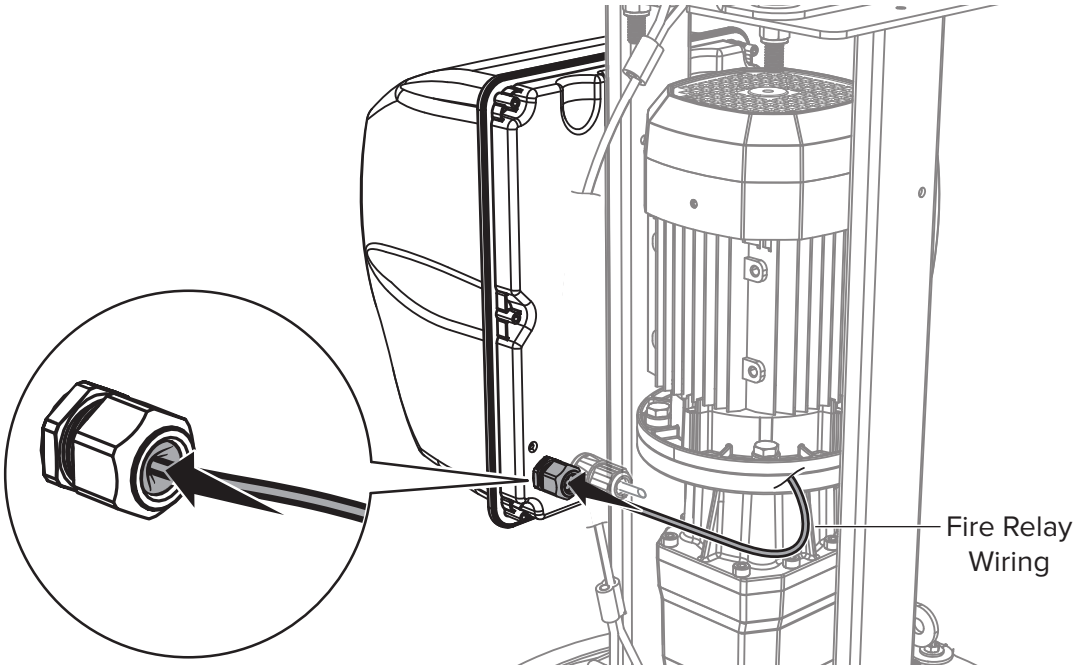
Connection to an ungrounded 480 VAC delta or an open delta transformer secondary is not permitted.

Supply Power	VFD Power Cable
L1/AC Line	Black or Brown
L2/AC Line	Red or Black
L3/AC Line	White or Gray
Earth/PE	Green or Green/Yellow

6. Connect fire relay wiring (if applicable)

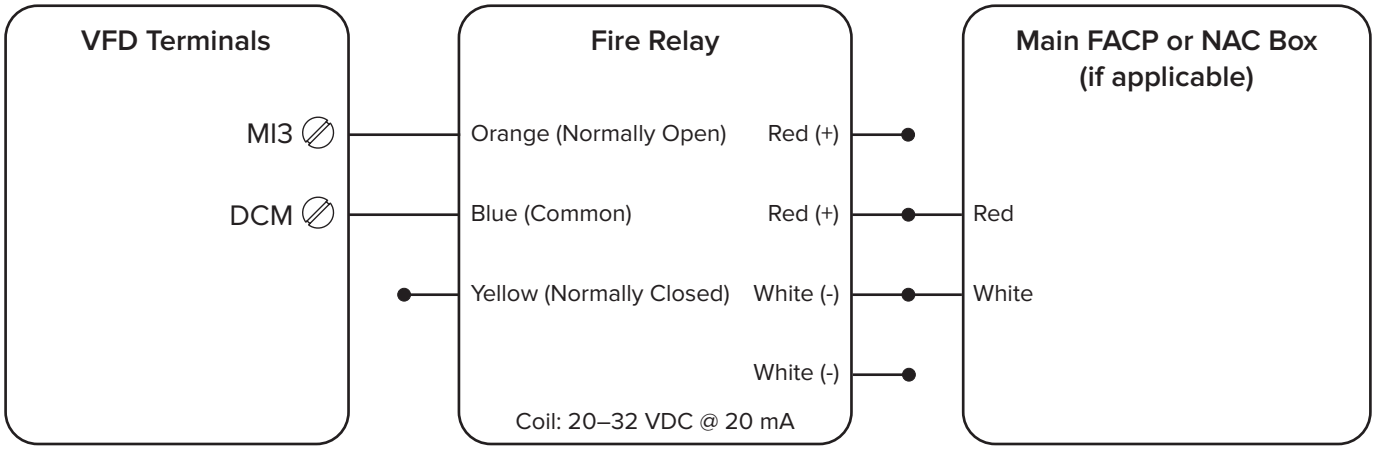
If applicable, insert fire relay wiring into cord grip on back of VFD (*Fig. 6*), and then wire to VFD terminals according to the appropriate diagram.

Fig. 6



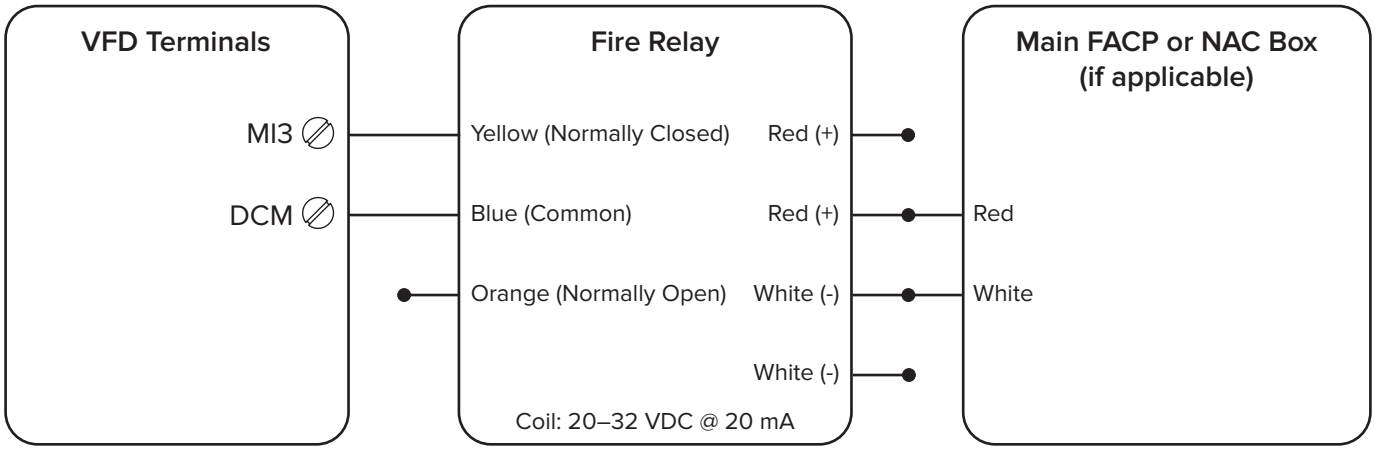
Normally open

A contact closure across digital input terminals MI3 and DCM will result in fan shutdown. The relay coil must be energized with 24 VDC by the FACP for fan shutdown. This is done using one set of the red (+) and white (-) wires. The other set of red and white wires is for passing the signal to the next fan (supervised pass-through). An alarm condition will stop the fan and issue a fault at the controller.



Normally closed, optional

The relay coil must remain energized with 24 VDC by the FACP for fan operation. This would be considered a fail safe or fail open wiring arrangement. This is done using one set of the red (+) and white (-) wires. The other set of red and white wires is for passing the signal to the next fan (supervised pass-through). An alarm condition will stop the fan and issue a fault at the controller.

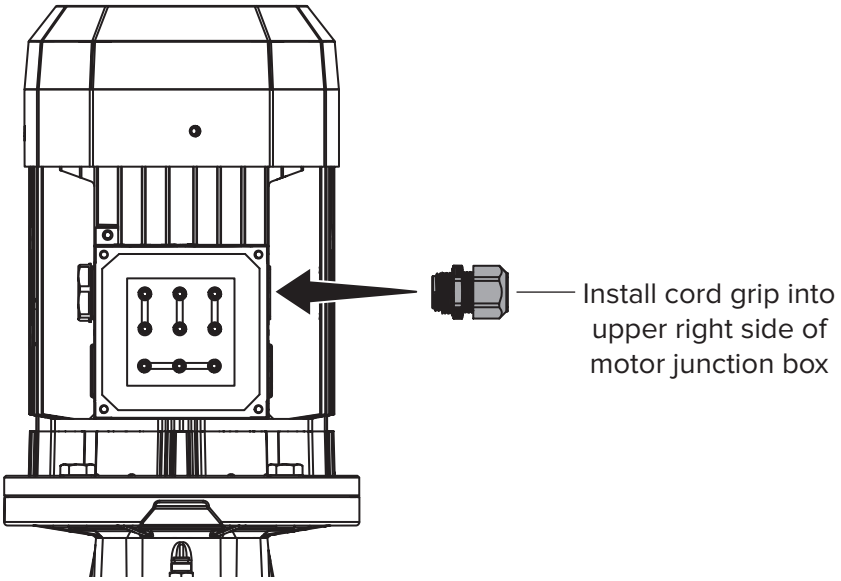


7. Connect motor wiring

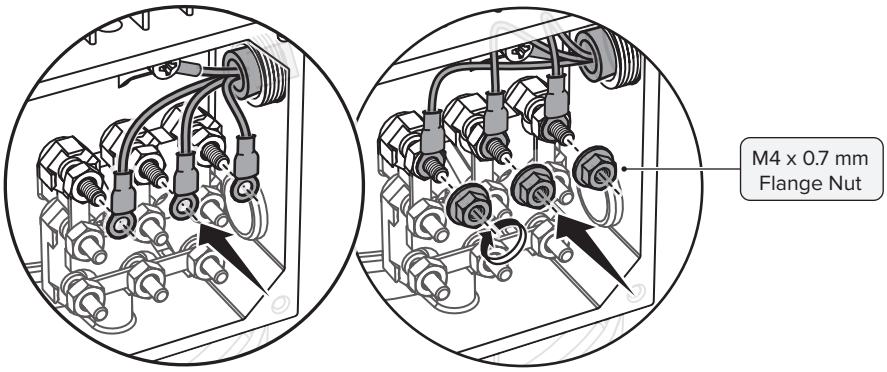
Install provided cord grip into **upper right side of motor junction box** (*Fig. 7*). Insert VFD's motor cable into cord grip and wire as shown on the following page using the original motor terminal block nuts and ground screw. Make sure motor jumper positions match VFD's voltage before applying power to fan.

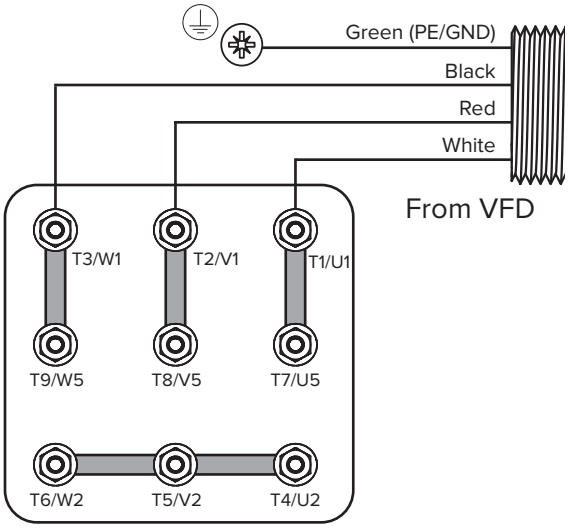
Internal motor wires omitted from illustrations for clarity. Motor appearance may differ slightly from the images in these instructions.

Fig. 7

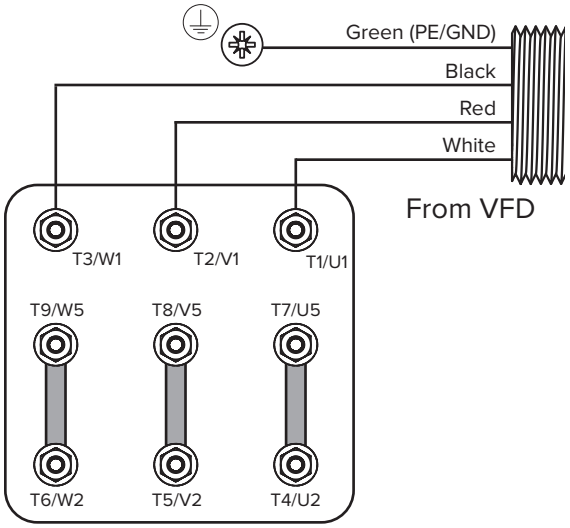


The motor wiring configurations shown are applicable to 9-lead, dual voltage, wye wound motors rated for 230/460 VAC or 575 VAC. Consult motor nameplate and/or wiring placard for verification of required wiring connections. Jumper bars are provided with the motor. Motors with terminal blocks require ring terminals and a 7 mm nut driver for termination. The diagrams include T2 and T3 swap to yield proper motor rotation. **Swapping leads to reverse rotation is done only on the output side of the drive**.

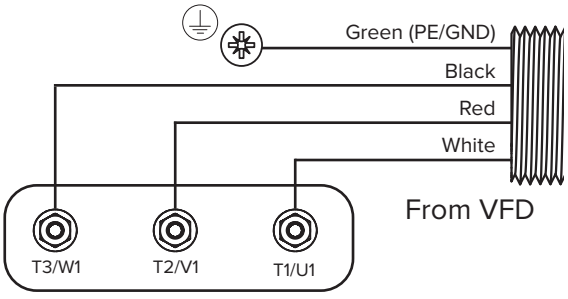




230 V Motor Jumpers



460 V Motor Jumpers



575 V Motor Terminals

8. Install covers

Install VFD cover to VFD with the six provided screws (*Fig. 8.1*), and then reinstall motor junction box cover with the four cover screws (*Fig. 8.2*). **Do not overtighten the screws**. *Motor appearance may differ slightly from the images in these instructions*.

Fig. 8.1

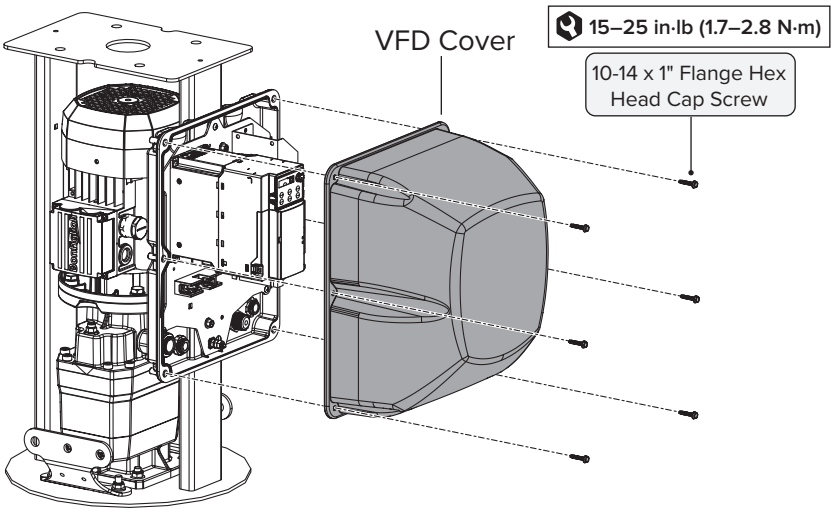
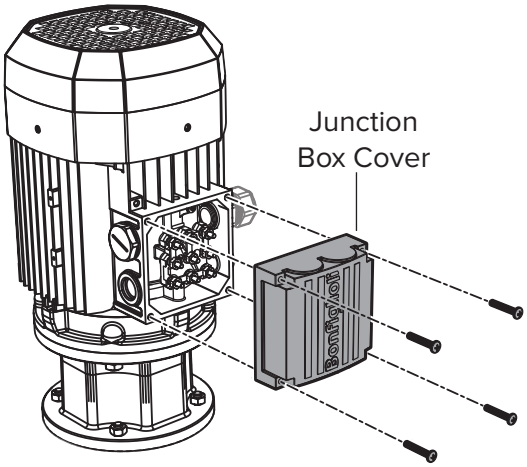


Fig. 8.2



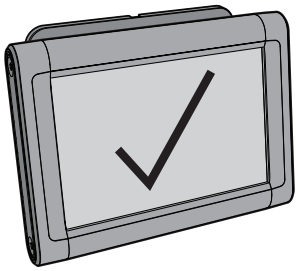
9. Install wall control and test fan

Route the CAT5 control cable from the fan to the wall control installation location (if not already routed). Refer to the instructions included in the wall control box for wall control installation details. Apply power and test fan.

The MS300 VFD is compatible with the Wired Standard Control and BAFCon. It is **not** compatible with the Lenze keypad controller. Refer to bigassfans.com/support for Wired Standard Control or BAFCon setup and operation information.

Wired Standard Control (compatible)

BAFCon (compatible)



Lenze Keypad (NOT compatible)

Note: All MS300 VFD parameters required for fan operation are programmed at the factory except for fan Modbus addresses. If your fans were on a network before VFD replacement, use the wall control to verify that each fan has a unique address, and modify the addresses if needed. If you need to modify other fan parameters, follow the instructions on the wall control screen to contact Customer Service.

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