Focus 3 Trouble Shooting Guide

This Troubleshooting Guide is pertinent to Focus 3N Non Regen DC Drives

IMPORTANT SAFEGUARDS

All work on the drive should be performed by personnel familiar with it and its application. Before performing any maintenance or troubleshooting, read the instructions and consult the system diagrams. Only minor adjustments should be necessary on initial start-up, depending on the application. In addition, some common sense maintenance needs to be followed.

WARNING

MAKE SURE THAT ALL POWER SOURCES HAVE BEEN DISCONNECTED BEFORE MAKING CONNECTIONS OR TOUCHING INTERNAL PARTS. LETHAL VOLTAGES EXIST INSIDE THE CONTROL ANYTIME INPUT POWER IS APPLIED, EVEN IF THE DRIVE IS IN A STOP MODE. A TURNING MOTOR GENERATES VOLTAGE IN THE DRIVE EVEN IF THE AC LINE IS DISCONNECTED. EXERCISE CAUTION WHEN MAKING ADJUSTMENTS WITH THE CONTROL DRIVING A MOTOR. NEVER INSTALL OR REMOVE ANY PC BOARD WITH POWER APPLIED TO THE CONTROL

WARNING

THE DC MOTOR MAY BE AT LINE VOLTAGE EVEN WHEN IT IS NOT IN OPERATION. THEREFORE, NEVER ATTEMPT TO INSPECT, TOUCH OR REMOVE ANY INTERNAL PART OF THE DC MOTOR (SUCH AS THE BRUSHES) WITHOUT FIRST MAKING SURE THAT ALL AC POWER TO THE CONTROL AS WELL AS THE DC POWER TO THE MOTOR HAS BEEN DISCONNECTED.

General Troubleshooting

The most frequent causes of drive failure are:

A. Loose or broken wire connections.
B. Circuit grounding within the interconnections or the power wiring.
C. Mechanical failure at the motor.

DO NOT make adjustments or replace components before checking all wiring. Also monitor all LED indicator lights before proceeding with troubleshooting checks, and check for blown fuses.

It should be noted that modern solid state electronic circuitry is highly reliable. Often problems, which appear to be electrical, are actually mechanical. It is advised that the motor be checked in the event of any drive problems. Refer to the motor owner’s manual for maintenance and repair procedures.
Basic Test Setup – Light Bulb Test

It is fairly easy to test Focus Drives on the bench. One does not have to use a motor to verify basic operation. When working properly, the Focus basically creates a variable voltage much like a light dimmer except the output is DC. The easiest way to check a Focus on the bench without a motor is to connect the Armature output to a resistive load. One could use a 75watt light bulb screwed into a light bulb socket base as shown below.

Basic Light Bulb Test Power Wiring
In order to test the Focus, one would need to setup the input for 115vac operation and for basic Armature Voltage feedback. The drive should also be set for the lowest current setting. Therefore before testing, one should record the settings before test so that they could be reset back after the test.

To make this easier, see the next page.

### Record Drive Set-up **BEFORE** performing Light bulb test

<table>
<thead>
<tr>
<th><strong>Before Test</strong></th>
<th><strong>Test</strong></th>
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<tbody>
<tr>
<td><strong>Circle One</strong></td>
<td></td>
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<tr>
<td><strong>JP2</strong> SPD CUR</td>
<td><strong>JP2</strong> SPD</td>
</tr>
<tr>
<td><strong>JP4</strong> ARM TACH</td>
<td><strong>JP4</strong> ARM</td>
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<tr>
<td><strong>JP8</strong> Hi Low</td>
<td><strong>JP8</strong> Low</td>
</tr>
<tr>
<td><strong>JP9</strong> A B C D</td>
<td><strong>JP9</strong> None</td>
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<thead>
<tr>
<th><strong>JP11</strong></th>
<th><strong>JP11</strong></th>
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<tbody>
<tr>
<td>115vac Operation</td>
<td>230vac Operation</td>
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### Basic Armature Circuitry Checkout

After the Focus is wired as shown on the previous page and the jumper set as indicated above, 115vac power could be applied and the Focus should cause the light bulb to vary in brightness from nothing to full brightness. One could measure the voltage across the bulb and it should be about 90vdc at maximum brightness. This would verify the basic Start/Stop, Reference, Power Supply, Regulator and Power Sections.
**Field Supply Checkout**

If one wants to check the Field Supply, power should be removed and the light bulb moved over to the F+ and F- terminals (use a 75w bulb or less for the field. Use of greater than 75w could permanently damage the Field rectifiers). Then upon application of power, the light bulb should light to full brightness and the voltage across the light bulb should measure about 100vdc.

If the Focus passes these basic tests, the drive should be OK and the drive should be able to run a good motor at least in Armature Voltage feedback (JP4 in ARM). Reset jumpers back to the “Before Test Recorded Settings” except for JP4 and re-check.

If the motor has a shunt field, it should measure at least:

- 200 ohms if Nameplate indicates 200vdc Field
- 100 ohms if Nameplate indicates 100vdc Field

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