VFD (Variable Frequency Drive)
1PH / 3PH - VFD240V03013A

c UL us LISTED IND. CONT. EQ. – 70ZA

CE

RoHS COMPLIANT

- Adjustable Frequency Drive for 3-Phase AC Motors
- NEMA 4X / IP65 Enclosure[1], Washdown and Watertight for Indoor and Outdoor Use
- Variable Speed / Soft-Start AC Motor Drive with Electronic Motor Overload Protection[2]
- Rated for 208 – 230 and 50[3] Hz and 60 Hz 3-Ph Motors
- Operates from 208 – 230 and 50[3]/60 Hz AC Line Input
- Includes CE approved RFI (EMI) filter

NOTES: *1. To maintain IP65 enclosure status, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).*

*2.UL approved as an electronic overload protector for motors. Must set J2 jumper to correct Horsepower, see **Step 4**.*

*3. The drive is factory set for 60 Hz motors. For 50 Hz motors, see **Step 3**.*

WARRANTY

J&D Mfg. warrants all products are free from defects in materials and workmanship under normal use for the period of one year from date of purchase. Our warranty does not cover ordinary wear and tear. J&D Mfg can repair or replace at our option, any product or part of the product that is found to be defective. Our warranty applies to materials only and does not include return freight, delivery, loss or damage to personal property, cost of removal or installation, any incidental or consequential damages or labor. This warranty does not apply to products which are misused, abused, altered, improperly installed or subject to negligence. All warranties must be approved through our warranty department. The original purchaser must present a copy of the invoice for the defective product. One year is our standard warranty unless specified on our literature or in the installation instructions/user manuals.

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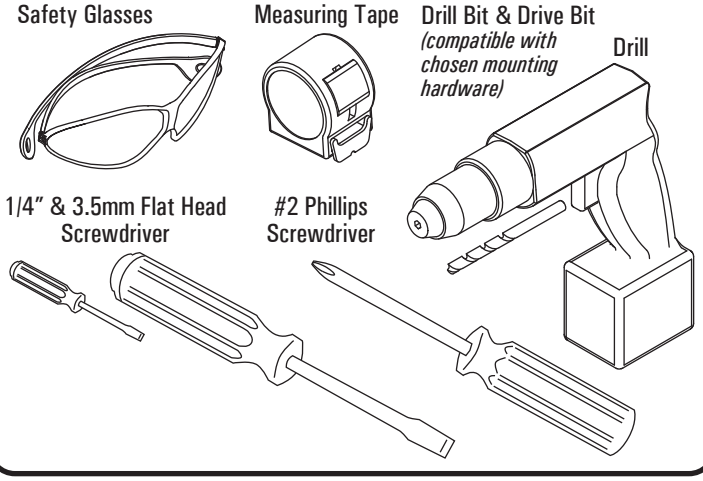
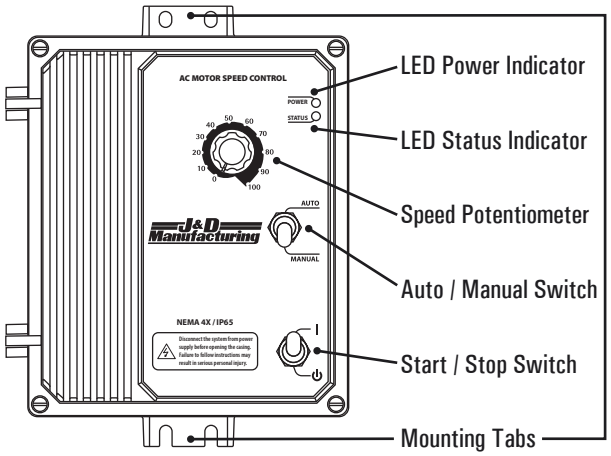
RECOMMENDED TOOLS FOR INSTALLATION (NOT PROVIDED)



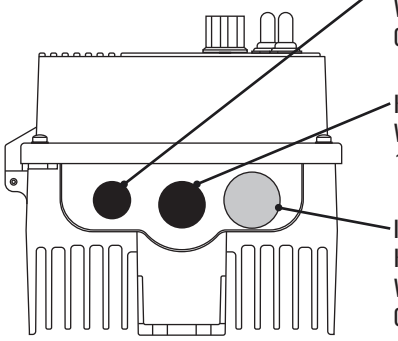
MOUNTING HARDWARE IS NOT PROVIDED

PARTS LEGEND

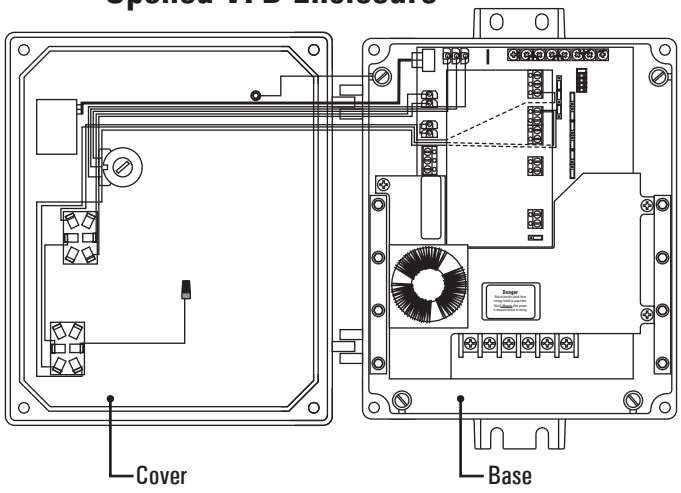
Front View of VFD Enclosure



Bottom View of VFD Enclosure



Opened VFD Enclosure



INSTALLATION

Please read over all instructions carefully before you begin. If you have any questions please call your local dealer, or contact J&D Manufacturing at 1-800-998-2398.

MOUNTING

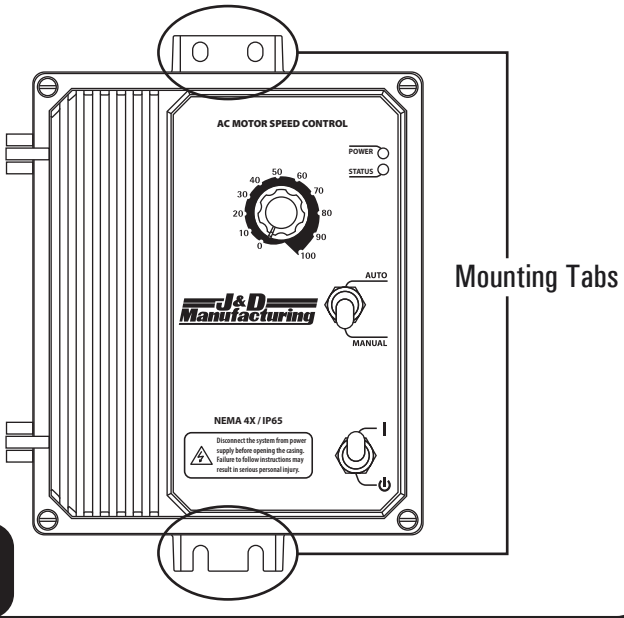
Location

- Unit must be mounted in a location so that the motor cable does NOT exceed 100' (30m).
- It is recommended that the drive be mounted vertically on a flat surface with adequate ventilation.
- Leave enough room below the drive to allow for AC Line, motor connections, and any other wiring that is required.
- Although the drive is designed for outdoor and washdown use, care should be taken to avoid extreme hazardous locations where physical damage can occur.
- When mounting the drive in an enclosure, the enclosure should be large enough to allow for proper heat dissipation so that the ambient temperature does not exceed 104 °F (40 °C) at full rating.

⚠ WARNING! Do not use this drive in an explosion-proof application.

Securing

- Choose surface/structure appropriate for the VFD.
- Choose appropriate hardware that can support the weight of the VFD, 10.3 lbs (4.7 kg), and is compatible with the mounting surface/structure.



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DISCONNECT POWER
and wait a minimum of 5 minutes for capacitors to discharge
- **BEFORE INSTALLING**
- **BEFORE SERVICING**

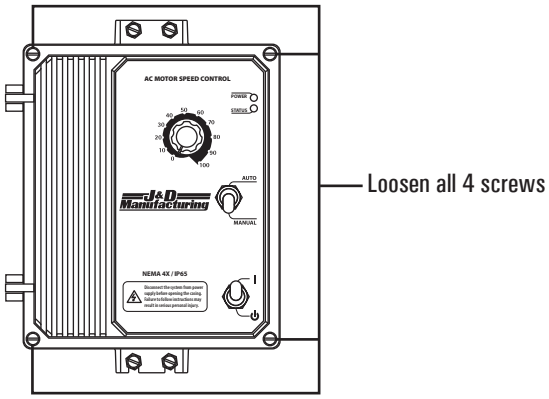
ALL ELECTRICAL WORK SHOULD BE COMPLETED BY QUALIFIED PERSONNEL AND MEET NATIONAL (NEC), REGIONAL AND LOCAL ELECTRIC CODES.

UL NOTICE

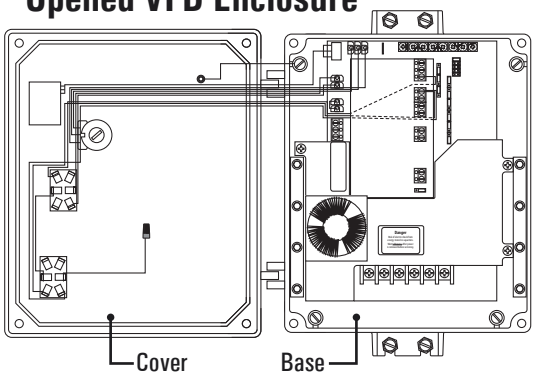
230 Volt Drives: Suitable for use on a circuit capable of delivering not more than 5 kA RMS symmetrical Amperes. 230 Volts maximum. Use copper conductors rated 167°F (75 °C). Suitable for operation in a maximum surrounding air temperature of 104°F (40 °C).

OPEN ENCLOSURE

Using 1/4" Flat Head Screwdriver, loosen all 4 screws to open enclosure.



Opened VFD Enclosure



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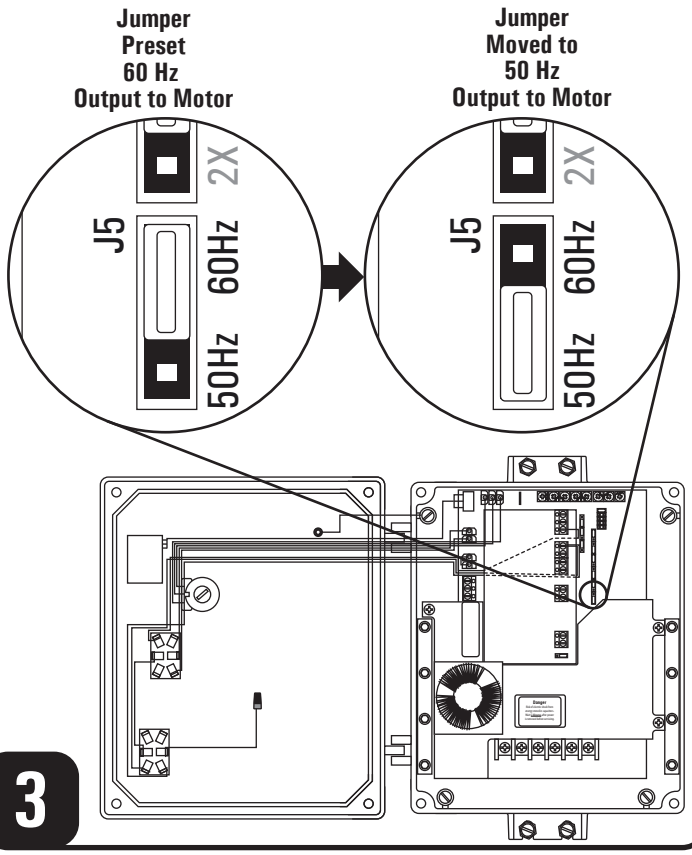
MOTOR HERTZ SETTINGS

Unit comes factory set for 60 Hz motors.

For 50 Hz motors move jumper **J5** from 60Hz to 50Hz as shown below.



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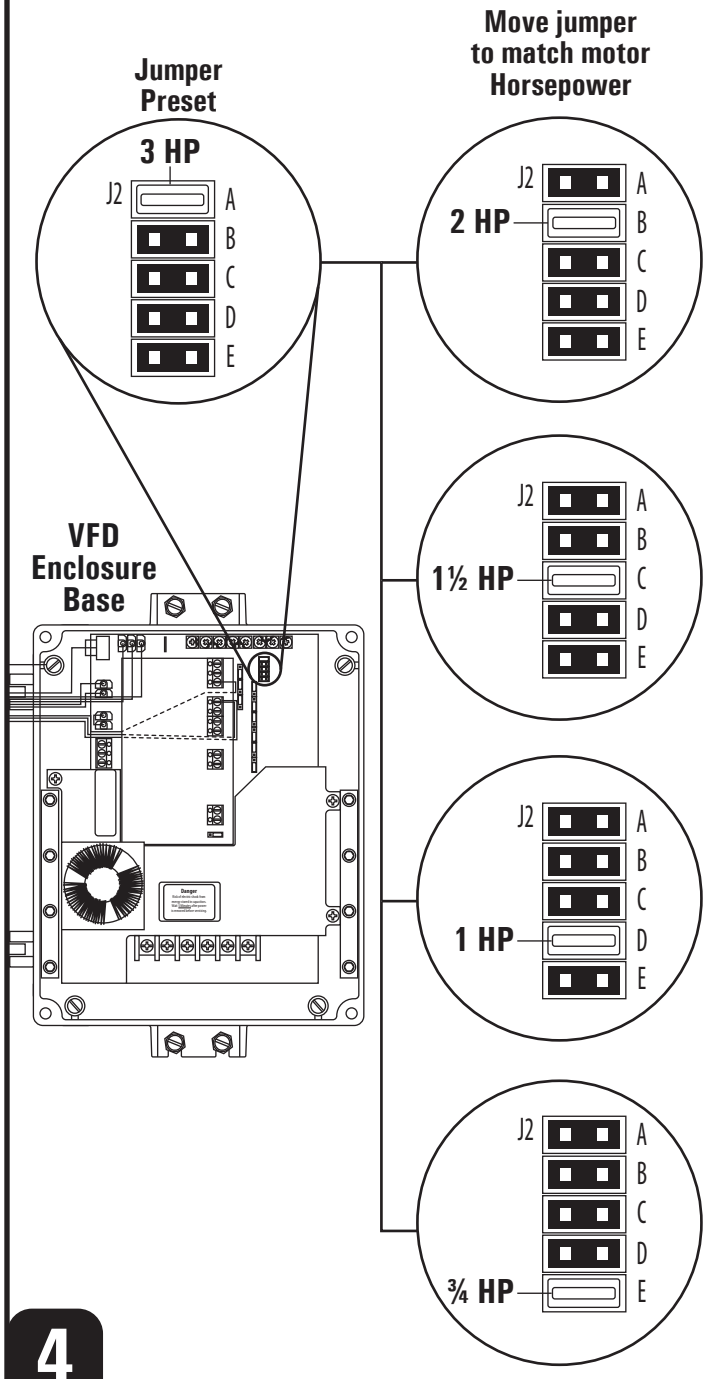
MOTOR HORSEPOWER SETTINGS

Unit comes factory set for a 3 Horsepower motor.

For motors with 2 Horsepower or lower, move **J2** jumper to the corresponding position as shown and listed below.

Motor HP	Jumper Position
2	B
1½	C
1	D
¾	E

- **J2** jumper must be set to the corresponding HP position to ensure the motor is properly protected with the Overload Protection feature.
- 1 Phase power supply can only power a 2 HP motor or lower.



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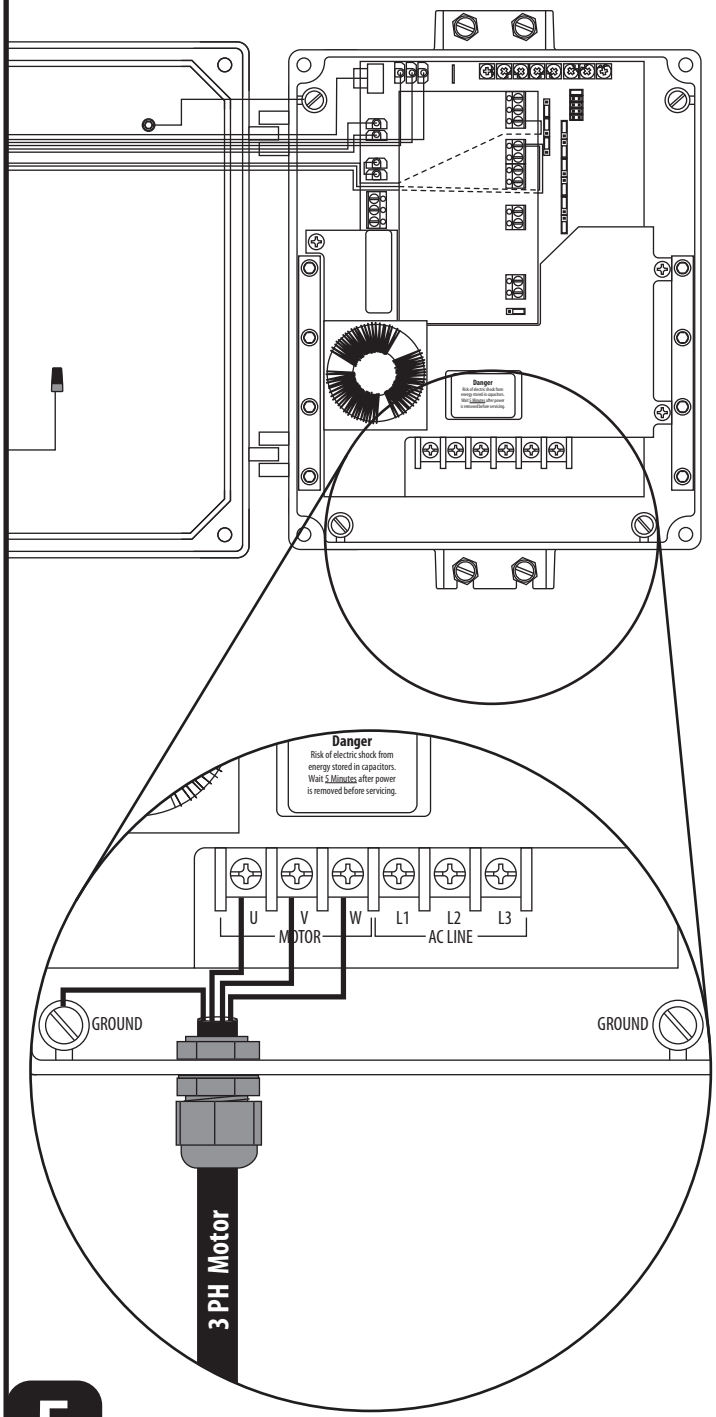
WIRING 3 PHASE MOTOR TO VFD

Using a #2 Phillips Screwdriver attach 3 Phase motor wires as shown below.

- Wires from motor to VFD cannot exceed 100'.
- To maintain IP65 enclosure status, washdown and watertight for indoor and outdoor use, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).

VFD Enclosure - Base



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If power source is 3 Phase proceed to Step 6.

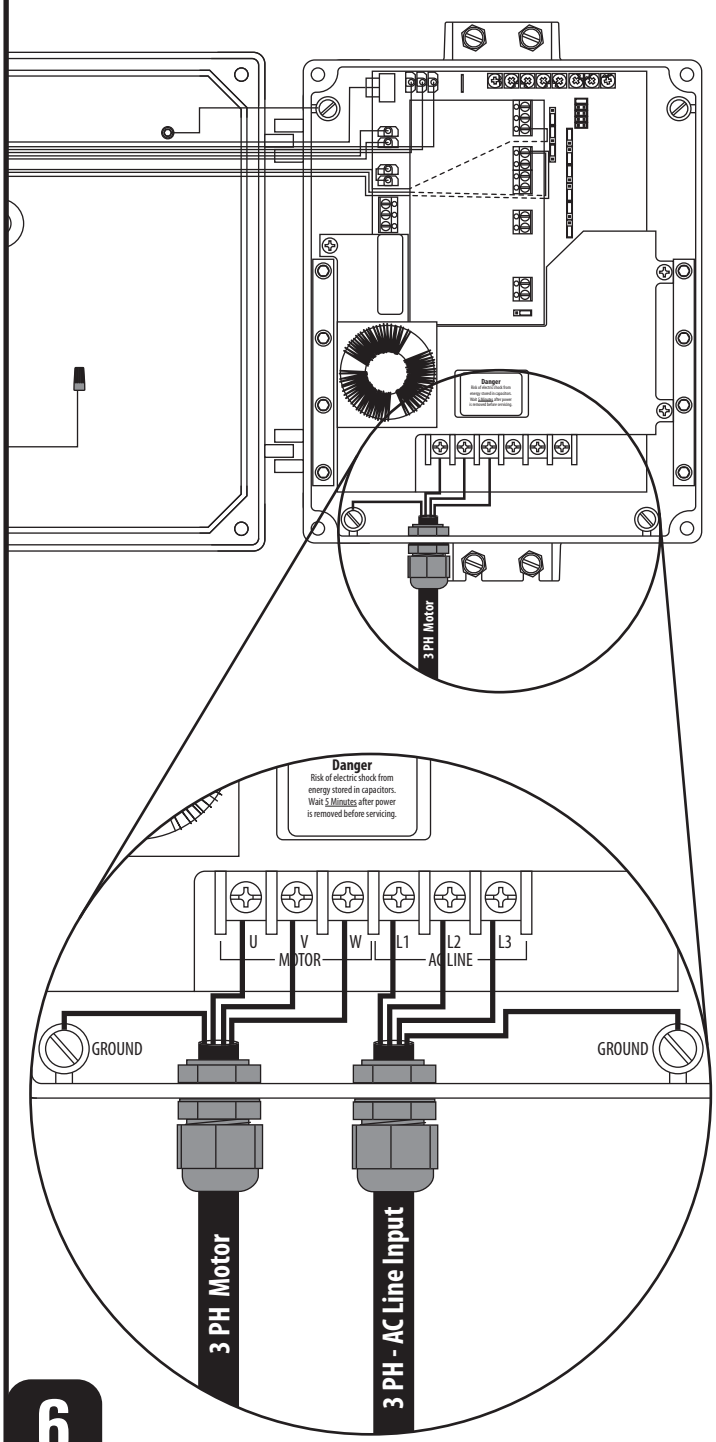
If power source is 1 Phase proceed to Step 7.

WIRING 3 PHASE POWER SUPPLY TO VFD

Using a #2 Phillips Screwdriver attach 3 Phase power supply wires as shown below.

- To maintain IP65 enclosure status, washdown and watertight for indoor and outdoor use, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).

VFD Enclosure - Base



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To animate VFD using a control proceed to Step 8.

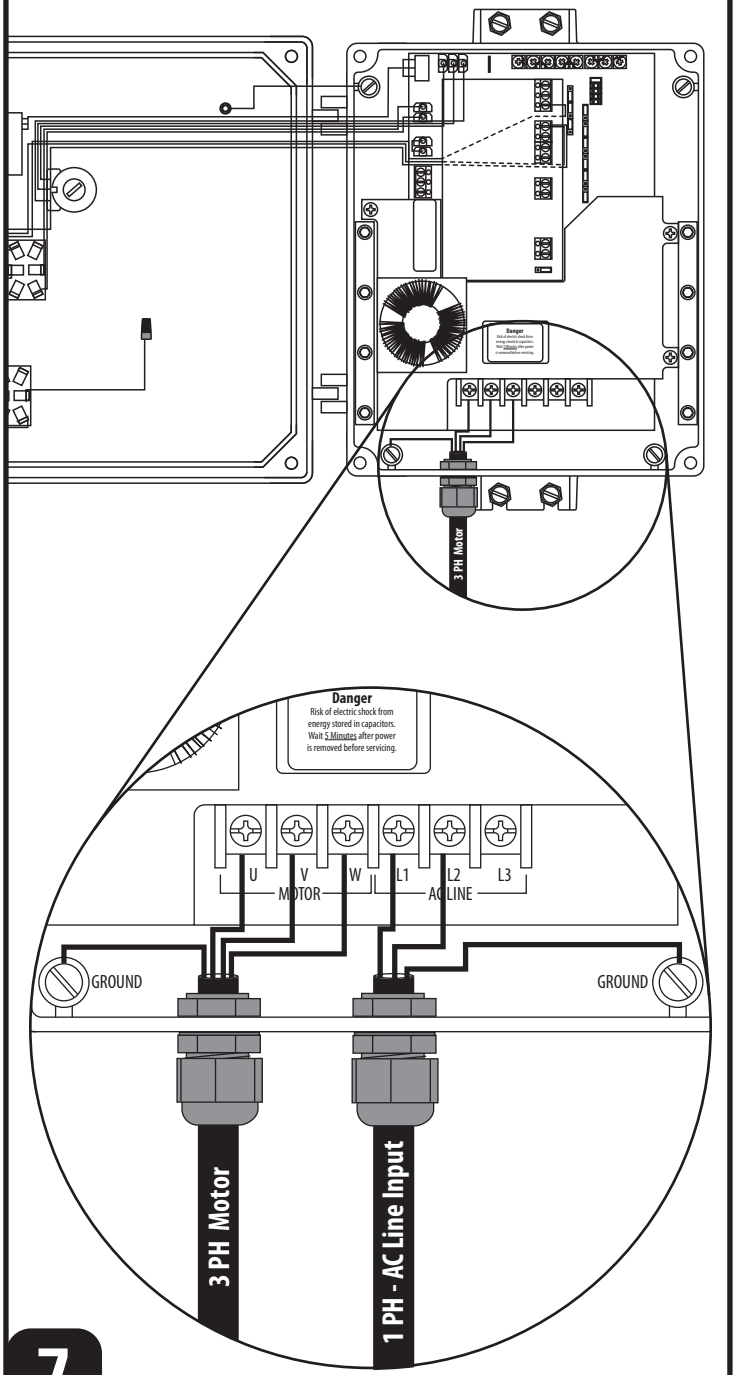
If VFD will be controlled manually, proceed to Step 11.

WIRING 1 PHASE POWER SUPPLY TO VFD

Using a #2 Phillips Screwdriver attach 1 Phase power supply wires as shown below.

- 1 Phase power supply can only power a 2 HP motor or lower.
- To maintain IP65 enclosure status, washdown and watertight for indoor and outdoor use, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).

VFD Enclosure - Base



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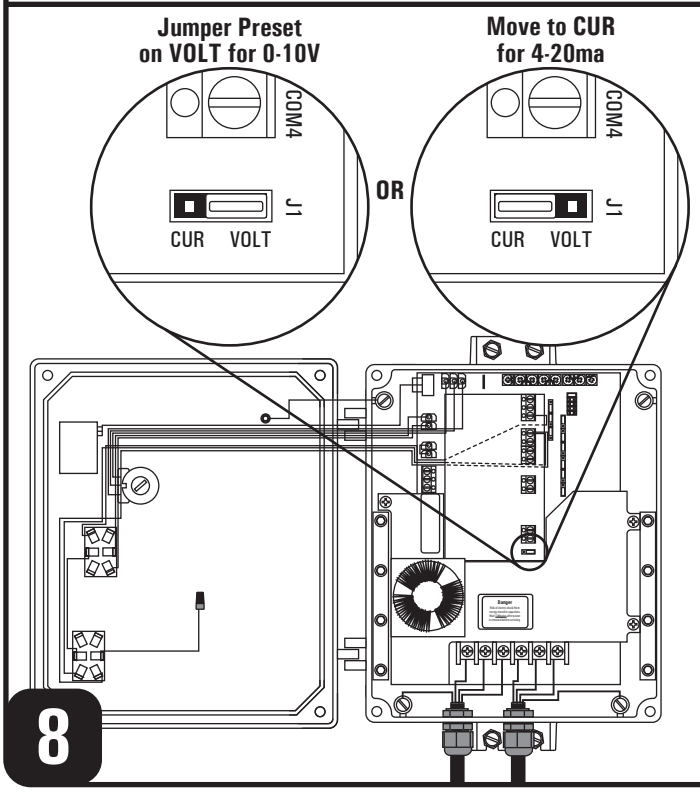
To animate VFD using a control proceed to Step 8.

If VFD will be controlled manually, proceed to Step 11.

MATCH CONTROL SIGNAL SETTINGS

Unit comes factory set for 0-10v signal.

For 4-20ma signals move jumper **J1** from VOLT to CUR as shown below.



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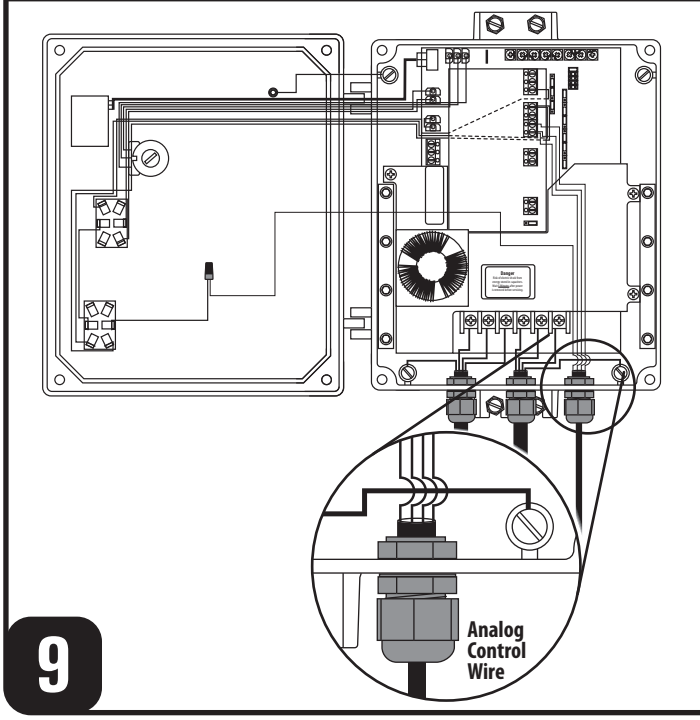
BRINGING CONTROL SIGNAL WIRE INTO VFD

- The control signal wire MUST use its own entry into the unit, as shown below. Remove knockout seal to access separate signal wire knockout.
- Pairing the signal wire with either the motor or the power supply will cause signal interference.
- To maintain IP65 enclosure status, washdown and watertight for indoor and outdoor use, ALL entering and exiting wiring requires properly sized watertight cord grips (not provided).



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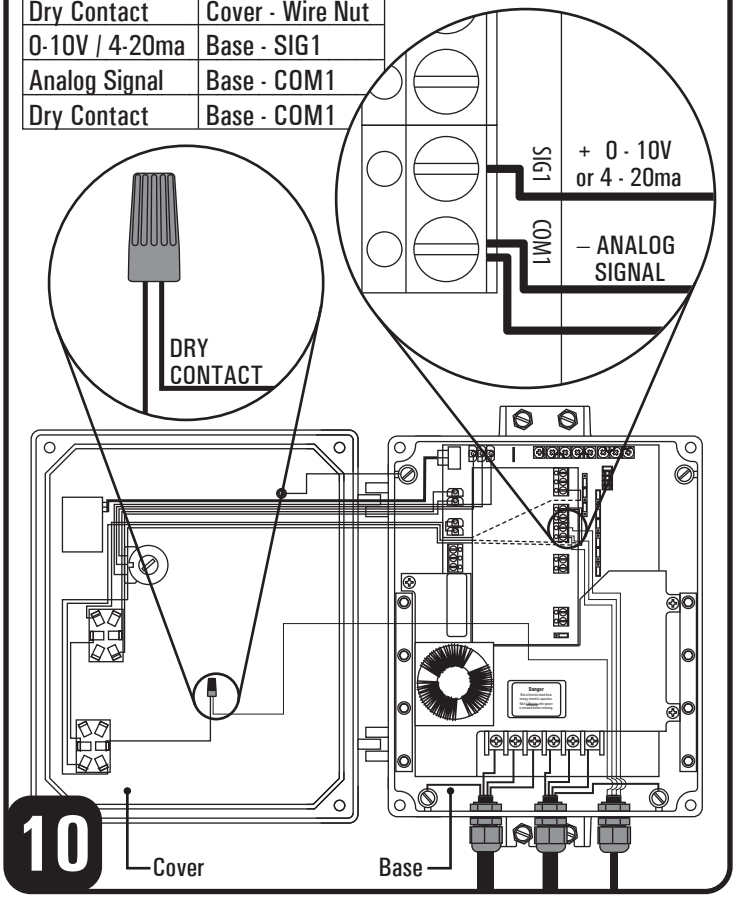
WIRING CONTROL TO VFD

Using the provided wire nut secure one of the Dry Contacts to the Start/Stop switch as shown below.

Using a ¼" Flat Head Screwdriver insert and secure the remaining control wires as shown and listed below.

Control Wire	Location in VFD
Dry Contact	Cover - Wire Nut
0-10V / 4-20ma	Base - SIG1
Analog Signal	Base - COM1
Dry Contact	Base - COM1



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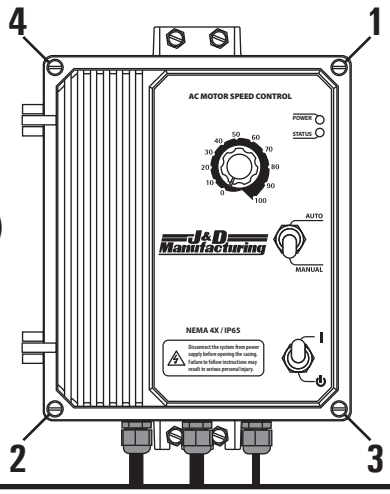
SECURING ENCLOSURE COVER

When properly closed this enclosure is IP65 rated, washdown and watertight for indoor and outdoor use.

Follow these directions when closing and securing cover. Failure to do so may allow infiltration of moisture into the unit causing product failure and voiding warranty.

Using 1/4" Flat Head Screwdriver tighten cover screws in the sequence as indicated below to 12 in-lbs (14 kg-cm).

Tighten screws in numerical sequence to 12 in-lbs (14 kg-cm)



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RECONDITION BUS CAPACITORS

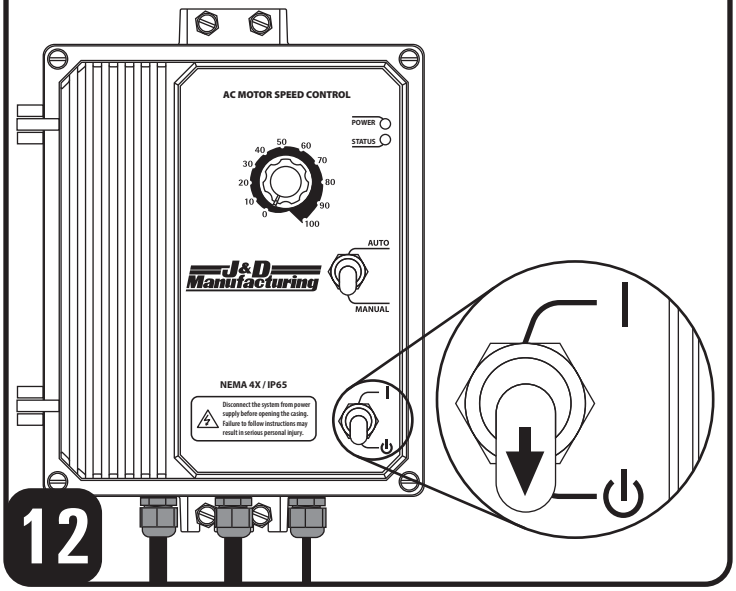
Failure to recondition the bus capacitors will cause them to fail and will void warranty.

Future reconditioning is also required any time power supply has been removed for over 12 months.

To recondition bus capacitors

1) Stop/Start switch must be in the Stop position

2) Allow power to VFD for a minimum of one hour



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TEST FAN ROTATION

Once bus capacitors have been reconditioned set VFD dial and switches as follows:

1) Control Dial to 50

2) Automatic / Manual Switch to Manual

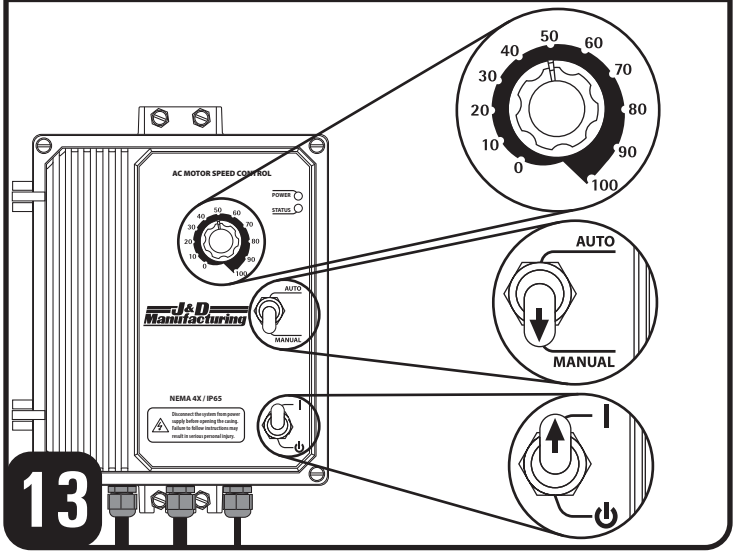
3) Stop / Start Switch to Start

Observe rotation of fan prop, if rotation is correct you are done with installation, if prop rotation is incorrect disconnect power source to VFD.

WARNING! Wait a minimum of 5 minutes for capacitors to discharge.

Open VFD enclosure and swap any two (non ground) motor wires connected in **Step 5**.

Following **Step 11**, re-close and secure VFD enclosure.



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To operate VFD using a control proceed to Step 14.

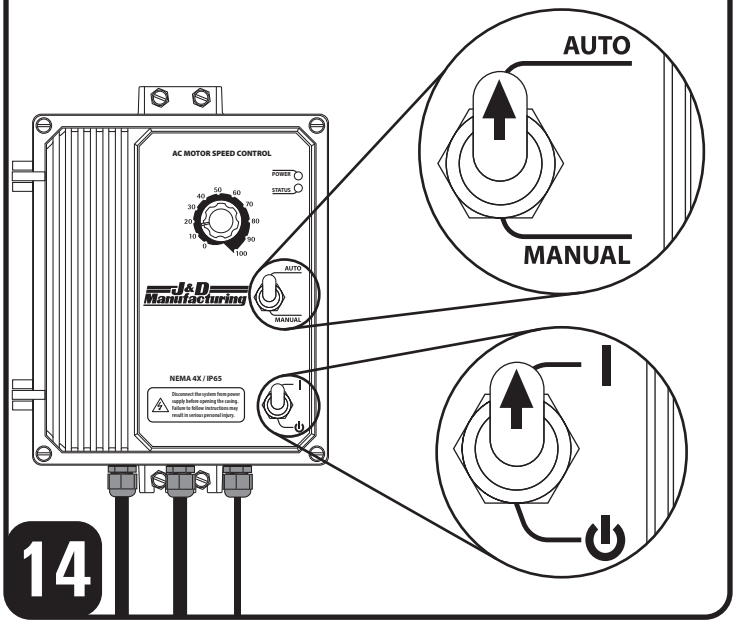
To operate VFD manually, proceed to Step 15.

OPERATE VFD USING CONTROL (not included)

To automate on/off cycles and fan speed with installed control set VFD switches as follows:

1) Automatic / Manual switch to Automatic

2) Stop / Start Switch to Start



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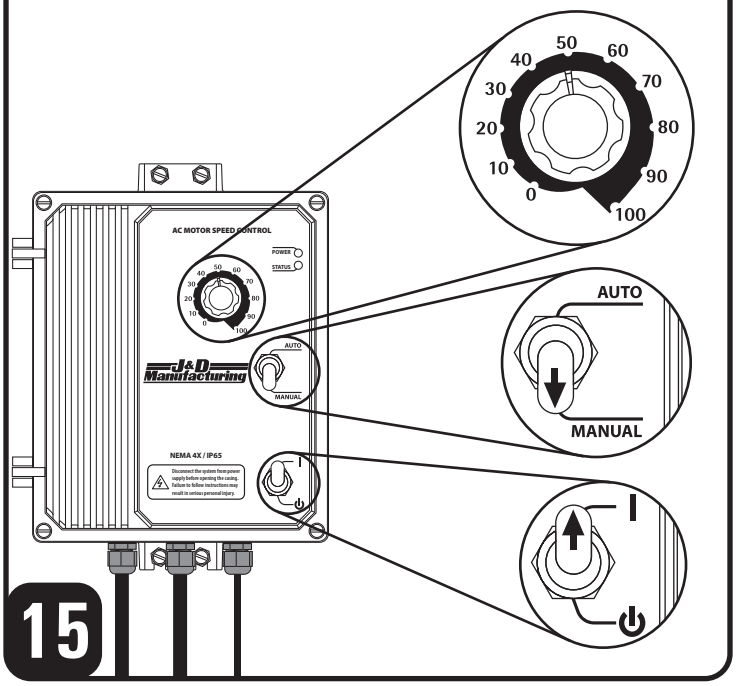
OPERATE VFD MANUALLY

To operate VFD manually, even if wired to automated control, set VFD dial and switches as follows:

1) Control Dial to desired fan speed

2) Automatic / Manual Switch to Manual

3) Stop / Start Switch to Start



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LED INDICATORS

LED Power Indicator will illuminate green when power is being supplied to the VFD.

WARNING do not depend on the LED Power Indicator as to when it is safe to service the unit, ALWAYS confirm that the power source has been removed before opening and servicing unit.

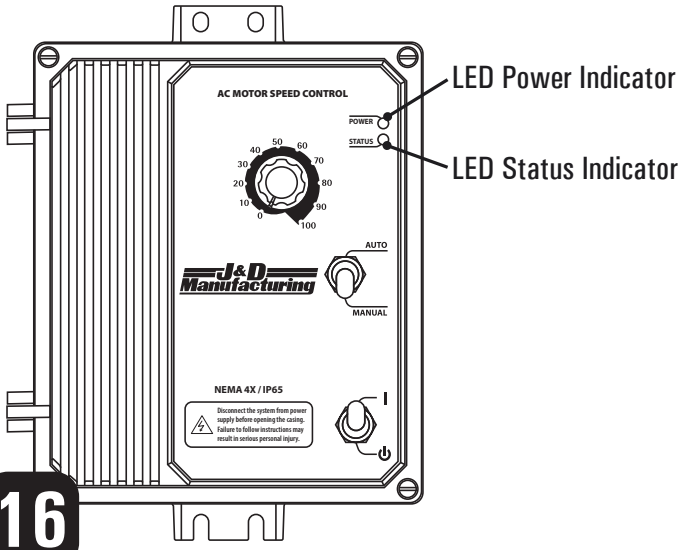
LED Status Indicator is a tricolor LED which will change color and/or flash, indicating units status. Refer to table below to interpret status indicator code.

Once issue has been remedied it is necessary to clear the fault by either turning Stop/Start Switch to Stop for at least 5 seconds or removing power to unit for a minimum of 5 seconds.

LED Color	LED Flash Rate	Units Condition
Green	Slow	Normal Operation
Red	Steady - No Flash	Overload (120%-160% Full Load)
	Slow Flash	Short Circuit
	Quick Flash	Drive Times Out
	Slow/Quick Flash	Overtemperature Trip
Red/Yellow	Slow Alternating Flash	Overvoltage
	Quick Alternating Flash	Undervoltage
Yellow	Steady - No Flash	Stop
	Slow Flash	Stand By
	Quick Flash	Input Phase Loss

Slow Flash = 1 Second On 1 Second Off

Quick Flash = 0.25 Second On 0.25 Second Off



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No additional changes or settings are required, or recommended, to utilize this VFD for its intended use.

WARRANTY NOTICE:

- **Any adjustment of trimpots will void warranty for VFD and possibly attached motor.**
- **Any changing of jumpers other than the ones indicated in these instructions will void warranty for VFD and possibly attached motor.**