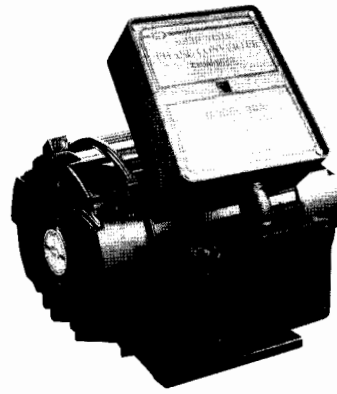


**Heavy Duty Rotary**  
**Produces** balanced 3 $\phi$  power  
for maximum motor efficiency  
from 1 $\phi$  current  
(manufacturer's statement)



**Standard Duty Rotary**  
**Produces** continuous  
3 $\phi$  power to 220 3 $\phi$  motors  
from 220V 1 $\phi$  current

## **TROUBLESHOOTING SECTION FOR** **ROTARY PHASE CONVERTERS**

Prior to discussing troubleshooting of a Cedarberg Rotary Phase Converter, it is **IMPORTANT** to understand one basic concept. If your Cedarberg Rotary Phase Converter starts and runs, it is in fact producing three phase current. If under these conditions you are still having problems with your machine, the problem does not lie in the phase converter. Your problem is either internal to your machine or lies somewhere in the wiring of the circuit.

Cedarberg Rotary Phase Converters are designed to start 220V three phase motors within a specified horsepower range on 220V single phase current. Before referring to the following troubleshooting guide, make **ABSOLUTELY CERTAIN** that:

1. The horsepower of the motor you are attempting to start is within the specified nameplate horsepower range of your converter.
2. The motor you are attempting to start is wired for 220V and not 440V.
3. Always check the incoming voltage. Voltage must be  $\pm 10\%$  of rated voltage. If not contact your power company.

Carefully read and understand this entire manual.

Scrutinize your installation to make Absolutely Certain that all factory installation requirements and recommendations have been adhered to. If you are still unable to locate your problem, the following guide should be helpful.

PROBLEM	SYMPTOM	CORRECTIVE ACTION
<p><b>I. Phase converter motor will not start.</b></p>	<p><b>A.</b> Is your phase converter motor single phasing? (Is the motor turning very slowly and / or making a growling or grinding sound?)</p> <p><b>1. No.</b> You do not have single phase power to your converter.</p> <p><b>2. Yes.</b> You have single phase power to your converter.</p>	<p><b>a)</b> You have an open circuit. Check all fuses and breakers. Check all connections to be certain they are tight.</p> <p><b>b)</b> Your system is wired incorrectly. Re-read Section D, Electrical Installations (page 8) for proper wiring procedures.</p> <p><b>a)</b> You may have an open circuit. Check all fuses, wires and connections.</p> <p><b>b)</b> Visually inspect internal phase converter wiring for bad connections, loose wires, etc. Connect as required.</p> <p><b>c)</b> Visually inspect phase converter internal components for apparent damage. Call factory at (651) 452-5012 for replacement of defective parts.</p> <p><b>d)</b> If you have a Model 50, 75, or 100, is the toggle switch in the "on" position? Toggle switch must be "on" to start the converter.</p> <p><b>e)</b> You may have a faulty mercury relay switch. Gently tap or shake mercury relay switch. If phase converter starts your switch is defective and must be replaced.</p>
<p><b>II. Phase converter starts and runs but motor on my machine will not start.</b></p>	<p><b>A.</b> Is your motor single phasing? (Is your motor turning real slow and / or making a growling sound?)</p> <p><b>1. No.</b> You do not have single phase power to your machine.</p> <p><b>2. Yes.</b> Single phase power is reaching your machine.</p>	<p><b>a)</b> You have an open circuit. Check all fuses and breakers.</p> <p><b>b)</b> Your system is wired incorrectly. Re-read Section D, Electrical Installation, (page 8) for proper wiring procedures. Make <u>Absolutely certain</u> that M3 (mfg leg) is used to power the motor only.</p> <p><b>a)</b> You may have an open circuit. Check all fuses and connections especially on M3 (mfg leg).</p> <p><b>b)</b> Your system may be wired incorrectly, Check that M3 (mfg leg) is used to power the motor only. Re-read Section D, Electrical Installation, (page 8) for proper wiring procedures.</p>

PROBLEM	SYMPTOM	CORRECTIVE ACTION
<p><b>II. Phase converter starts and runs but motor on my machine will not start. (cont.)</b></p>	<p><b>3.</b> - Yes. Motor is trying to start but lacks power.</p>	<p><b>a)</b> If you have a Model 50, 75, or 100, try leaving the toggle switch in the "on" position. This will not harm your phase converter.</p> <p><b>b)</b> Your load requirements may be too severe for your converter. Check to determine that the phase converter is rated to start motors this size. If it is, your application may require and oversized converter.</p>
<p><b>III. Phase converter starts and runs. Motor starts and runs. but...</b></p>	<p><b>A.</b> Phase converters vibrates excessively.</p> <p>Some vibration is normal especially during rotary start-up and shutdown and as machine loads are activated.</p> <p><b>B.</b> Machine does not perform under load conditions.</p>	<p><b>a)</b> Your unit may not be properly installed. Re-read Section B (page 7) Mounting and Location, to determine proper installation.</p> <p><b>b)</b> Your load requirements may be too severe for your application and may require an oversized rotary converter.</p> <p><b>a)</b> Your system may be wired incorrectly. Re-read Section D, Electrical Installation (page 8) for proper wiring procedures.</p> <p><b>b)</b> Your load requirements may be too severe for your application and may require an oversized rotary converter.</p>
<p><b>IV. Phase converter starts and runs, but...</b></p>	<p><b>A.</b> Voltage is low and current draw is high at the machine.</p>	<p><b>a)</b> You have a bad connection. Check <u>all</u> connections to be certain they are clean and tight.</p> <p><b>b)</b> Your system is wired incorrectly. Re-read Section D, Electrical Installations,(page 8) for proper wiring procedures.</p>
<p><b>V. Motor is running backward.</b></p>	<p><b>A.</b> Improper rotation.</p>	<p><b>a)</b> Line leads are hooked up wrong for proper rotation. Reverse any two lines at the motor only.</p>
<p><b>VI. Motor is running hot.</b></p>	<p><b>A.</b> Are your thermal overloads tripping?</p> <p>1. No.</p> <p>2. Yes.</p>	<p><b>a)</b> Your motor is operating within accepted NEMA specifications.</p> <p><b>a)</b> Your thermal overloads may be set too close to nominal. Check trip point and re-adjust if necessary.</p>

PROBLEM	SYMPTOM	CORRECTIVE ACTION
<p><b>VI. Motor is running hot.</b> (cont.)</p>	<p><b>A.</b> Are your thermal overloads tripping? (cont.)</p> <p><b>2.</b> Yes. (cont.)</p>	<p><b>b)</b> You may have a loose connection. Check that <u>all</u> connections are tight.</p> <p><b>c)</b> You may have used insufficient wire size for the installation. Re-read Section D, Electrical Installation, (page 8) for proper wiring procedures.</p> <p><b>d)</b> You may have insufficient motor ventilation. Check and provide ample ventilation for motor.</p> <p><b>e)</b> Motor may be dirty. Check and clean motor.</p> <p><b>f)</b> You may have a bad motor. Have motor checked and repaired as required.</p>
<p><b>VII. Multiple speed motor will not start at all speeds.</b></p>	<p><b>A.</b> Motor starts and runs fine at one speed, but will not start at other speeds.</p>	<p><b>a)</b> One or more motor speed is not within the horsepower range of the converter. Size rotary phase converter for largest horsepower requirement. If you have sized the converter to the largest HP, you may need to oversize Rotary due to high starting load demand.</p> <p><b>b)</b> If you have a Model 50, 75, or 100, try leaving the toggle switch in the "on" position. This will not harm your phase converter.</p>
<p><b>VIII. Magnetic switch chatters or does not close.</b></p>	<p><b>A.</b> Chattering</p>	<p><b>a)</b> You may have M3 (mfg leg) wired to your magnetic coil. Re-read Section D, Electrical Installation (page 8) for proper wiring procedures. M3 (mfg leg) must be used to power the motor load only.</p>
<p><b>IX. Excessive blowing of fuses, circuit breakers or heaters.</b></p>	<p><b>A.</b> Instant blowing of fuses, or circuit breakers.</p> <p><b>B.</b> Nuisance tripping of fuses, circuit breaker or heaters.</p>	<p><b>a)</b> You have a short circuit. Check circuit for broken or loose wires. Check motor for shorts. Check all connections.</p> <p><b>a)</b> You may have used insufficient wire size for the installation. Re-read Section D, Electrical Installation (page 8) for proper wiring procedures.</p> <p><b>b)</b> You may have used insufficient fuse sizing for the installation. Re-read Section D, Electrical installation, (page 8) for proper wiring procedures. You are not running on true three phase, the starting &amp; running amperage is often higher than it would normally be.</p>

<b>PROBLEM</b>	<b>SYMPTOM</b>	<b>CORRECTIVE ACTION</b>
<p><b>IX. Excessive blowing of fuses, circuit breakers or heaters. (cont.)</b></p>	<p><b>B. Nuisance tripping of fuses, circuit breaker or heaters. (cont.)</b></p>	<p>To solve the problem, go to one step higher fuse or breaker or adjust the heater to compensate.</p> <p><b>c) Your motor load may require a higher efficiency than the converter is allowing.</b></p> <p>Solutions are:</p> <ol style="list-style-type: none"> <li>1. Install the next larger size Cedarberg Rotary Phase Converter.</li> </ol>

**If at any time you experience a popping sound, see smoke or liquid coming from within the converter, you can assume that the converter has internal damage and you will need to contact the factory for repair assistance.**