

P3K-AL-0218

CONT ON SHEET 2

SH NO. 1

REV NO. 0

**TITLE**

VOLTAGE COMPARATOR - LOW HYSTERESIS

SCHEMATIC DWG. 125D3224

BOARD NO. 125D3225 G1 & G2

FIRST MADE FOR

P3K-AL-0218

COMMON SHEET 2

SH NO. 1

~~EHC T-203~~

REVISIO

## TEST PROCEDURE

## Part A

26 APR 1934 T O U

1. Connect +30V HQ to Pin 17, -22V HQ to Pin 21, and HQ ground to Pin 19. Connect lights L1 and L2 as shown in Test Sketch.
2. Turn R22 and R44 fully CCW.
3. Apply HQ ground to Pins 9, 31, 41, & 39.
4. Adjust R21 so that L1 is just on the point of lighting.
5. Adjust R43 so that ~~V<sub>2</sub>~~<sup>L2</sup> is just on the point of lighting.
6. Remove the grounds from Pins 9, 31, 41, & 39.
7. Hook up board as per test set up.
8. Turn R22 and R44 fully counterclockwise. ditto
9. Close S1. *pin 31*
10. Adjust 2K pot (see test set up) for +8.0 volts at Pin 31. Check that TP8 reads +8.0 volts.
11. Adjust R20 for +9.0 volts at Pin 9. Check that TP1 reads +9.0 volts.
12. Adjust R20 counterclockwise slowly observing L1. When L1 lights stop turning R20.
13. Read the voltage at Pin 9. This should equal +8.0 volts  $\pm$  30 mv.
14. Turn R20 clockwise slowly, observing L1. When L1 goes out, stop turning R20.
15. Read the voltage at Pin 9. This should be +8.03 volts  $\pm$  30 mv. See Note 1.
16. Turn R20 about 3 turns clockwise.
17. Turn R22 fully clockwise.
18. Repeat steps 11 thru 15. This time L1 should go out at +8.2  $\pm$  50 mv.  
" " " " pick up AT See Note 2.
19. Turn R22 fully counterclockwise.
20. Adjust 2K pot for -8.0 volts at Pin 31.

**ACTIVE**

FOR (C)

THE

1.5

ET-273

273-2

273-12

273-13

273-13

273-71

PRINTS •

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MADE BY D. Mone Apr. 29, 1974  
ISSUED APR 29 1974

## APPROVALS

## Steam Turbine

DIV ON  
DEPT.

P3K-AL-0218

Schenectady, N. Y.

**LOCATION**

CONT ON SHEET 2

SM NO. 1

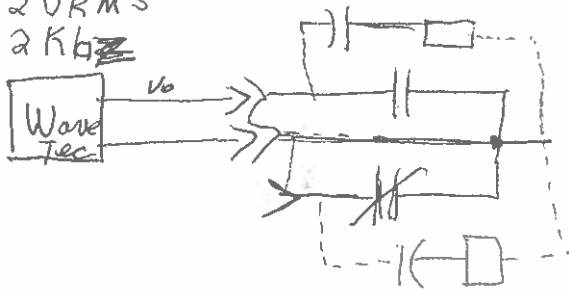
REV NO.	TITLE	CONT ON SHEET	SH NO.
P3K-AL-0218	VOLTAGE COMPARATOR - LOW HYSTERESIS SCHEMATIC DWG. 125D3224 BOARD NO. 125D3225 G1 & G2	3	2
FIRST MADE FOR			
		REVISIC	
21. Adjust R20 CCW for -7.0 volts at Pin 9.			
22. L1 should be out. Adjust R20 CCW slowly observing L1. When L1 lights, stop turning R20.			
23. Read the voltage at Pin 9. It should have a value of -8.0 volts $\pm$ 30 mv.			
24. Adjust R20 slowly CW observing L1. When L1 goes out, stop turning R20.			
25. Read the voltage at Pin 9. This should have a value of -7.97 volts $\pm$ 30 mv. See Note 1.			
26. Turn R20 about 3 turns CW.			
27. Turn R22 fully CW. Repeat steps 21 thru 25, only this time L1 should go out at -7.8 $\pm$ 50 mv. See Note 2.			
28. Turn R22 full CCW.			
29. Open S1, close S2.			
30. Adjust 2K pot for +8.0 volts at Pin 39. Check that TP9 reads +8.0 volts.			
31. Adjust R42 CW for +9.0 volts at Pin 41. TP 10 should read +9.0V.			
32. L2 should not be lighting. Adjust R42 slowly CCW until L2 lights. When this happens stop turning R42.			
33. Read voltage at Pin 41. This should equal 8.0 volts $\pm$ 30 mv.			
34. Adjust R42 slowly clockwise. L2 should go out. When this happens stop turning R42.			
35. Read voltage at Pin 41. This should equal +8.03 volts $\pm$ 30 mv. See Note 1.			
36. Turn R44 fully clockwise. Repeat steps 31 thru 35. This time L2 should go out at +8.2 volts $\pm$ 50 mv. See Note 2.			
37. Turn R44 fully CCW.			
38. Adjust 2K pot (see test set up) for -8.0 volts at Pin 39.			
39. Adjust R42 CCW for -7.0 volts at Pin 41.			
40. L2 should be out. Turn R42 counterclockwise slowly until L2 lights.			
		PRINTS	
MADE BY D. Mone Apr. 29, 1974	APPROVALS	Steam Turbine Schenectady, N. Y.	DIV OR DEPT. LOCATION
ISSUED APR 29 1974		P3K-AL-0218	CONT ON SHEET 3 SH NO. 2

REV NO.	TITLE	CONT ON SHEET	SM NO.
P3K-AL-0218	VOLTAGE COMPARATOR - LOW HYSTERESIS SCHEMATIC DWG. 125D3224 BOARD NO. 125D3225 G1 & G2 FIRST MADE FOR	4	3
REVISION			
41. Read voltage at Pin 41. This should equal -8.0 volts $\pm$ .03 volts.			
42. Adjust R42 slowly CW observing L2. When L2 goes out, stop turning R42.			
43. Read the voltage at Pin 41. It should be -7.97 volts $\pm$ 30 mv. See Note 1.			
44. Turn R44 completely clockwise. Repeat steps 39 thru 43, only this time L2 should go out at -7.8 volts $\pm$ 50 mv. See Note 2.			
45. Turn R44 fully CCW.			
46. Connect an oscilloscope in place of L1.			
47. Set R20 and R42 for zero volts at TP1 and TP10, respectively.			
48. Close S1. Adjust the 2K pot for +5 volts DC at Pin 31.			
49. Open S1. Connect S1 to trigger the scope. Close S1 and observe the trace on opening or closing on the scope. The pickup time should be less than 16 ms.			
50. Open S1 and observe that dropout time of the VC. It should be less than 30 ms.			
51. Connect up the oscilloscope in place of L2.			
52. Close S2 and observe the trace on the oscilloscope. The pickup time should be less than 16 ms.			
53. Open S2 and observe the trace on the scope. The dropout time should be less than 30 ms.			
<u>Failures:</u> Any test that cannot be carried out is a condition for rejection and should be reported to Control Design Engineering.			
NOTE 1: With hysteresis pot (R22 or R44) at full CCW the difference between pick-up voltage and drop-out voltage must be less than 30 mv.			
NOTE 2: With hysteresis pot (R22 or R44) at full CW the difference between pick-up voltage and drop-out voltage must be greater than 200 mv.			
PRINTS			
MADE BY D.Mone Apr. 29, 1974	APPROVALS	Steam Turbine Schenectady, N. Y.	DIV OR DEPT. LOCATION
ISSUED APR 29 1974			P3K-AL-0218
		CONT ON SHEET	4
		SM NO.	3

REV. NO. <span style="border: 1px solid black; border-radius: 50%; padding: 2px;">0</span>  P3K-AL-0218  CONT ON SHEET <span style="border: 1px solid black; padding: 0 5px;">5</span> SH NO. 4	TITLE VOLTAGE COMPARATOR - LOW HYSTERESIS SCHEMATIC DWG. 125D3224 BOARD NO. 125D3225 G1 & G2 FIRST MADE FOR								
<div style="text-align: center; font-style: italic; font-size: 1.2em; margin-bottom: 10px;">             Use Handwritten Test for              this Step <u>Part B</u>              9336 3/20/90 (See next page)           </div> <p>This test should be carried out if the VC output relays have RC contact protection.</p> <ol style="list-style-type: none"> <li>1. Connect up the VC board as in Fig. 2.</li> <li>2. Adjust R20 for -1 V DC at TP8.</li> <li>3. Set a square wave generator for 1 V amplitude, 100 ms period.</li> <li>4. Apply the square wave from Pin 6 to Point A (Fig. 2). Monitor the voltage across Ra on an oscilloscope. The wave shape should be as shown in Fig. 2b. The time constant of the exponential should equal 8.45 ms <math>\pm</math> 15%.</li> <li>5. Adjust R20 for 1 V DC at TP8. Apply the square wave across Point A to Pin 5. The signal across Ra should be the same as in 4.</li> <li>6. Adjust R42 for -1 V DC at TP 9. Apply the square wave across Point B and Pin 3. Monitor the voltage across Rb. It should be similar to that across Ra in step 4.</li> <li>7. Adjust R42 for +1 V DC at TP9. Apply the square wave from Point B to Pin 1. The signal across Rb should be similar to that across Ra in step 4.</li> </ol>									
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 30%;">           MADE BY            D. Mone Apr. 29, 1974         </td> <td style="width: 20%;">           APPROVALS         </td> <td style="width: 30%;">           Steam Turbine            Schenectady, N. Y.         </td> <td style="width: 20%;">           DIV OR DEPT.            LOCATION         </td> </tr> <tr> <td>           ISSUED            APR 29 1974         </td> <td></td> <td></td> <td>           P3K-AL-0218            CONT ON SHEET <span style="border: 1px solid black; padding: 0 5px;">5</span> SH NO. 4         </td> </tr> </table>		MADE BY D. Mone Apr. 29, 1974	APPROVALS	Steam Turbine Schenectady, N. Y.	DIV OR DEPT. LOCATION	ISSUED APR 29 1974			P3K-AL-0218 CONT ON SHEET <span style="border: 1px solid black; padding: 0 5px;">5</span> SH NO. 4
MADE BY D. Mone Apr. 29, 1974	APPROVALS	Steam Turbine Schenectady, N. Y.	DIV OR DEPT. LOCATION						
ISSUED APR 29 1974			P3K-AL-0218 CONT ON SHEET <span style="border: 1px solid black; padding: 0 5px;">5</span> SH NO. 4						

USE FOR RC CONTACT PROTECTION

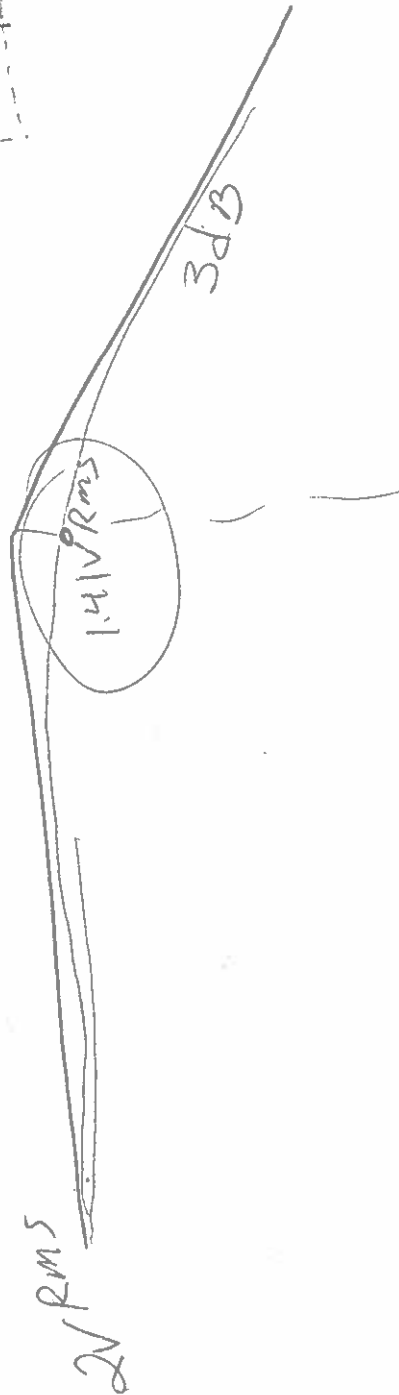
2 VRMS  
2 KHz



1. Set Voltage  $V_0$  to 2VAC at 200 Hz
2. Increase Freq until Voltage drops to 1.41 V
3. Freq should be between 3994 Hz and 5976 Hz
4. Repeat for all ckt's.

9336

3/21/90



REV. NO. 

TITLE

VOLTAGE COMPARATOR-LOW HYSTERESIS

CONT ON SHEET

6

SH NO.

5

P3K-AL-0218

CONT ON SHEET

6

SH NO.

5

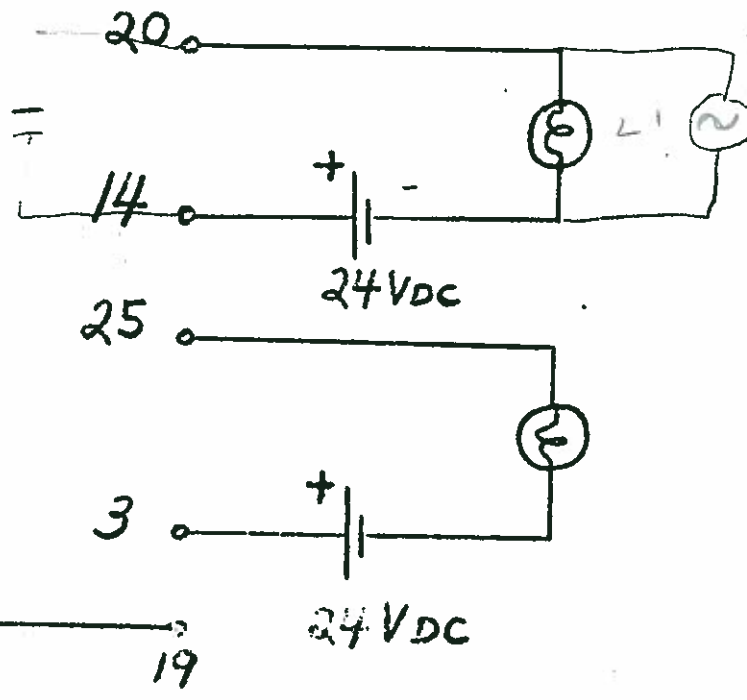
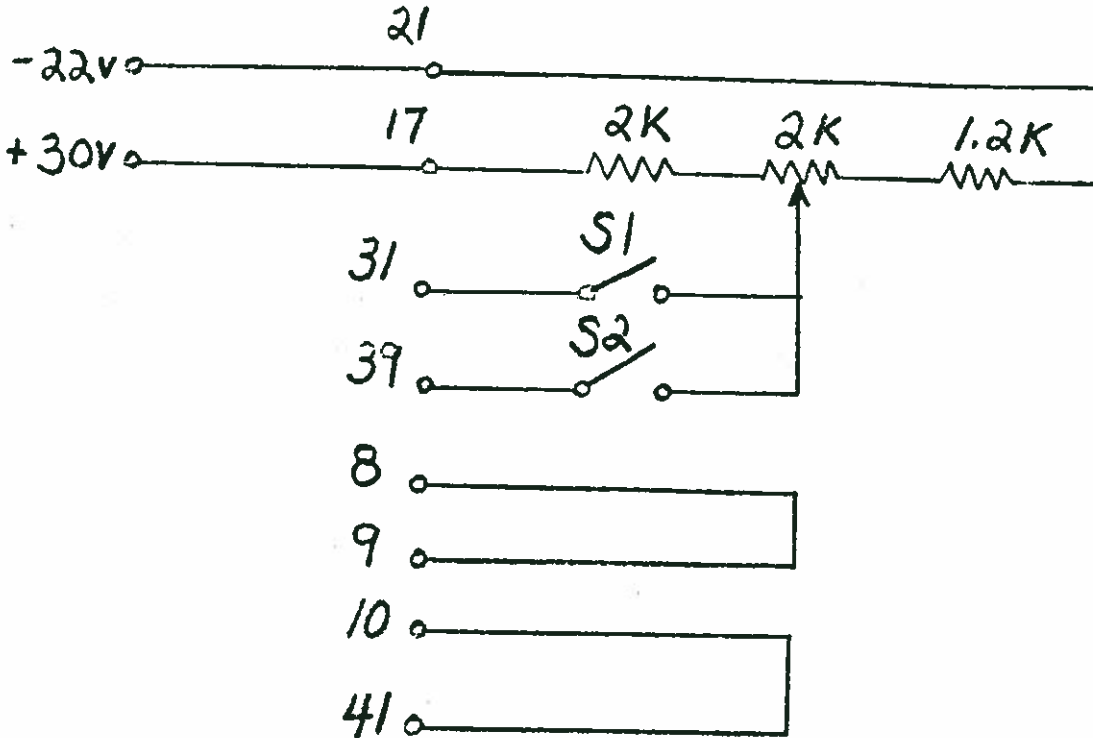
FIRST MADE FOR

SCHEMATIC DWG. 125D3224

BOARD NO. 125D3225 G1 & G2

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FIG. 1



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Steam Turbine

Schenectady, N.Y.

DIV OR DEPT.

LOCATION

P3K-AL-0218

CONT ON SHEET

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SH NO.

5

PRINTS TO

REV NO. 1

TITLE

CONT ON SHEET 7

SH NO. 6

P3K-AL-0218

VOLTAGE COMPARATOR - LOW HYSTERESIS

SCHEMATIC DWG. 125D3224

BOARD NO. 125D3225 G1 & G2

CONT ON SHEET 7

SH NO. 6

FIRST MADE FOR

REVISI

Fig. 2 A

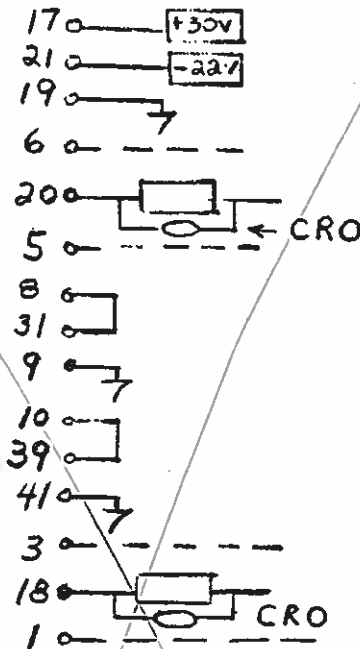
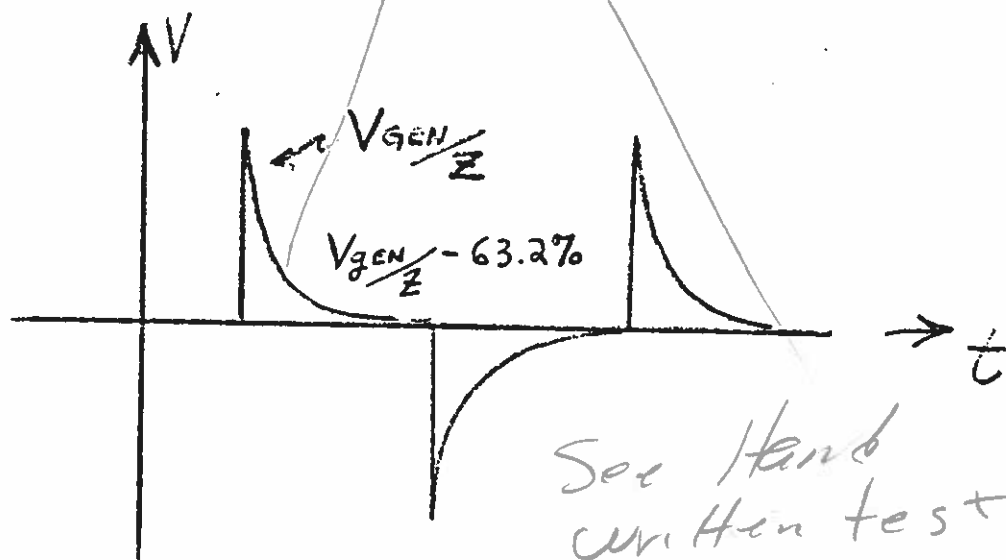


Fig. 2 B



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APR 29 1974

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Steam Turbine

DIV OR DEPT.

P3K-AL-0218

Schenectady, N.Y.

LOCATION

CONT ON SHEET 7

SH NO. 6

REV NO.		TITLE	P3K-AL-0218		CONT ON SHEET	SH NO.	7
P3K-AL-0218		VOLTAGE COMPARATOR - LOW HYSTERESIS SCHEMATIC DWG. 125D3224					
CONT ON SHEET		FIRST MADE FOR BOARD NUMBER 125D3225 G1 & G2					
PREPARED BY <u>R. J. Pillsworth</u> DATE <u>4/22/74</u>							
R.J. Pillsworth EHC DESIGN ENGINEERING							
APPROVED BY <u>P.C. Callan</u> DATE <u>4-26-74</u>							
P.C. Callan - MANAGER EHC DESIGN ENGINEERING							
REVIEWED BY <u>C. Bugg</u> DATE <u>4/25/74</u>							
C. Bugg EHC TEST ENGINEER							
PRINT							
MADE BY D. Mone Apr. 29, 1974		APPROVALS		DIV OR DEPT.		P3K-AL-0218	
ISSUED APR 30 1974		Steam Turbine Schenectady, N.Y.		LOCATION		CONT ON SHEET	
						SH NO. 7	



# Data Sheet

Job # _____								
Serial # _____					Burn-in Start _____			
Date _____								
Data Sheet for __125D3225G0002__ Sheet 1 of 2__					Burn-in Stop _____			
Test Procedure _P3K-AL-0218_					Technician _____			
Test Procedure Step	Nominal	Lower Limit	Pre-Burn in Results	Post Burn in Results	Upper Limit	Pot Values If applicable CW      CCW		Pass/Fail
R21	+ to CW - to CCW	from C1 - C2	-	-	-			
R43	+ to CW - to CCW	from C8 - C9	-	-	-			
10	+8.0VDC	+8.0VDC			+8.0VDC	-	-	
11	+9.0VDC	+9.0VDC			+9.0VDC	-	-	
11 -R20	-	-	-	-	-			
13	+8.0VDC	+7.97VDC			+8.03VDC	-	-	
15	+8.03VDC	+8.0VDC			+8.06VDC	-	-	
18	> 200mV	> 200mV			-	-	-	
23	-8.0VDC	-7.97VDC			-8.25VDC	-	-	
25	-7.97VDC	-7.94VDC			-8.0VDC	-	-	
27	> 200mV	> 200mV			-	-	-	
30	+8.0VDC	+8.0VDC			+8.0VDC	-	-	
31	+9.0VDC	+9.0VDC			+9.0VDC	-	-	
31 -R42	-	-	-	-	-			
33	+8.0VDC	+7.97VDC			+8.03VDC	-	-	
35	+8.03VDC	+8.0VDC			+8.06VDC	-	-	
36	> 200mV	> 200mV			-	-	-	
41	-8.0VDC	-7.97VDC			-8.03VDC	-	-	
43	-7.97VDC	-7.94VDC			-8.0VDC	-	-	
44	> 200mV	> 200mV			-	-	-	
49	< 16mS							
50	< 1.8S							
52	< 16mS							
53	< 1.8S							

## Data Sheet

[illegible]