g GE Energy	**Functional Testing Specification**
Inspection & Repair Services ***Louisville, KY***	**LOU-GEF-CPU3x-B** **1050 CPU**

Test Procedure for CPU3x Printed Circuit Board

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Functional test procedure for CPU3x Printed Circuit Board

1. SCOPE

1.1 This specification provides the Engineering Requirements for testing the CPU3x printed circuit board. The process applies only to CPU3x boards model number 44A294506-G01.

2. STANDARDS OF QUALITY

2.1 Refer to the current revision of the IPC-A-610 standard for workmanship standards.

3. APPLICABLE DOCUMENTS

3.1 The following document(s) shall form part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue shall apply.

3.1.1	**GEK-36093**	Diagnostic Software for 1050T Controls
3.1.2	**GEK-71632**	Diagnostic Software for 1050MC Controls
3.1.3	**GEK-45668**	Computer Access Panel

4. ENGINEERING REQUIREMENTS

4.1 Description

4.1.1 The 1050 Control is a solid-state, integrated circuit controller/processor system using LSI circuits for data processing and control. The static logic circuits are arranged on modular, plug in, printed circuit boards, clearly identified by type. The circuit boards are mounted with functional grouping. In addition, a board identification number marks each rack slot. The backplane consists of printed conductors arranged in a busing structure so that each slot is universal and can accept any board type. The 1050 control uses the AXIS2 board for controlling two or more axis drives.

4.2 Equipment Cleaning

4.2.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to the local documented procedures for cleaning guidelines.

4.3 Equipment Inspection

4.3.1 Equipment should be visually inspected for any defects prior to applying power. This inspection should include the following as a minimum:

- **4.3.1.1** Wires broken or cracked
- **4.3.1.2** Terminal strips / connectors broken or cracked
- **4.3.1.3** Loose wires
- **4.3.1.4** Components visually damaged
- **4.3.1.5** Capacitors leaking
- **4.3.1.6** Solder joints damaged or cold
- **4.3.1.7** Circuit board burned or de-laminated
- **4.3.1.8** Printed wire runs burned or damaged

5. EQUIPMENT REQUIRED

5.1 The following equipment is required to perform the process requirements. Equipment may be substituted provided that all accuracy's and test ratios are equivalent or better.

Qty	Reference #	Description
1	GE 1050T/MC	CPU3 Model
1	GE Computer Access Panel	External Interface
1	Diagnostic Tape Specific to Control	Diagnostic Tape
1	Executive Tape Specific to Control	Executive Tape
1	Part Program Specific to Control	Part Program
1	Axis Cart	Motion Cart for Control

6. TESTING PROCESS

6.1 Diagnostic Test

6.1.1 Remove existing board from control and insert BUT (Board Under Test).

6.1.2 Turn control ON and check CAP Panel, if FFFE does not register on panel with the Display Selector Switch in the "Program Counter" position, do not go any further, troubleshoot board.

6.1.3 Load diagnostic tape by pushing down on "Load Tape" switch on the CAP Panel. Tape should begin to load.

6.1.4 When the first portion of the tape has finished loading the display should read "**CPU TEST COMPLETE".** Let test cycle for 1 hour

6.1.5 Then push "Load Tape" switch again. When tape stops at Memory Test, run test for 30 minutes by pushing "Option Stop".

6.1.6 Load third portion of the diagnostic tape, by toggling "Load Tape" switch. When tape finishes loading, it should rewind back to the beginning of tape. When displays reads "**TURN CONTROL OFF, THEN CONTROL ON"**. Turn off control. Turn control on and start the last part of the diagnostic program, let it cycle for 30 minutes.

6.2 Running a Part Program

6.2.1 Load executive software tape. Power up drive cart and enable drives.

6.2.2 Load part program tape and run Part Program for 6 hours.

6.2.3 Once control finishes running part program shutdown axis cart and then control.

6.3 ***TEST COMPLETE ***

7. NOTES

7.1 Cheap sockets have been known to cause intermittent problems and will keep the control from initializing, FFFE.

8. REFERENCES

Location	Checksum	GE #	Chip type	Chip type
A9	16E9	430-010A	74S288	82S129/82S123/18S30
B9	0F84	430-011A	74S288	82S129/82S123/18S30
K7	15BC	430-009A	74S288	82S129/82S123/18S30
L9	02BF	430-007A	74S288	82S129/82S123/18S30
M9	03F8	430-008A	74S288	82S129/82S123/18S30
D8	03C0	662-023A	74S287	AM27S21/82S123/14S10
M8	0A8E	662-022C	74S287	AM27S21/82S123/14S10
L8	0726	662-021B	74S287	AM27S21/82S123/14S10
K8	052B	662-020C	74S287	AM27S21/82S123/14S10
E7	0A94	997-165A	74S387	82S126/14SA10
E5	83ED	107-080A	74S472	82S147/AM27S29/18AS42
F5	8F6A	107-081A	74S472	82S147/AM27S29/18AS42
B14	4C82	107-002B	74S472	82S147/AM27S29/18AS42
B15	EC33	107-003B	74S472	82S147/AM27S29/18AS42
1C15	6EA1	107-005B	74S472	82S147/AM27S29/18AS42
E15	8220	107-006B	74S472	82S147/AM27S29/18AS42
1F15	316B	107-004D	74S472	82S147/AM27S29/18AS42
1G15	8F23	108-001C	74S472	82S147/AM27S29/18AS42
M15	7413	107-001B	74S472	82S147/AM27S29/18AS42