

31QJ79G01
P/OV SP/SP #2 Bd.
10j79g1 GE20

MARK III
PC BOARD TEST

REV.A
SHEET 1 of 4

ASSEMBLY DRAWING
4176J86G01

PC BOARD DRAWING

SCHEMATIC DRAWING
4176J76

TEST KIT
PROGRAMMABLE, 4176J85 RAMP GENERATOR

1.0 INSPECTION

- | | | |
|-------------------------|----------------------|--------------------------|
| .1 IDENTIFICATION _____ | .3 SOLDER/WIRE _____ | .5 KEY SLOT 7 & 17 _____ |
| .2 COMP./ CONN. _____ | .4 TEMP CYCLE _____ | .6 _____ |
| | | .7 _____ |

REMARKS: CHANGES PER A.N. 85EC1008, J.A.W. 2/26/85 REV. A
R36 WAS 20K

2.0 TEST SET UP

- 2.1 Connect +15, -15, +5 VDC and common to programmable test kit.
- 2.2 Connect +15, -15 VDC and common to ramp generator test kit, #4176J85.
- 2.3 Connect up cable #4136J55 to programmable test kit.
- 2.4 Connect the TTL output of a wavetek model 171 freq generator to the SG1 jack.
- 2.5 Connect the common of the freq generator to power supply common.
- 2.6 Connect the ramp generator BNC cable to the "VCG IN" terminal of the wavetek.
- 2.7 Turn all switches off.
- 2.8 Set R15 CW, R35 CCW.
- 2.9 Plug board into test kit.
- 2.10 Ramp switch to out position.

3.0 INPUT CHECKS

- 3.1 Apply +4 VDC to pin 9.
- 3.2 TP2 must be approximately +14.5 VDC.
- 3.3 Decrease voltage at pin 9. TP2 will switch to approximately -13.5 VDC when input voltage is between +1.5 to +1.9 VDC.
- 3.4 Remove voltage at pin 9.

4.0 FREQ ADJ

ACTIVE	FOR 61
BY JPC	DATE 3-30-95

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- 4.1 Adjust R5 for 0.00 at TP7. ^{3V} ~~0.00~~ 15V
L1 should be on. L2, L3 should be off.
Pin 11 should be -.01 to +.01 VDC.
- 4.2 Adjust oscillator for 4000 HZ.
Turn on S1.
Adjust R8 for +10.000 VDC at TP7.
Adjust R12 for -10.000 VDC at TP3.
R15 CW → L1, L2 and L3 must be on. ^{11.32} 10V
TP1 should be -15 VDC.
- 4.3 Set oscillator to 3960 HZ.
Adjust R15 CCW until L1 just goes out. ⁴¹ 10V
Set oscillator to 3950 HZ.
Turn S1 off, then on. L1 must be on. ⁴¹ 10V
Increase oscillator, L1 should go out at
approximately 3960 HZ.
With L1 off, pin 2 should read approximately -.12 VDC
- 4.4 Set oscillator to 3970 HZ. ⁴¹
TP9 will read approximately +14.5 VDC.
TP9 will switch immediately to approximately -13 VDC
after turning S1 off.
- 4.5 Set the oscillator to 2 HZ.
Turn S1 on.
L1, L2 and L3 must be on, (wait several seconds for
L2 and L3 to go on).
TP8 should read approximately +9.4 VDC (unsteady).
Turn S1 off. L2, and L3 must go out within 1 second.
Turn S1 on.
- 4.6 Set oscillator to 3564 HZ.
Turn S2 on, L1 must remain on.
→ Pin 1 will read -7.06 TO -7.89 VDC ^{7.54}
Adjust R35 CW until L1 just turns off.
- 4.7 Set oscillator to 4000 HZ.
Pin 10 should be -10.4 to -10.7 VDC.
Connect -15 VDC to pin 11.
TP4 should be +.4 to +.7 VDC.
Remove -15 VDC from pin 11.
AC ripple at pin 11 must be less than .02V p-p.
- 4.8 Turn Off S2.

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5.0 OVER-SPEED TEST SET-UP

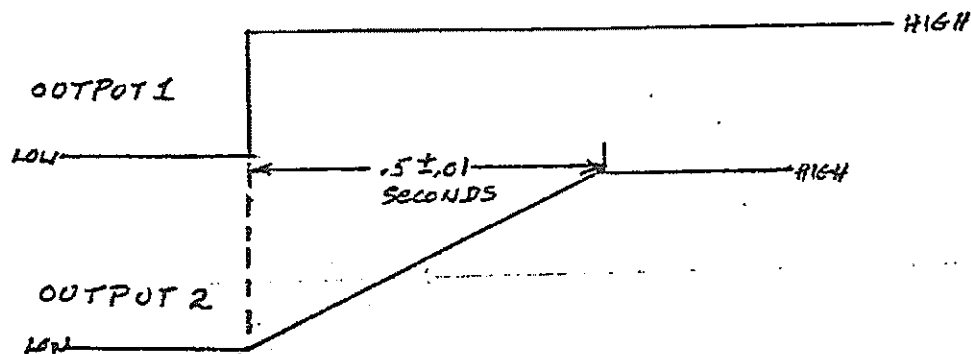
5.1 Connect up a dual trace scope as follows:
 a) Channel 1 to output 1 of ramp generator.
 b) Channel 2 to output 2 of ramp generator.

5.2 Set scope as follows:
 a) Channel 1 --- 5V/DIV, DC mode
 b) Channel 2 --- 2V/DIV, DC mode
 c) Chop mode
 d) Trigger on Channel 1
 e) .1 Sec/DIV
 f) Scope and level at "+"
 g) Single sweep
 h) Store mode

5.3 Switch the wavetek to the dial position,!

6.0 RAMP GENERATOR SET-UP

6.1 Ramp switch to out.
 6.2 Adjust P1 for approximately 0 VDC at output 1.
 6.3 Adjust the wavetek for approximately 3600 HZ,
 6.4 Re-adjust P1 for 3600 ± 1 HZ at the wavetek output.
 6.5 Ramp switch to in.
 6.6 Adjust P2 for 3970 ± 1 HZ.
 6.7 Ramp switch to out.
 6.8 Erase the scope screen.
 6.9 Set the ramp switch to in.
 Adjust P3 so that output 2 of the ramp generator goes from low to high in $.5 \pm .01$ seconds.
 Repeat steps 6.7 thru 6.9 until a $.5 \pm .01$ second ramp time is obtained. (See Figure 1).



6.10 Set ramp switch to out.

7.0

OVERSPEED TEST

7.1

Disconnect channel 2 from output 2..

7.2

Connect channel 2 to pin 41.

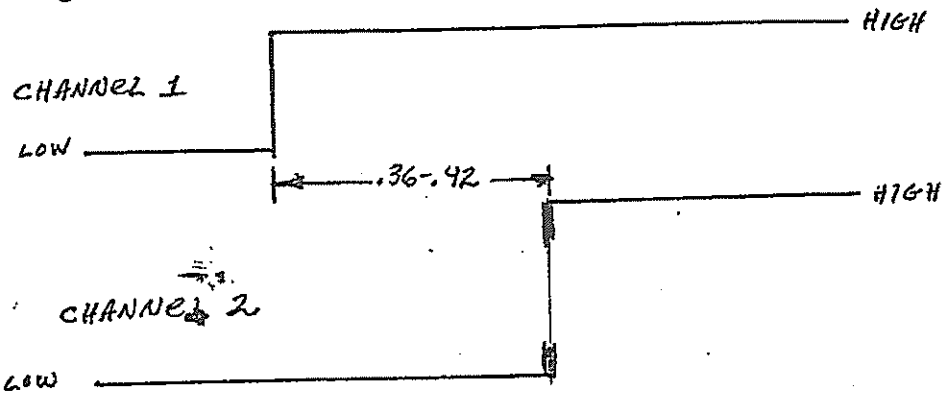
7.3

Erase scope screen. Set scope to 50 millisec/DIV.

7.4

Set ramp switch to in.

The time delay from when channel 1 goes high and channel 2 goes high must be to .36 to .42 seconds. (See Figure 2).



7.5

Disconnect the ramp generator BNC cable from the "VCG IN" terminal.

7.6

TEST COMPLETE