



GE Energy

Functional Testing Specification

Parts & Repair Services
Louisville, KY

LOU-GED-148D1647G4

Test Procedure for a valve position driver card

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REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Convert old test format over to current shop's format	G. Chandler	6/10/2013
B			
C			

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PREPARED BY G. Chandler	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL <i>Charlie Wade</i>
DATE 6/10/2013	DATE	DATE	DATE 6/10/2013

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1. SCOPE

1.1 This is a functional testing procedure for a valve position driver card.

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 Check board's electronic folder for more information

3.1.2 P3K-AL-0656-A01 Circuit Board Specifications

4. ENGINEERING REQUIREMENTS

4.1 Equipment Cleaning

4.1.1 Equipment should be clean and free of debris prior to applying power unless performing an initial check. Refer to site specific SRA's for cleaning guidelines.

4.2 Equipment Inspection

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

4.2.1.1 Wires - broken, cracked, or loosely connected

4.2.1.2 Terminal strips / connectors - broken or cracked

4.2.1.3 Components - visually damaged

4.2.1.4 Capacitors - bloated or leaking

4.2.1.5 Solder joints - damaged or cold

4.2.1.6 Circuit board - burned or de-laminated

4.2.1.7 Printed wire runs / Traces - 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		Fluke 87 DMM (or Equivalent)
2		+/- 15VDC Power Supplies
2		+/- 22VDC Power Supplies

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6. Testing Process

6.1 Testing

- 6.1.1 Connect board as in figure 1. Apply power and verify the following:
- 6.1.2 +15vdc +/- 1vdc at TP1.
- 6.1.3 -15vdc +/- 1vdc at TP2.
- 6.1.4 -22vdc at pin 37 < 100ma
- 6.1.5 +22vdc at pin 41 < 100ma
- 6.1.6 Ground pin 11 and verify pin 9 is 0vdc +/- .010vdc. Verify this with both the 124 ohms and 249 ohms+ loads (one at a time).
- 6.1.7 Adjust VR2 full CCW and VR54 full CCW. Remove ground from pin 11 and apply 1vdc.
- 6.1.8 Verify pin 10 is -4.11vdc to -3.95vdc.
- 6.1.9 Switch from 124 ohm load to 249 ohm load and verify pin 10 has no change in value.
- 6.1.10 Measure current at pins 12 to 13 and verify -.092ma to .097madc.
- 6.1.11 Adjust VR54 full CW.
- 6.1.12 With 1vdc still applied to pin 11 verify -5.22vdc to -4.84vdc at pin 10.
- 6.1.13 Switch from 124 ohm load to 249 ohm load and verify pin 10 has no change in value.
- 6.1.14 Measure current at pins 12 to 13 and verify -0.114ma to 0.124madc.
- 6.1.15 With 1vdc still applied to pin 11 adjust VR2 for 0.4vdc at TP6.
- 6.1.16 Measure current at pins 12 to 13 and verify -.202ma to .206madc.
- 6.1.17 Switch from 124 ohm load to 249 ohm load and verify no change in current.
- 6.1.18 Adjust VR51 full CCW.
- 6.1.19 Adjust VR50 for 2.5vdc at TP50.
- 6.1.20 Adjust VR51 for 6.000vac RMS +/- .010vac RMS.
- 6.1.21 Verify frequency at TP12 is between 3000 and 3400Hz.
- 6.1.22 The oscillator at TP12 must restart in all of the following conditions:
- 6.1.23 Remove all power and reconnect.
- 6.1.24 Remove the +22vdc supply and reconnect.
- 6.1.25 Remove the -22vdc supply and reconnect.
- 6.1.26 Make sure at ambient temp TP12 does not drift more than .060vac RMS.
- 6.1.27 Run the transducer from top to bottom and verify the waveform gain at TP12 does not change more than .015vac RMS.

Note: The region of the transducer used is 2.5" from the body (called the bottom stop) to 6" from the bottom stop (called the top stop).

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6.1.28 Extend the transducer to the top stop and adjust VR3 for 0vdc +/- .010vdc at TP8.

6.1.29 Using a scope verify the wave forms in figures 4 and 5.

6.1.30 Insert the transducer to the bottom stop.

6.1.31 Using a scope verify the wave forms in figures 6 and 7.

6.1.32 Set the transducer for 0vdc at TP8.

6.1.33 Use VR53 to null (0vdc) at TP13.

6.1.34 Set transducer for 1vdc at TP8.

6.1.35 Verify with VR4 full CW TP13 is -7.79 to -6.58vdc.

6.1.36 Verify with VR4 full CCW TP13 is -1.24 to -1.18vdc.

6.2 Post Testing Burn-in Required ☒ Yes ☐ No



Note: All MARK I, II, & III Turbine related cards require a post testing burn-in of 100 hours.

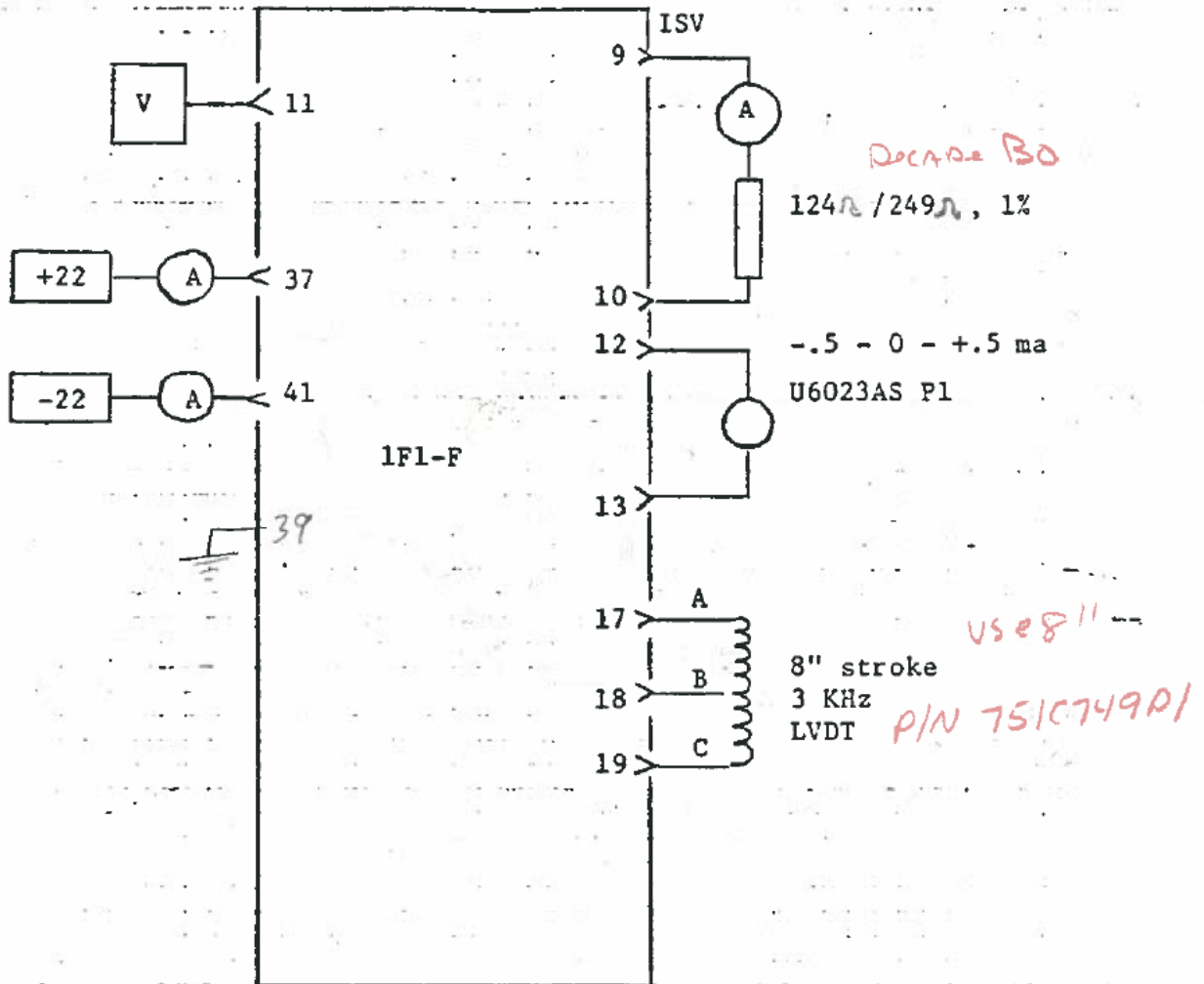
6.2.1 Apply BUS or Operational power to the card for a period of 100 hours.

6.2.2 Re-test card while warm using the above procedure.

6.3 *TEST COMPLETE*****

7. Notes

7.1 Figure 1 Test Setup



7.2

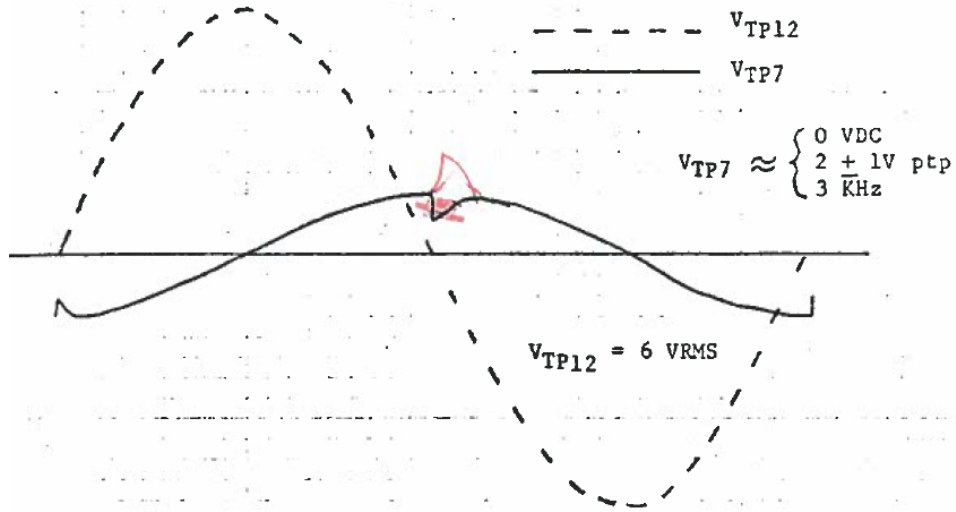


FIGURE 4: V_{TP7} - Transducer fully extended
TOP STOP
TS

7.3

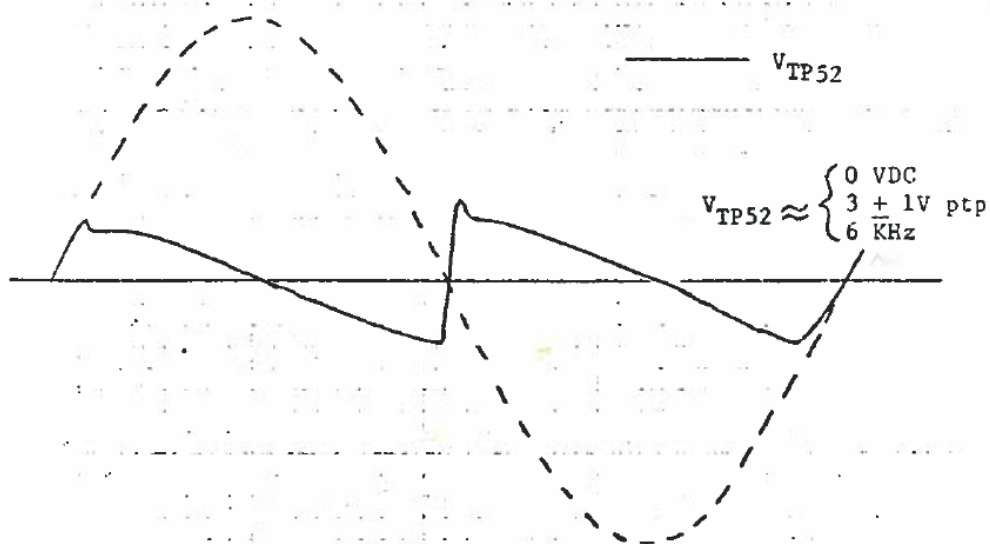


FIGURE 5: V_{TP52} - Transducer fully extended
TOP STOP
TS

7.4

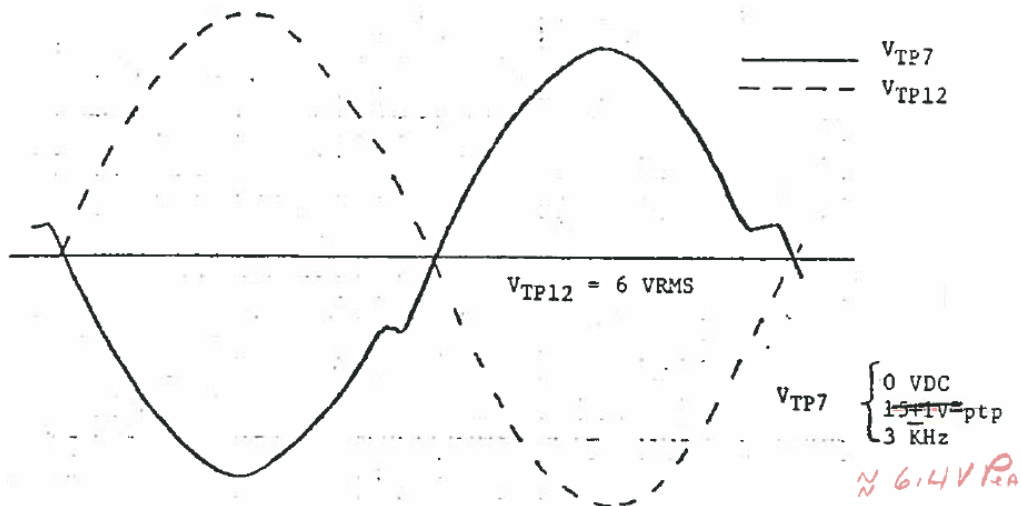


FIGURE 6: V_{TP7} - Transducer Inserted 8"

Bottom Stop
BS

7.5

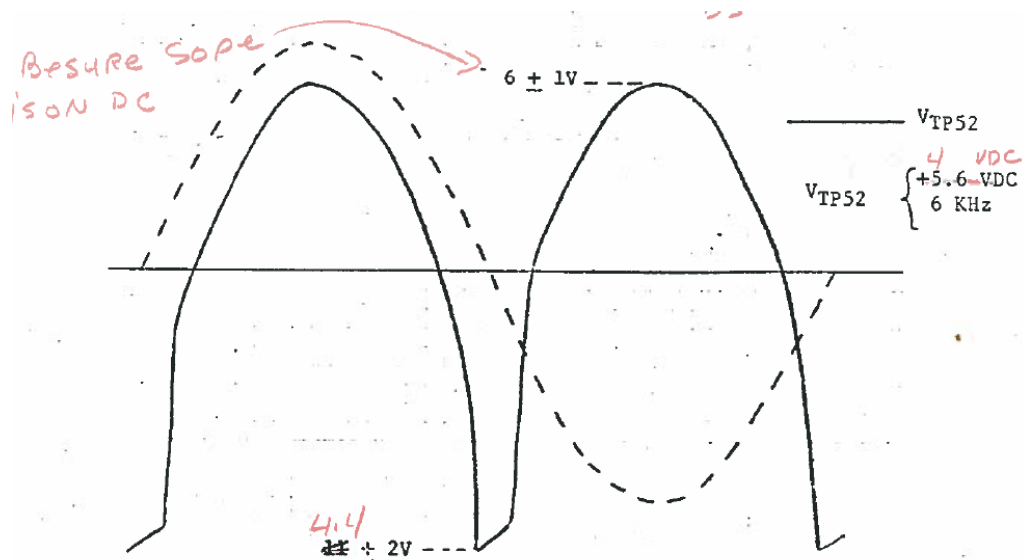


FIGURE 7: V_{TP52} - Transducer Inserted 8"

Bottom Stop
BS

7.6