IMPORTANT: READ ENTIRE MANUAL CAREFULLY. THIS PHASE CONVERTER MUST BE INSTALLED BY A QUALIFIED INDUSTRIAL ELECTRICIAN.

READ FIRST !!!!!!! DANGER: HIGH VOLTAGE

ELECTRIC SHOCK COULD RESULT IN DEATH OR INJURY. MUST BE INSTALLED BY A QUALIFIED INDUSTRIAL ELECTRICIAN FOR INSTALLATION, WAIT 30 MINUTES AFTER DISCONNECTING POWER BEFORE SERVICING.

IMPORTANT PLEASE READ CAREFULLY
THIS OPERATION AND INSTALLATION MANUAL IS NOT INTENDED TO REPLACE OR SUPERSEDE ANY REQUIREMENTS OF LOCAL, STATE, OR NATIONAL CODES, AND MUST BE INSTALLED BY A INDUSTRIAL LICENSE ELECTRICIAN. IF THIS CONVERTER IS MODIFIED OR INSTALL BY A NON-LICENSE ELECTRICIAN, WARRANTY WILL BE VOIED.
1.0 INSTALLATION

1. If the phase converter doesn’t come up to speed in 2 to 3 seconds, TURN IT OFF!
2. Make sure the wire meets our minimum recommended wire size.
3. All loads including transformers must be disconnected or in the off position before starting the phase converter each time.
4. Do not bolt the Phoenix Phase Converter idler motor directly to the floor. It is highly recommended that some form of anti-vibration or rubber pad this is between the idler motor and the floor.
5. Connect idler Motor for low voltage run 220 volts the wiring diagram is located on the nameplate and inside the terminal box of the idler motor.
6. Magnetic controls, single phase loads, or resistive loads must be energized by L1 and L2, never connect power, grounds or neutral wires to L3.
7. Converter panel and idler motors are intended to be mounted in a clean, dry, location with adequate air supply and avoidance from flammable or combustible Materials.
8. Do not run this converter with any external loads on the idler motor shaft.
9. Make sure the idler Motor, Rotary phase converter panel and your equipment are properly grounded.

2.0 PHYSICAL INSTALLATION

All Phoenix phase converters panel come standard in a NEMA 1 rated enclosure and without a pushbutton and magnetic starter. NEMA 3R and pushbutton are an available option. NEMA 1 panel are designed for indoor use only. Phoenix phase converter panel must be mounted on a study surface.

All Phoenix Phase Converter idler motors come standard in a totally enclosed fan cooled and cast iron frame, the Idler motor is designed for outdoor or indoor use. Do not need to bolt down the phase converter idler Motor, A anti-vibration pad of some sort is recommended.
Steps to install the idler motor and panel

1. Your single phase line is going to be the largest wire that you will need to run, so mount the phase converter as close to the circuit breaker panel as possible and run your three phase longer.
2. Run your single phase 230 volts and your ground wire into the panel and connect your 230 lines on T1 and T2 and your ground to the frame of the enclosure.
3. Turn on your breaker or disconnect and you can test that the start and stop is engaging the contactor and releasing it, then remember to turn off the breaker again.
4. Your idler motor needs to be connected for LOW voltage, the diagram is located on the name plate and/or inside the connection box of the motor.
5. Your idler motor has to be in the same circuit as your three phase output. The idler motor can be connected directly to the terminal block labeled L1, L2 and L3, top or bottom side of the block is ok. Or you can connect the idler motor to a disconnect or a three phase circuit breaker panel along with your three phase output from the converter panel as shown in the diagram above.

- Follow all local, and state and national electric codes (NEC)
- Protect all wire size and machinery with proper size breakers
- Always make sure phase converter starts first before any external loads
- A qualified industrial electrician must do all the wiring
- Run all single phase loads and controls off of L1 and L2
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PAIRING TWO PHASE CONVERTERS TOGETHER

Diagram showing the connection between 1 phase circuit breaker panel, 3 phase circuit breaker panel or load center, 1 phase disconnect, 3 phase disconnect, phase converter, and motor.
It is important to have adequate single-phase electrical service. The actual single phase current that will flow through the converter is approximately 1.73 times the three-phase current. The National Electric Code requires 2.5 times the three-phase load current to allow for starting current and a margin of safety. This is a good conservative calculation to determine your single phase branch circuit wire size and breaker size.

This means that with a 230 volt supply, a 10 hp machine that runs near full load (27 amps) will need approximately 46 amps of single phase current. N.E.C. requires (27 amps x 2.5 = 67.5 amps) of single phase. Therefore wire should be used that can handle at least 70 amps and the breaker should protect that wire. Multiply this current by the voltage (in this case 230 volts) to get the kW or kilowatts. The transformer that supplies your power must be at least this big.

The power required to run the phase converter is very small and is negligible in figuring out the power required. The power required is calculated based on the load only.

Size the wire going to a load for the converter maximum three phase current if the converter is sized to run and start that particular load. Example: 10 hp lathe would normally need a 20 hp rotary phase converter to start and run it. Size the wire going to the lathe to 27 amps (the max current for a 20 hp converter). This will aid in the starting of the converter and insure that a power reducing voltage drop will not occur.

Too small of wire can keep the converter from starting properly.

Increase wire size one size for every 50 feet of run and round up.

<table>
<thead>
<tr>
<th>Converter Size</th>
<th>Min Single Phase Wire</th>
<th>Min Wire to Generator</th>
<th>Min Breaker Size</th>
<th>Max Breaker Size</th>
<th>Total Max Resistive Load</th>
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<tbody>
<tr>
<td>2 HP</td>
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<td>10 AMPS</td>
<td>15 AMPS</td>
<td>N/A</td>
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<td>3 HP</td>
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<td>10 AMPS</td>
<td>20 AMPS</td>
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<td>5 HP</td>
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<td>7.5 HP</td>
<td>8 Gauge</td>
<td>10 Gauge</td>
<td>20 AMPS</td>
<td>40 AMPS</td>
<td>10/5</td>
</tr>
<tr>
<td>10 HP</td>
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<td>8 Gauge</td>
<td>20 AMPS</td>
<td>50 AMPS</td>
<td>14/7</td>
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<td>30 AMPS</td>
<td>75 AMPS</td>
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<td>20 HP</td>
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<td>125 AMPS</td>
<td>35/17.5</td>
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<td>150 AMPS</td>
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<td>200 AMPS</td>
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<td>250 AMPS</td>
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<td>400 AMPS</td>
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TROUBLESHOOTING

THE PHASE CONVERTER PANEL:

Before contacting Tech Support, it will be helpful to fill out the blank spaces below, tech support will be asking these questions

This space is left blank intentionally for notes

VOLTAGE READING

IDLE VOLTAGE

L1-L2__________

L1-L3__________

L2-L3__________

LOADED VOLTAGE

L1-L2__________

L1-L3__________

L2-L3__________

DURING START-UP

L1-L2__________

Breaker Size__________

Single Phase Wire Size__________

SERVICING THE PANEL

FOR ADDITIONAL ASSISTANCE VISIT PHOENIXPHASECONVERTERS.COM AND CLICK ON THE SUPPORT TAB.

EASY ACCESS

For testing and servicing the phase converter, always keep the Phase converter panel cover on. There is additional threaded holes so you can lift the panel a third of the way higher, here you will be able to test and trouble shoot the phase converter with out being exposed to the capacitors.
LIMITED WARRANTY
2/5/10 YEARS ROTARY PHASE CONVERTERS
BY Phoenix Phase Converter

Scope of Warranty
All Phoenix Phase Converter control panels are warranted against defects in material and workmanship for 10 years. This warranty covers both control panel parts and labor for 5 years, after 5 years only labor is warranted. The idler/generator is covered by the manufacturer warranty for 2 years. Warranty is from the date of purchase by the original owner: Phoenix Phase Converter will repair or replace (at our option), at no charge, any parts that are found to be faulty during the warranty period specified. The Phoenix Phase Converter control panel warranty must be performed by/at Phoenix Phase Converter facility and will be returned in a timely manner, but not to exceed a 5 business days of repair time. Phoenix Phase Converter will not be responsible for shipping cost to or from our facility, especially express or next day air shipping. Phoenix Phase Converter do not offer loaners converters, and is not responsible for any other charges, such as but not limited to, downtime, equipment, labor cost of electrician or owners time.

Extended Obligations of the original Owner
1. The original proof of delivery or receipt to obtain warranty service. 2. Receipt for the installation of the converter by a industrial license electrician. 3. Idler motor/generator motor may have to be inspected by a EASA Electric Motor Shop. 4. Repair or replacement of Phoenix Phase Converter control panel “out of warranty” or “non-warrantable” will not be returned without prepayment.

Some instance which may void warranty include, but are not limited to:
1. Physical abuse or unauthorized alterations of the unit or components. 2. Failure to properly install ground unit. 3. Operation of unit above or below operational voltage of 208-250 volts. 4. Operation of unit without adequate ventilation, or with fan removed or broken. 5. Operation of unit in a corrosive environment. 6. Failure to follow recommended wire size, fuse, and transformer requirements. 7. Installation of unit by a non-licensed electrician. 8. Act of god including, flooding, or lighting strikes.

Return Policy
Units may be returned for a full refund excluding shipping cost to and from our facility up to 14 days of receiving the unit and that is not been used and is in it original packaging. If the purchaser want to return the unit while in transit the purchaser is responsible for all shipping cost; used converters we may offer a credit; full or partial credit is determined based on the condition of the unit.

Mission Statement
It is the mission of Phoenix Phase Converter to provide a complete simple, no non-sense solution to your phase needs. We conduct our business in an honest and fair manner, providing friendly customer service. Premium-Quality products, industries best technical expertise.

Contact Us:
• Phone 1-800-417-6568

phoenixphaseconverters.com
Leader in Power Solutions for over 60 years.
Ask us about our dealer programs.

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