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GE Industrial Systems

Functional Testing Specification

*Renewal Services
Louisville, KY*

LOU-GED-7556D34

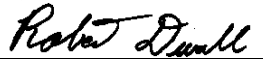
Test Procedure for a Servo Amp FunctionCard

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REV.	DESCRIPTION	SIGNATURE	REV. DATE
A	Initial release	Dan Laemmle	10/01/03
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PREPARED BY Dan Laemmle	REVIEWED BY	REVIEWED BY	QUALITY APPROVAL 
DATE 10/01/03	DATE	DATE	DATE 10/10/03

Functional test procedure for a 7556D34G1 Card

1. SCOPE

1.1 This is a functional testing procedure for a 7556D34G1 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

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 the local documented procedures 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 or cracked

4.2.1.2 Terminal strips / connectors broken or cracked

4.2.1.3 Loose wires

4.2.1.4 Components visually damaged

4.2.1.5 Capacitors leaking

4.2.1.6 Solder joints damaged or cold

4.2.1.7 Circuit board burned or de-laminated

4.2.1.8 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
2		Fluke 85 DMM (or Equivalent)
1		Sinewave Generator 3 Khz
1		Factory Test Fixture # 5.2.1.1
1	H188540	GM 5005 Transducer

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6. TESTING PROCESS

6.1 Setup

- 6.1.1 Generator must be capable of supplying 6.0 v RMS at 3 Khz into the primary of T1. The shop Wavetek and Tenma Function Generator will not put out enough. Connect to J4 and J5 on Test Fixture.
- 6.1.2 Connect +30Vdc and -22Vdc to Test Fixture. Connect Fluke meter on MA to J13 and J14
- 6.1.3 Connect Transducer to Amp connector on Test Fixture. Top stop is with rod out 16.125 inches from transducer body. Bottom stop is 3.125 inches from transducer body.
- 6.1.4 Follow Test Fixture setup and Test Instructions below.



Note:

6.2 Testing Procedure

- 6.2.1 See attached sheets below.

6.3 *****TEST COMPLETE*****

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7. NOTES

10- 1-03; 2:15PM;GE INDSYS

502 493 0640

1 / 2

MARK II TEST RECORDS

Servo Amplifier	APPLICATION	P.C. BD. NO.	BD. NO.	SER. NO.
JRBINE:	7486D72 G2 (PA)	817D628		
	7486D72 G1 (Func)	817D632		
	7556D34 G2 (PA)	817D628		
	7556D34 G1	817D632		

TEST: INSTRUCTIONS A-1077JL3 5.2.1.2.04 EQUIPMENT 5.2.1.1 DATE
TRANS. SN RATED STROKE IN

1.0 INSPECTION USE TRANSDUCER Gm5005 436 C568 P3

.1 Identification	.3 Solder/Wire	.5 Key Slot	(19)PA
.2 Comp./Conn.	.4 Temp. Cycle	.6	(17)FUNC
		.7	

REMARKS:

- 4.0 Initial Conditions: INPUT 2 OFF; COMMAND SW at (+); Dials at 0.00.
SERVO CURRENT sw. at 80 ma, VALVE POSIT. sw at 41, S5 (IND.).
- 5.0 Equipment Checkout; First use each day; FB Transd. Stroke/Spec IN.
- 6.0 Preparation of Bds; Func. R20 and R26 CW, R12 and R15 no change.
P.A. R121 CW, R108 Center; Plug both bds. in.
- 7.0 TEST PROCEDURES: TP's for PA Bd. in ().
- 7.1 Lower Gear Offset Adjustment: (Transducer 1" above Top Stop)
- 7.1.1 Jump TP8 to TP5; Vary COMMAND for ERROR ≤ 0 .
- .2 Remove jumper from TP8; Note TP8 = $+0.28V \pm 0.05 = V7.1.2$.
- .3 Note ERROR $\leq V7.1.2 \times R6/R27 = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad} V \pm 0.1$.
- .4 Rotate R26 CCW; Note TP8 = $-0.60 \pm 0.05 = V7.1.4$.
- .5 Note ERROR $\leq V7.1.4 \times R6/R27 = \frac{\quad}{\quad} \times \frac{\quad}{\quad} = \frac{\quad}{\quad} V \pm 0.1$.
- .6 Replace jumper TP8 to TP5; Note ERROR \leq returns to 0V.
- 7.2 Check Other Gains:
COMMAND at 0.00, Valve Pos. Transd. for ERROR ≤ 0 .
COMMAND at +0.5V; Note ERROR $\leq = -\left(\frac{\text{COM. GAIN}}{2}\right) V$
- 7.3 NULL Pos. FB Transd: Set Transd. 1" beyond Top Stop.
Scope at TP4, Adj. R12 and R15 for null (less than 150 MV P-P).
Note UNREG. VLV. POS. OUTPUT = 0V + 0.1.
- .4 Adjust Amplifier Zero: Adjust COMMAND for ERROR $\leq 0V$.
Adjust R113 for FIDELITY METER = 0.
- .5 Adjust Amplifier Gain: Increase COMMAND for ERROR $\leq -5V$.
Note TP9 & (TP4) each -5V.
- Adjust R102 for SERVO CURRENT = 79 ma.
Note TP1 (+) to TP2 (-) = (+4.64 to +5.24 VDC) AMP TO 0.12
- .6 Repeat 7.4 and 7.5 until no change needed.
- .6 Amplifier Linearity: Vary ERROR \leq Voltage per Table.
Adjust (R108) if necessary.

ERROR \leq V		+5	+3	+1	0	-1	-3	-5
Servo Current MA	Max	-82.2	-50.4	-18.4	+1	+18.4	+50.4	+84.0
	Min	-77.8	-45.6	-13.6	-1	+13.6	+45.6	+76.0
Observed								

Position FB Gain; Posit. transd. 1" above Top Stop.
Adjust COMMAND for +5.38V.
Adjust R121 for ERROR $\leq 0V$; Note (TP8) = $-4.5V \pm 0.1$.
Position transd. 1" above Bot. Stop; COMMAND +0.38V.
Adjust R20 for ERROR $\leq 0V$.
Note REG. VALVE POS. OUTPUT and (TP5) = $+5.00V \pm 0.1V$
Note UNREG. VALVE POS. OUTPUT IS $+6.6V$ min.

Servo Amplifier 5.2.1.2.04

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7. Note TP3 = UNREG. VALVE POS. OUTPUT.
- 7.8. Valve Position Indicator Adjustment:
Position Transducer at Bot. Stop; Adjust R131 for Zero.
Position Transducer at Top Stop; Adjust R125 for Full Scale.
- 8.0. Amplifier Noise Level: $ERROR \leq 0V$.
Scope (TP2); Note Noise Level is less than 10 MV P-P
- 9.0. Demodulator Output Wave Forms: (CR2 Bot) Scope on DC.
- .1. Note pos. full-wave rectified wave form decr. to 0 as transd. is extended beyond Top Stop to Sync. Posit.
- .2. Note neg. full-wave rectified wave form as transd. is extended farther.
- 10.0. Valve Position: Filter Output TP3; Scope at UNREG. Jack
Pos. Transd. at Bot. Stop; Note ripple and noise less than 60 MV P-P.
- 11.0. Additional Voltage Checks: (Command at +5.0V)
- .1. Funct. Bd. TP2 to J3 (6.6 to 7.0V rms) V
TP2 to J7 (11.0 to 11.6V rms) V
R16R to R17R (22.5 to 23.5V rms) V
TP4 to TP5, more than 16V P-P V P
TP11 with COM = +4.99 to 5.01V + V
- .2. P.A. Bd. CR101L to COM (-0.5 to -0.8V) - V
R110T to COM (-1.0 to -1.6V) - V
R114L to COM (+14.2 to +15.8V) + V
TP7 to TP3 (-5.2 to -6.0V) - V
TP10 to TP3 (+5.2 to +6.0V) + V
- 12.0. Temp. Coef. Check P.A. Bd:
- | VM | Cond. | Cold Volts | Heat at (30 sec.) | Δ Volts |
|-----|-----------|--------------------|-------------------|----------------|
| TP9 | Bot. Stop | (+4.6 to +5.0) + V | R126 (CR112) | + 10MV MV |
| TP8 | - | (-4.4 to -4.6) - V | R118 (CR109) | + 5MV MV |

If use 817D605G1 as DC amp - Put 1K ~~Here~~
Sine Wave
 $V_{pp} = 12$

Need 7556D34G2 or something to Mod.
to for Servo amp Pwr. Fnd. stat
(Base bid. 817D628)

we have
Similar with orange tag

UUT in Servo. Amp Function Bld.

8. Oscilloscope Verification Examples:

Fig. 1

Fig. 2