

**g GE Canada**

## Test Instructions for

**0621L0215 G001**

Device Number

## Drive Excitation Control Card

### Description of Device

**Originated By:**           Maher Albasel            
Typed Name

**Date:** May 10, 2007  
mm/dd/yy

**Approved By:**           Maher Albasel            
Signature

**Approval Date:** May 10, 2007  
mm/dd/yy

## TEST INSTRUCTIONS

## PREVIOUS REVISION SHEET

621L0215 G001

Device Number

## Drive Excitation Control Card

### Description of Device

[illegible]

# TEST INSTRUCTIONS

g

Location: Book or file      File

Device Name      Drive Excitation Control Card  
Device Number    621L0215 G001  
Date:      May 10, 2007

Pg.:      3/7

1.      PURPOSE:
  - a.    Static and dynamic test procedures for Drive Excitation Control Card
2.      ELEMENTARY:
  - a.    Drawing 266A9681 and 266A1737
3.      EQUIPMENT:
  - a.    DVM TL#001033 or equivalent
  - b.    Oscilloscope TL#00172 or equivalent
  - c.    Resistor 1K ½ W 0177A1001 P049
  - d.    Resistor 100K ½ W 0177A1002 P001
  - e.    6 phase isolated 20VAC bench supply (only needed if card came in without 0632L0504 unit)
4.      SET UP:
  - a.    If 0632L0504 unit came with card disconnect card from unit and test unit separately first
  - b.    Install 1K resistor into R90
  - c.    Then reconnect card except do not connect the GPG wires (make sure they are isolated from everything) to 0632L0504 once unit has been tested.
  - d.    Perform these connections only if card came in alone
    - a.    Connect 0° to CP30
    - b.    Connect 180° to CP32
    - c.    Connect CT to CP31
    - d.    Connect 120° to CP10
    - e.    Connect 300° to CP12
    - f.    Connect CT to CP11
5.      PROCEDURE:
  - a.    Apply to AC power and check the incoming AC has a p-p voltage of approximately 21 VAC. Make sure the scope is connected to the CT of each set when checking.
  - b.    Verify the following voltages

# TEST INSTRUCTIONS

gg

Location: Book or file      File

Device Name      Drive Excitation Control Card  
 Device Number      621L0215 G001  
 Date:      May 10, 2007

Pg.:      4/7

Vdc	±Vdc	Between				Ripple <XmVp-p
		1TB		1TB		
P15	1.67	14	(+)	16	(-)	300
N15	1.67	28	(-)	16	(+)	300
P10	0.1	15	(+)	16	(-)	30
N10	0.1	17	(-)	16	(+)	30

(ensure continuity between 1TB16, CP31, CP38)

		CP		CP		
P15	1.67	14	(+)	9	(-)	800
N15	1.67	16	(-)	9	(+)	800

(ensure continuity between CP9, CP11, CP19)

- c. GPG Phasing  
 d. Verify the following (sync scope to line and use CP30 as reference point)

CP	Test Point	Amplitude (Vp-p)		Shift (X°)	
		min	max	min	max
33	0°	27	34	3	6
35	90°	15	22	85	90
36	180°	27	34	183	186
34	270°	15	22	265	270

- e. Regulator
- Remove CP3-CP4 and jumper I4-C4
  - Connect the following points
  - 1TB2 to 1TB8
  - 1TB4-1TB6
  - 1TB3-1TB17
  - 1TB22-1TB5
  - 1TB13-1TB19
  - 1TB11-1TB15
  - Adjust 1TB2 for 0 VDC with R2 CCW should get 0Vdc ±30mVDC at CP5
  - Adjust 1TB2 for -1 VDC by turning R2 CW should get 7.5Vdc ±500mVDC at CP5
  - With power off verify 4.7kΩ between 1TB7 and CP4
  - Check for 1μF and 470KΩ between CP1 and CP2

- f. Aux Pots
- Turn power back on.

# TEST INSTRUCTIONS

gg

Location: Book or file      File

Device Name      Drive Excitation Control Card  
Device Number    621L0215 G001  
Date:      May 10, 2007

Pg.:      5/7

- ii. R4      CCW  $\Rightarrow$       1TB12 = 0Vdc
- iii. R4      CW     $\Rightarrow$       1TB12 = +10Vdc
- iv. R1      CCW  $\Rightarrow$       1TB21 = -1.8Vdc      =      1TB5
- v. R1      CW     $\Rightarrow$       1TB21 = -5.8Vdc      =      1TB20
- vi. R2      CCW  $\Rightarrow$       1TB2 = 0Vdc
- vii. R2      CW     $\Rightarrow$       1TB2 = -10Vdc
- viii. Turn all pots back CCW
- ix. Feedback Level Detector
- x. Connect CP7 to 1TB12.
- xi. Verify the following:
- xii. R4 CCW 1TB9 should be 300 mVDC wrt 1TB10
- xiii. Turn R4 CW until 1TB12 is 2 VDC wrt COM
- xiv. 1TB9 should be 31 VDC
- xv. Increase 1TB12 and 1TB9 should remain 31 VDC
- g. Isolated Current Feedback Amplifier
  - i. Disconnect feedback wires to CP8 and CP9; make sure wires are isolated cover ends if needed (only needed if testing both card and base unit together)
  - ii. Jumper CP8 to CP9 and ensure R90 (1K $\Omega$ ) is installed.
  - iii. Apply power and verify CP17  $\leq$  30 mVDC.
  - iv. Turn power off
  - v. Install 100K for R90
  - vi. Move jumper from CP8 to CP14 turn power on CP17 should be -1.5 VDC
  - vii. Move jumper from CP8 to CP16 turn power on CP17 should be +1.5 VDC
  - viii. Power down and reinstall 1k $\Omega$  into R90 (reconnect the wires to CP8 and CP9 if using base unit)
  - ix. Feedback Circuit
  - x. Remove feedback wires marked CP21, CP22 (only do if testing card and base together)
  - xi. With no power applied, measure the following

CP	to	CP	R3	Value
18	to	21	N/A	100k
20	to	22	N/A	100k
21	to	COM	CW	1050
21	to	COM	CCW	1k
22	to	COM	CW	1050
22	to	COM	CCW	1k

- xii. With all CPC points to the following positions verify the chart data

# TEST INSTRUCTIONS

g

Location: Book or file File

Device Name Drive Excitation Control Card  
Device Number 621L0215 G001  
Date: May 10, 2007

Pg.: 6/7

C to ?	CP	CP	V I/P @ CP	O/P @ CP	O/P @ C3	(±)	O/P @ CP3	(±)
open	i3	n/a	0	n/a	n/a	n/a	0mV	40mV
i	18	20	0	n/a	n/a	0mV	40mV	440mV
i	18	n/a	P10	21	100mV	(-)1V	5%	(+)10V
i	20	n/a	P10	22	100mV	(+)1V	5%	(-)10V
v	18	20	0	n/a	n/a	0mV	4mV	0mV
v	18	n/a	P10	21	100mV	(-)100mV	5%	(+)100mV
v	20	n/a	P10	22	100mV	(+)100mV	5%	(-)100mV

## h. GPG circuits

- Connect CP5 to CP6 and adjust R2 fro 4.5 VDC at CP6
- Observe fig 2a and fig 2b at both CP29's
- $150 \mu s \leq T_{on} \leq 300 \mu s$
- $300 \mu s \leq T_{off} \leq 600 \mu s$
- $V_{max} \leq 25.2 \text{ VDC}$

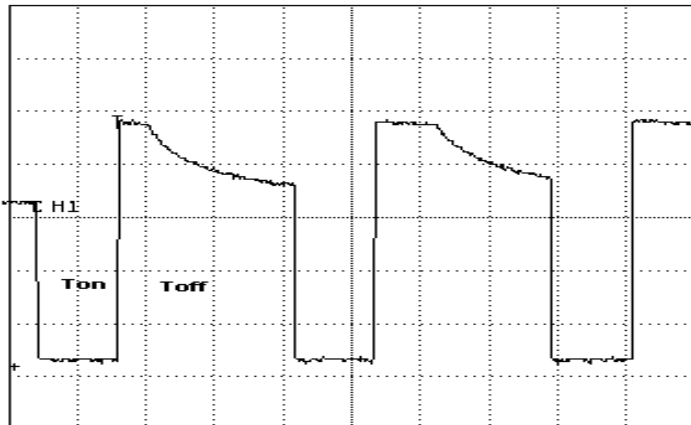


Fig 2a

CH1 5U A 200μs 12.5 U UERT

SNAPSHOT OF CH1 USING MIN/MAX METHOD:

DIS= 21.4 U	TOP = 23.8 U	WID = 236μs
MES= 12.2 U	BASE= 550mU	DUTY= 68.6 %
PRX= 2.95 U	MEAN= 14.8 U	FREQ= 1.33kHz
MAX= 23.8 U	QRS= 0.0 %	PER = 752μs
MID= 12.2 U	UNDS= 0.0 %	RISE? 3.26μs
MIN= 550mU	RMS = 16.6 U	FALL= 361μs
P-P= 23.2 U	AREA= 68.4mUs	

DIST= 98.0 % MES = 50.0 % PROX= 10.0 %  
AGAIN ↑

TEK 2440 THU MAR 02 12:54:01 1995

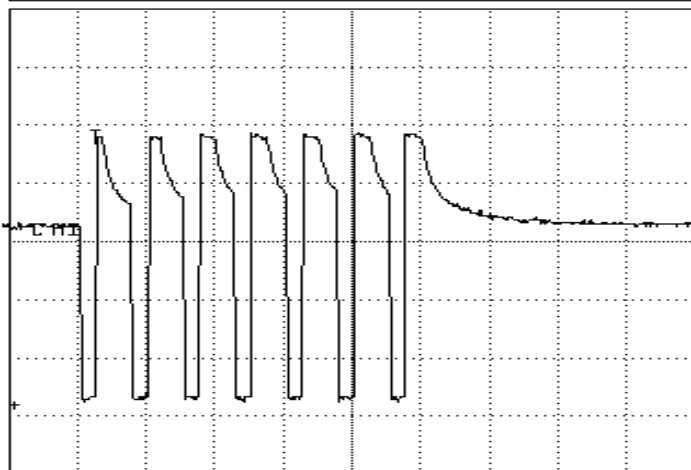


Fig 2b

CH1 5U A 1ms 12.6 U UERT

SNAPSHOT OF CH1 USING MIN/MAX METHOD:

DIS= 21.6 U	TOP = 24.0 U	WID = 240μs
MES= 12.4 U	BASE= 550mU	DUTY= 68.4 %
PRX= 2.95 U	MEAN= 15.6 U	FREQ= 1.31kHz
MAX= 24.0 U	QRS= 0.0 %	PER = 761μs
MID= 12.3 U	UNDS= 0.0 %	RISE? 16.6μs
MIN= 550mU	RMS = 16.6 U	FALL= 399μs
P-P= 23.4 U	AREA= 319mUs	

DIST= 98.0 % MES = 50.0 % PROX= 10.0 %  
AGAIN ↑

TEK 2440 THU MAR 02 12:54:49 1995

- Dynamic Test (can only be done if base unit was sent with card)
- Attach all GPG and feedback wires as per wire markers.

# TEST INSTRUCTIONS

gg

Location: Book or file      File

Device Name      Drive Excitation Control Card  
Device Number    621L0215 G001  
Date:      May 10, 2007

Pg.:      7/7

- ii. Ensure all pots are turned CCW and R90 (1K $\Omega$ ) is installed.
- iii. Ensure that the jumpers and feedback wires are set for the same mode (ie. current or voltage). Note that the wire markers are set up for the current mode. To change to Voltage mode use CP18, CP20 and change all C-I jumpers to C-V.
- iv. Monitor the O/P load with a scope in differential mode and 100X probes.
- v. Monitor CP29 "A" or "B".
- vi. Apply AC power and observe that the GPG LEDs are off. If one LED is on then adjusting R3 for a system balance MAY be the answer. The GPG static tests will have already proofed these circuits so that a feedback system balance is usually the problem.
- vii. Slowly turn R2 CW and see that both GPG circuits turn on at the same time and that the O/P load is phasing up evenly. Note that there may be some differences at the low end but once you start drawing more current the waveforms should stabilize.
- viii. Set current for about 2A O/P and let run with "capture" mode on the 'scope; the O/P should remain stable for the run.
- ix. Set card up in Voltage mode and verify regulation in that mode (ie. power up again and turn R2 slowly CW again).
- x. Leave R3 UNSEALED since the card may require system balancing at customer's site.

## 6. UPGRADES:

- a. See revision page

## 7. END.