

INLAND MOTOR KOLLMORGEN CORPORATION

TP-13784

TITLE: FCU Series Test Procedure

Written by: G. L. Dowdy
Approved by: G. L. Dowdy

Date: 7/14/88
Date: 7/28/88

Revision: B
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4.2 Functional Test--continued:

If question (3) is answered NO, turn off all power to the FCU and obtain schematic C-98361 and board assembly C-112401. Remove top cover of the FCU (see MAINTENANCE Section of the FCU User's Manual MN-33) and find the Small Signal circuit board that is above the transformer. Verify that the value of R21 on this board matches the resistor value specified in the Resistor Table of the Small Signal Board Schematic C-98361. If not, replace this resistor with the proper value and repeat Load Clamp Test. If the resistor value is correct, check "FAIL" and terminate the testing on this unit. Tag this unit with a date and a "FAILED LOAD CLAMP WINDOW TEST" label.

Load Clamp Window Test FAIL _____

5.0 DCOUT Output Test:

5.1 Set Up:

Proceed to this test only if the Load Clamp Test has been completed.

Put a check in the space provided as each step is completed.

- Turn off Load Clamp Tester or DC Power Supply, and allow the voltage to discharge.
- Disconnect the Load Clamp Tester or DC Power Supply and 100 ohm resistor as they are no longer needed.
- Attach the Load Resistor Configuration as found in Table 1 to +DCOUT and -DCOUT.
- Attach the voltmeter to the +DCOUT and -DCOUT outputs. Be sure to set the meter to the DC scale.
- Connect Variac MK-10903 output the "+PWR AC IN -- X1" and "-PWR AC IN -- X2" of the FCU.
- Set Variac voltage to zero, turn on Variac, and slowly adjust the Variac to obtain a DCOUT voltage equal to the DC VOLTAGE FOR OUTPUT TEST voltage shown in Table 1.

Record the DCOUT output voltage set here

85.0 (f) VDC

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5.2 Functional test:

Allow the FCU to operate for about one minute.

Record the DCOUT output voltage measured after one minute here 84.9 (g) VDC
Turn off the Variac.

Is the voltage in (g) within the DCOUT OUTPUT VOLTAGE RANGE of Table 1?
Y Y or N

If the answer is YES then check the "PASS" blank provided and tag the unit with a date and a "TESTED FCU XXX-XX (Model Number)" label.

Unit PASS ✓

If the answer is NO then check the "FAIL" blank provided and terminate the testing on this unit. Tag the unit with a date and a "FAILED DCOUT OUTPUT TEST" label.

DCOUT Output Test FAIL _____

6.0 Conclude FCU Test:

Put a check in the space provided as each step is completed.

- ✓ Turn off all power to the FCU and verify discharge of both output voltages.
- ✓ Remove all resistors from the FCU connector.
- ✓ Remove all jumpers and wires from the FCU connector.
- ✓ Verify that the connector is free of all connections.

Record the date of completed test here
Record Unit Serial Number assigned here
Job NUMBER

3/16/95 (h)
95C4524 (i)
17075

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2.0 Equipment Required:

MK-10922 Load Clamp Tester or DC Power Supply (1 Amp minimum, Maximum Voltage is Clamp Threshold found in Table 1)

MK-10903 Variac (22 amp rms Max, 13.3 amp DC Max)

Oscilloscope with 10X probe

Isolation Transformer

Voltmeter (DC scale)

One 500 ohm, 2 Watt or higher, resistor (or two 1K ohm, 1 Watt or higher, resistors connected in parallel)

Four 8 ohm, three 6.3 ohm, and one 12 ohm 300 Watt Load Resistors, or resistance and wattage equivalent (See Load Resistor Configuration in Table 1)

AC Line Cord

One 100 ohm (1 Watt or higher) resistor

Note: 100 ohm resistor not needed if MK-10922 Load Clamp Tester is used.

3.0 Visual Inspection:

Visual inspect case for damage such as cracks, dents, bent edges, or broken connector housings.

4.0 Load Clamp Test:

4.1 Set Up:

Put a check in the space provided as each step is completed.

- Connect a jumper wire between +BYPASS and -BYPASS.
- Install the 500 ohm 2W resistor across +28VDCOUT and COMMON.
- Connect the line cord to LINE AC IN and LINE AC RETURN on the FCU (DO NOT plug into wall outlet yet).
- Plug oscilloscope into isolation transformer and power up.
- Attach a scope probe to +DCOUT and verify zero volts, referenced to -DCOUT, on the oscilloscope. Set scope time base to about 0.5 s/div. sweep.

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4.1 Set Up--continued

✓ If using the MK-10922 Load Clamp tester: With the tester input voltage turned off, attach the positive terminal of the tester to +DCOUT and the negative terminal to -DCOUT. Connect the Variac to the tester.

N/A If using the PC Power Supply: Connect one end of the 100 ohm 1W resistor to +DCOUT. With the DC Power Supply turned off, attach the positive terminal of the DC Power Supply to the open end of the 100 ohm resistor and the negative terminal to -DCOUT.

✓ Plug in the line cord connected to LINE AC of the FCU.

Measure across the 500 ohm resistor with the DC voltmeter and enter the voltage measured here 28.26 (a) VDC

1) Is this voltage between 26 and 30 VDC? Y or N Y ✓

If the answer to question (1) is YES, proceed to 4.2 Functional Test.

If the answer to question (1) is NO, unplug the line cord to LINE AC and remove top cover of the FCU as described in the MAINTENANCE Section of the FCU User's Manual MN-33. Verify that all four fuses are in place and that good connection is being made between the 12 pin terminal block of the base plate and the 8 pin connector of the nearest circuit board. If connections are good, verify approximately 30 VAC on the transformer secondary (attach AC voltmeter and then plug in LINE AC line cord). If the transformer voltage is correct, check "FAIL" and terminate the testing on this unit. Tag this unit with a date and a "FAILED 28 VOLT TEST" label.

28 VOLT Test FAIL _____

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4.2 Functional Test:

Enter the CLAMP THRESHOLD RANGE voltage from Table 1 which is correct for the FCU Model being tested. 103 - 115 (b) VDC

Enter the CLAMP WINDOW RANGE voltage from Table 1 which is correct for the FCU Model being tested. 95 - 104 (c) VDC

Set the voltage of the Load Clamp Tester or DC Power Supply to zero volts before turning on. Turn on the Tester or DC Power Supply and raise the voltage slowly. If the voltage level on the scope does not rise with the voltage input from the Tester or DC Power Supply, turn off voltage, remove top cover, and verify that good contact is being made between boards on the Molex connectors and try again. If the voltage level on the scope does rise, raise the voltage to the range recorded in blank (b). Turn up the voltage about 10 more volts or until you observe the voltage on the scope which rises slowly to a maximum voltage and then falls quickly to a minimum voltage (sawtooth waveform).

Enter the maximum voltage here 105 (d) VDC
Enter the minimum voltage here 100 (e) VDC

- 2) Is voltage (d) within the voltage range of (b)? Y or N Y
- 3) Is voltage (e) within the voltage range of (c)? Y or N Y

If questions (2) and (3) are both answered YES then check the "PASS" blank provided and proceed to the DCOUT Output Test.

Load Clamp Test PASS ✓

If question (2) is answered NO, turn off all power to the FCU and remove the top cover (see MAINTENANCE Section of the FCU User's Manual MN-33) and verify that the two large fuses are in the fuseholders mounted to the side cover. If the fuses are in place, obtain schematic C-98361 and board assembly C-112401 and find the Small Signal circuit board that is above the transformer. Verify that the value of R20 on this board matches the resistor value specified in the Resistor Table of the Small Signal Board Schematic C-98361. If not, replace this resistor with the proper value and repeat Load Clamp Test. If the resistor value is correct, check "FAIL" and terminate the testing on this unit. Tag this unit with a date and a "FAILED LOAD CLAMP THRESHOLD TEST" label.

Load Clamp Threshold Test FAIL _____