ASSEMBLY DRAWING
4176J85G01

PC BOARD DRAWING

SCHEMATIC DRAWING
4176J84

TEST KIT
PROGRAMMABLE-4176J85-RAMP GENERATOR
H188990 Ramp Generator
H188991 Watchdog Probe

1.0 INSPECTION

.1 IDENTIFICATION ____ .3 SOLDER/WIRE ____ .5 KEY SLOT 9 & 19

.2 COMP./ CONN. ____ .4 TEMP CYCLE ____ .6 ____

.7 ____

REMARKS: CHANGED PER A.N. 85EC1008, R36 to 10K, Rev. A J.A.W. 2/27/85

3-27-86 Note cable R21 should be 1 meg.

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 (50Ω out) Connect the (+) output of a wavetek model 171 freq generator to one side of a speed probe (G.E. part #1284J25-P1, airpax type #1-0028).
2.5 Connect the other side of the speed probe to the SG1 jack on the test kit.
2.6 Connect the common of the freq generator to power supply common.
2.7 Connect the ramp generator BNC cable to the "VCG IN" terminal of the wavetek.
2.8 Turn all switches off.
2.9 Set R15 CW, R35 CCW.
2.10 Plug board into test kit.
2.11 Ramp switch to out position.

3.0 INPUT CHECKS

3.1 With S1 off, TP2 must be approximately -13.5 VDC. ____
Apply -1.0 VDC to pin 9. TP6 must be -.4 to -.7 VDC. ____
3.3 Apply +1.0 VDC to pin 9. TP6 must be +.4 to +.7 VDC. ____
3.4 TP2 must be approximately +14.5 VDC. ____
3.5 Decrease voltage at pin 9. TP2 will switch to approximately -13.5 VDC when input voltage is ~~between +.2 and +.24~~ VDC. ____

approx. 0 VDC on 12 scale

3.6 Remove voltage at pin 9.

4.0 FREQ ADJ

4.1 Adjust R5 for 0.00 at TP7.
L1 should be on. L2, L3 should be off.

Pin 11 should be -.01 to +.01 VDC.

4.2 Set oscillator for a 5 VRMS SINE WAVE.
Adjust oscillator for 4000 HZ.
Turn on S1.
Adjust R8 for +10.000 VDC at TP7.
Adjust R12 for -10.000 VDC at TP3.
L1,L2 and L3 must be on.
TP1 should be -15 VDC.

S1 ON S2 OFF

4.3 Set oscillator to 3960 HZ.
Adjust R15 CCW until L1 just goes out.
Set oscillator to 3950 HZ.
Turn S1 off, then on. L1 must be on.
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.
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, L3 must go out within 1 second.
Turn S1 on.

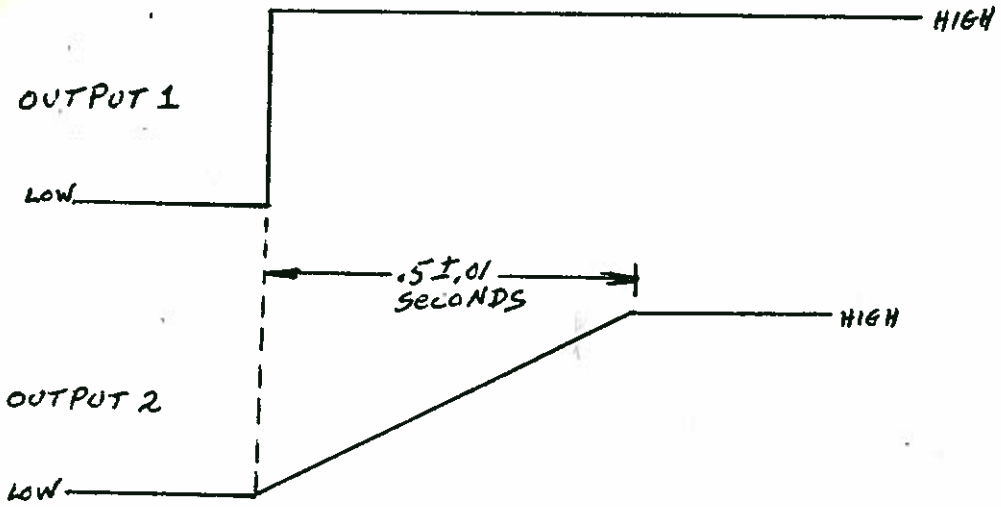
4.6 Set oscillator to 3564 HZ.
Turn S2 on, L1 must remain on.
Pin 1 will read -7.06 to -7.89 VDC.
Adjust R35 CW until L1 just turns off.

4.7 Set oscillator to 4000 HZ.

NOTE IF 0VDC OUTPUT GO BACK + REMOVE WIRE FROM PIN 9

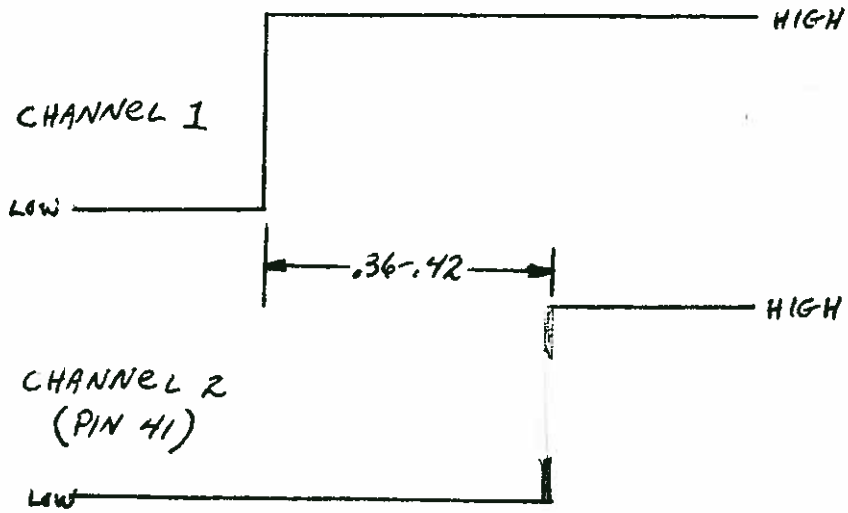
Adjust P3 so that output 2 of the ramp generator goes from low to high in .5 ± .01 seconds.
Repeat steps 6.7 thru 6.9 until a .5 ± .01 second ramp time is obtained. (See Figure 1).

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. - 100 ms better To Read
7.4 Set ramp switch to in.
The time delay from when channel 1 goes high and channel 2 goes high must be .36 to .42 seconds. (See Figure 2).



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

TEST COMPLETE

r-1310j78g1 GE20

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 less than .02V p-p.

4.8 Turn Off S2.

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 Set the wavetek as follows:

a) Sine wave output
b) 5 VRMS amplitude
c) Switch to dial position

6.0 RAMP GENERATOR SET-UP (S1 still on)

6.1 Ramp switch to out.
6.2 Adjust P1 for approximately 0 VDC at output 1.
6.3 Adjust the waveter for approximately 3600 HZ.
6.4 Re-adjust P1 for 3600 ± 1 HZ at the waveter output.
6.5 Ramp switch to in.
6 6 Adjust P2 for 3970 ± 1 HZ.
Ramp switch to out.
6.8 Erase the scope screen.
6.9 Set the ramp switch to in.