

January 13, 2010

Product: Ishida OMNi-4000 Automatic Wrapper

Issue: Power Related Error Messages

Cause: Low or Intermittent Power

Solution: Increase Power Level by Installing Buck-Boost Transformers



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## Background

When the power supplied to an OMNi-4000 wrapper is chronically low or prone to drops the error code 0471-0000 "The Problem Arose in the Wrapper" may occur (see Fig 1.). Specifically, this error occurs when the output of the OMNi-4000's main 3-phase transformer falls below 180 volts.

This document covers steps that can be taken to reduce or eliminate the occurrences of power related errors.

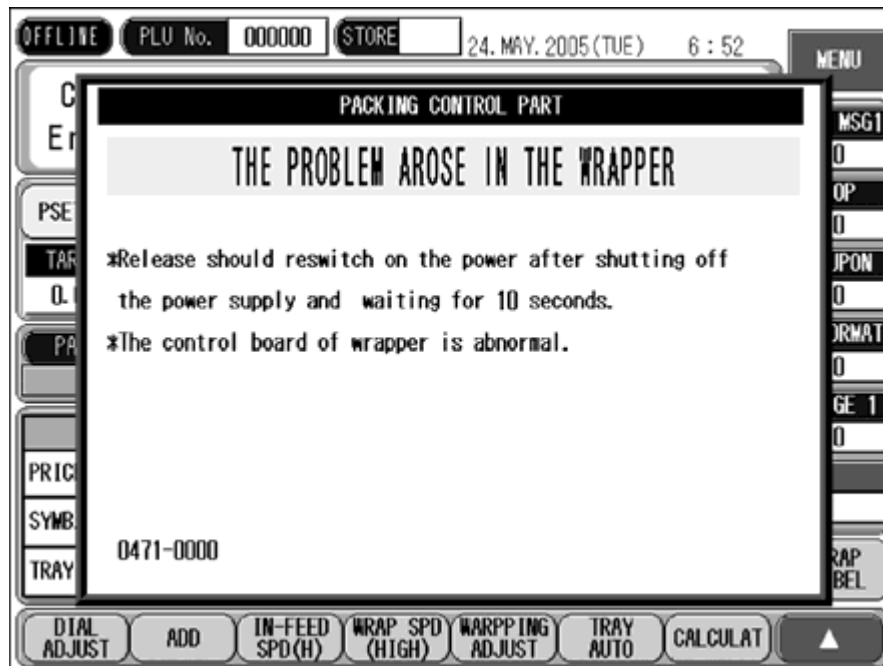


Figure 1. Low Power Error Screen 0471-0000.

## Procedure

### Measuring Power



Before connecting power to the OMNi-4000 check the 220 volts 3-phase power at the outlet. The wrapper ships with the transformer taps set at 208 volts. If power is above 220 volts the wrapper may be damaged. Based on the power readings, set the taps following the instructions in section *Transformer Output Power and Tap Settings* below.

After removing the rear, center panel take power measurements at the following points (see Fig. 2).

**Input Power:** Three terminals (L1, L2, L3) at the top of the 6.3A circuit breaker (PKZM0-6.3-T)

**Output Power:** Three terminals (T1, T2, T3) at the bottom of the 10A circuit breaker (PKZM0-10-T)

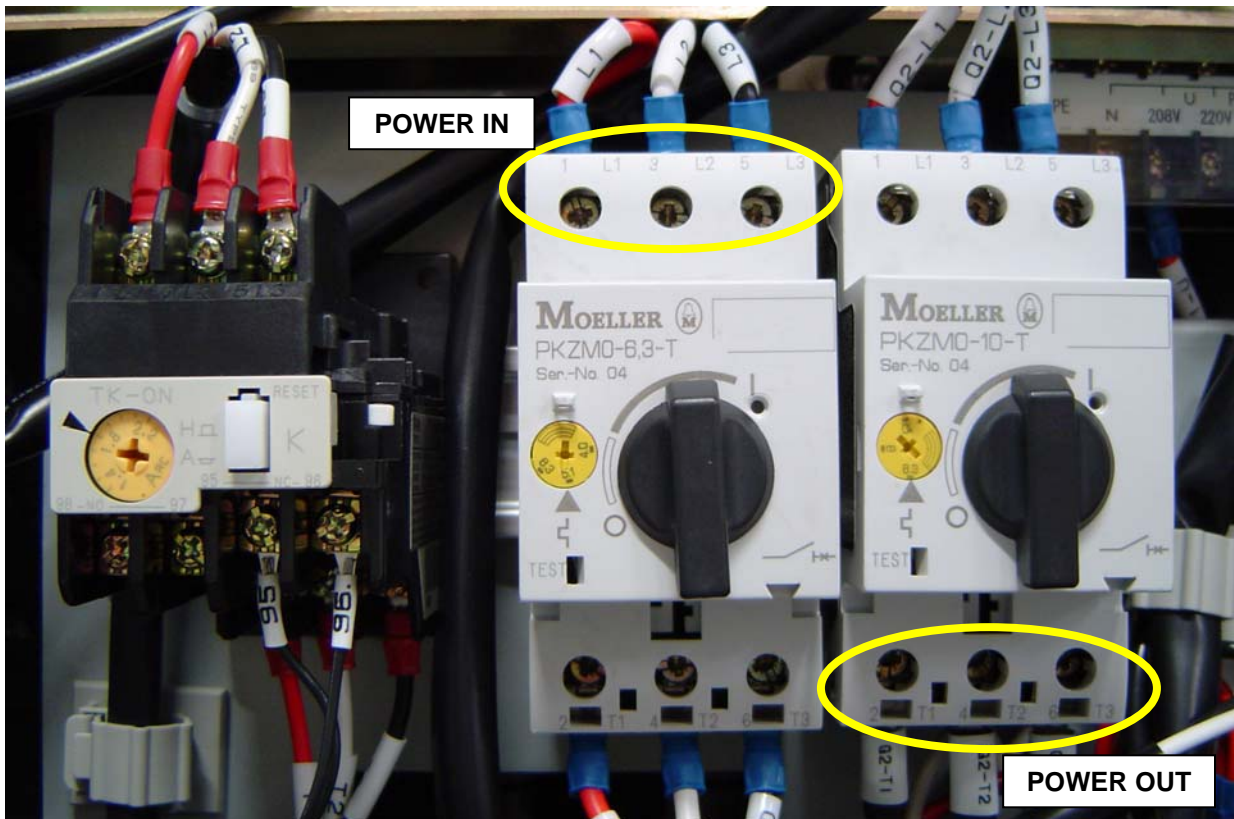


Figure 2. Test Points: Power In and Power Out of Main Transformer

### Transformer Output Power and Tap Settings

The allowable transformer power output is  $200 \pm 10$  volts, i.e. 190 ~ 210 volts. The desired output is 205 ~ 210 volts. The higher voltage reduces the likelihood that power drops will reach the 180 volt error threshold.

Set the three transformer inputs to the lowest setting (208, 220, 240) that generates the target output (see Fig. 3). Each line is marked as “U”, “V”, and “W”. Be sure to set all three inputs on the same voltage tap. Unmatched taps will damage the wrapper.

In all cases the OMNi-4000 installation should be monitored for error 0471-0000. If the error occurs and the transformer power output is below 200 volts the installation of Buck-Boost transformers should be considered. See section *Buck-Boost Transformers* below.

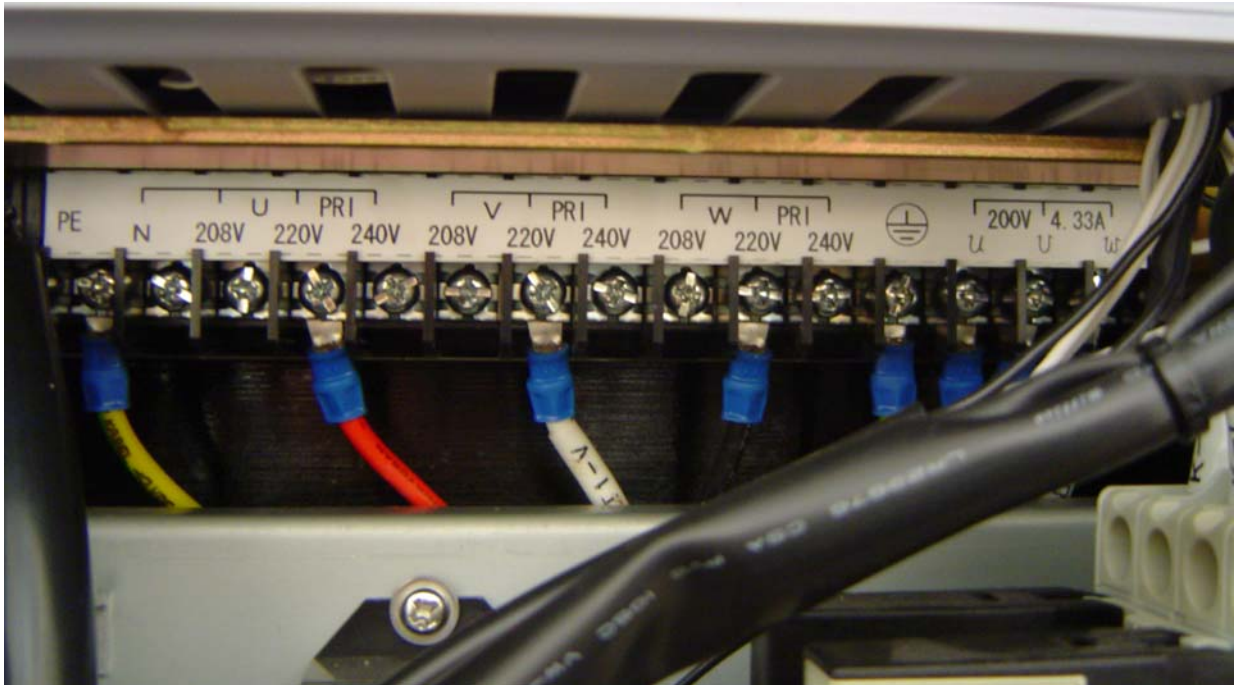


Figure 3. Main Transformer 3-Phase Input Taps Marked as "PRI"

Buck-Boost Transformers

If the available 3-phase power is low or power 0471-0000 occurs frequently, the installation of Buck-Boost transformers is one method to increase power. Depending on the Electric Utility company in the area power may be supplied in either Delta or Wye configuration. Always consult a licensed electrician to determine the configuration and perform the wiring. The Delta or Wye configuration will determine if two or three Buck-Boost transformers are needed and their specifications. See Fig. 4, 5, 6, and 7.

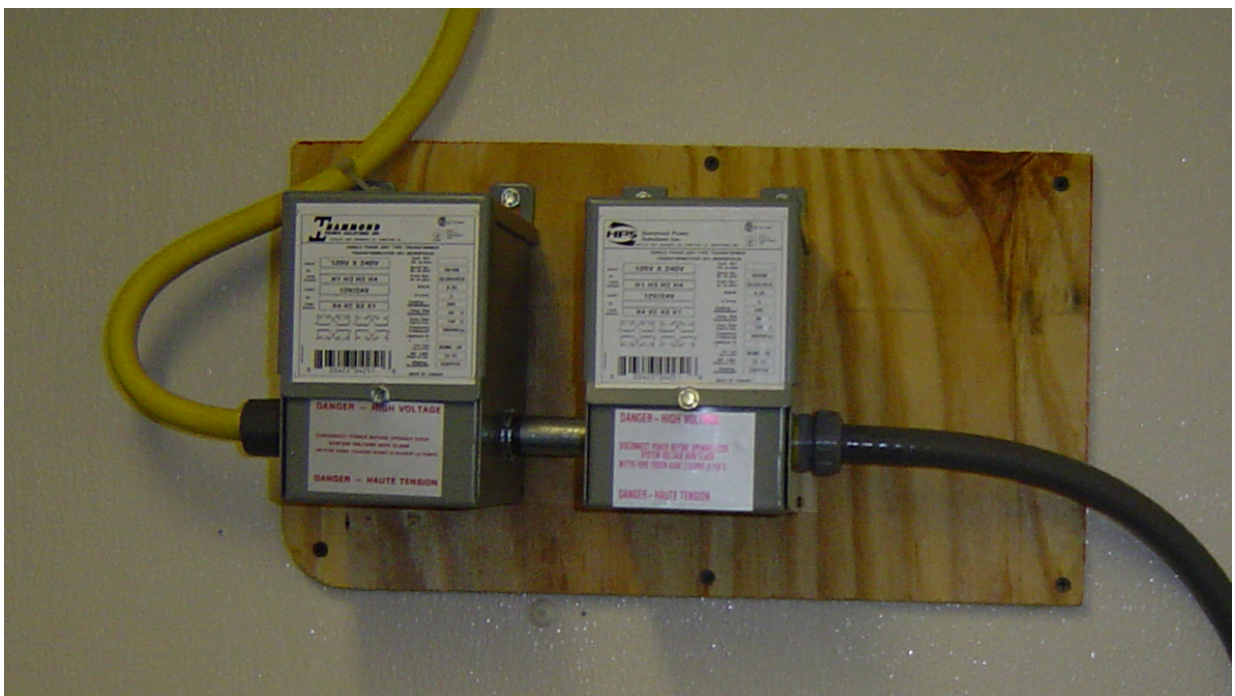


Figure 4. Two Buck-Boost Transformers for 3-Phase Delta Configuration





Figure 5. Three Buck-Boost Transformers for 3-Phase Wye Configuration

Based on the OMNi-4000's maximum rated current draw of 14A, the following Buck-Boost transformer can be wired to increase line power from 200 volts to 220 volts (approximately).

**Delta:** Two transformers, 0.35kVA, ex. Hammond Power Solutions model QC35ERCB

**Wye:** Three transformers, 0.20kVA, ex. Hammond Power Solutions model QC20ERCB

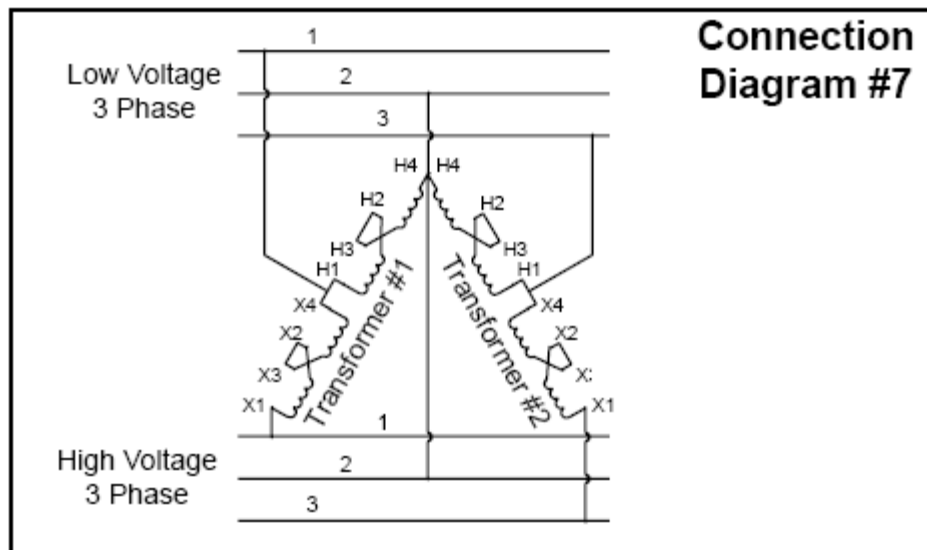


Figure 6. Typical Wiring for Two Buck-Boost Transformers for 3-Phase Delta Configuration\*

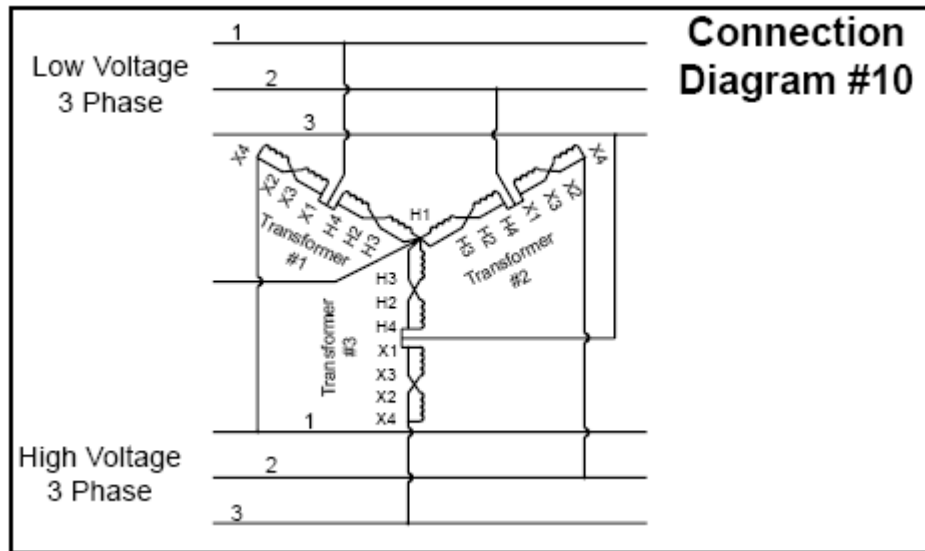


Figure 7. Typical Wiring for Three Buck-Boost Transformers for 3-Phase Wye Configuration\*

\* Always consult a licensed Electrician to perform the Buck-Boost transformer wiring.

### Random Resetting (Reboot)

On a related topic, if the OMNi-4000 experiences random resetting (reboot), check if one of the 3-phase power lines is a high (wild) leg. Measure each line to ground to determine the relative voltages. If present, connect the high leg to the white wire at the incoming power terminal located at the rear of the wrapper (see Fig. 8). The white wire is the only 3-phase line connection not supplying power to the main CPU Control Unit.

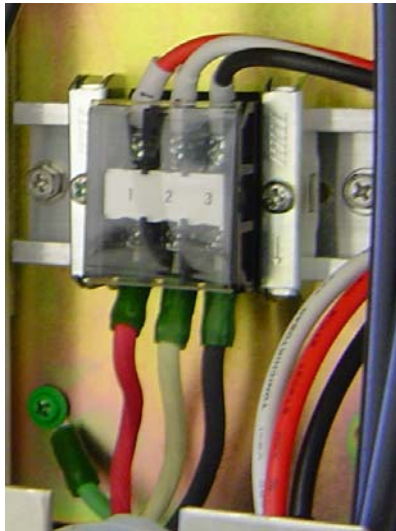


Figure 8. Incoming 3-Phase Power Connections

## Notes

- Buck-Boost transformers usually do not eliminate low power error 0471-0000 when the cause is unstable line power. They will, however, reduce the frequency and duration of the error.
- Buck-Boost transformers will not stabilize supply line voltage. The output voltage of the transformers is a function of the input voltage. If the input voltage varies, then the output voltage will also vary by the same percentage.
- Error 0471-0000 can also be caused by a partially closed door. Until the safety interlocks on all eight of the OMNi-4000's access doors are fully closed the error will not clear. Often the front printer door is not fully closed. If error 0608-0000 "OPERATION OF THE APPLICATOR STOPPED" is listed next to error 0471-0000 in the error log, the 0471-0000 error was caused by the front printer door.
- Although the 0471-0000 error message screen instructs the operator to turn off the main power and wait 10 seconds before restarting this may not resolve the problem. Only when the 3-phase power supplied to the wrapper is stable and above the minimum voltage will the wrapper return to normal operation.
- Be aware that if the building has a backup generator the OMNi-4000 may experience error 0471-0000 problems due to periodic testing. The switch to generator power is often accompanied by surges and sags in line voltage.
- The following components may also cause error 0471-0000:
  - Rear panel fuses: F21, F22, F23 (250V, 4A)
  - Rear panel fuses: F27, F29 (250V, 4A)
  - P-858/A Wrapper I/O control board fuses: F3, F4 (250V, 5A)
  - P-858/A Wrapper I/O control board

## Reference

- Hammond Power Solutions Buck-Boost Transformer on-line guide:  
[http://www.hammondpowersolutions.com/upload\\_files/htp-10\\_sec2.pdf](http://www.hammondpowersolutions.com/upload_files/htp-10_sec2.pdf)
- OMNi-4000 Bulletin Number TB20061030-R2, "Troubleshooting Blown Fuses".
- OMNi-4000 Error Codes and Troubleshooting Guide
- OMNi-4000 Service Manual