

10A1 Calibration Outline

Presets

V/CM	20mv
1MC BW	Pulled Out
Inputs (Both)	Ground
Step Atten. Bal	Centered

1. Coarse Adj (R275)

Cathodes of V113 & V313 at same Voltage. (About 1.2v at cathode end of diodes.)

2. + Bal Adj (R130)

Same Absolute voltage between (C152/R152 & Q123A collector) & (L123/R117 & Q123A Collector). (About 3 volts.)

3. - Bal Adj (R330)

Same absolute voltage between (C352/R352 & Q123B collector) & (L323/R317 & Q123B collector).

4. Step Atten Bal (R389)

Min shift between 20, 10, & 5mv. R200 may have to be adj to keep trace on screen.

5. Int. DC Bal (R200)

Min trace shift between 5, 2, & 1mv/cm.

NOTE: Steps 4 & 5 interact. Repeat until no further adj is necessary.

6. Var. Atten. Bal (R215)

20mv/cm. Min trace shift as Var. is rotated.

7. I_b Bal (R510)

Adj for min fold ^{over} of trace as Var. is rotated.

NOTE: Steps 6 & 7 interact.

Presets

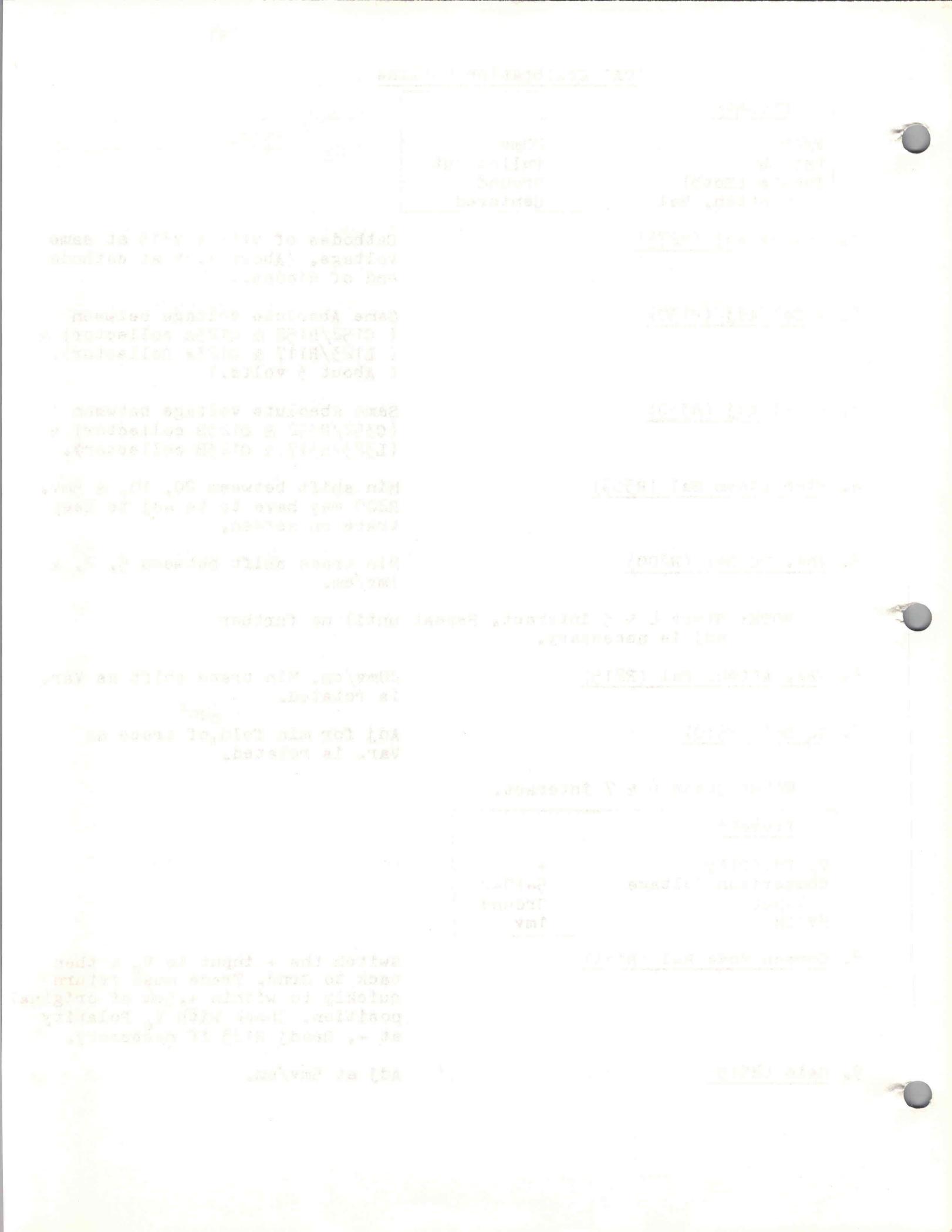
V _c Polarity	+
Comparison Voltage	5-10-0
- Input	Ground
MV/CM	1mv

8. Common Mode Bal (R183)

Switch the + input to V_c & then back to Grnd. Trace must return quickly to within +.5cm of original position. Check with V_c Polarity at -. Readj R183 if necessary.

9. Gain (R513)

Adj at 5mv/cm.



10A1 Calibration Outline (cont.)

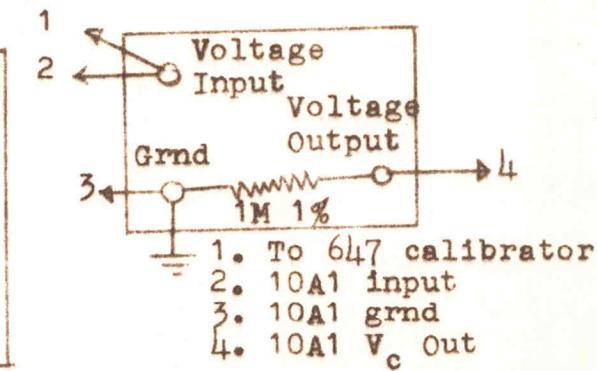
10. Check Attenuators (Both + & - Inputs) Accuracy 1mv : $\pm 2.5\%$
 2mv-2v : $\pm 1.5\%$
 5v - 10v : $\pm 3\%$
11. Microphonics 1cm max at 1mv/cm
12. + Grid Current Bal (R136)
 - Grid Current Bal (R336)
 (S/N 101-179 only) Adj at 1mv/cm.
13. Grid Current Check S/N 180 & up 1cm max at 1mv/cm. Check both + & - inputs.
14. Trig Bal (R659) Trig at center line with very small calibrator signal & with time base in DC.
15. Check Minimum V_c Voltage Comparison voltage at min & mv/cm at 1. $\pm .5$ cm shift from grnd to V_c . Reset helidial to agree with V_c residual voltage if more than $\pm .5$ cm.
16. 6V Cal (R583) Comparison at 5-10-0. 6V ± 1 mv at V_c Out jack.
17. 1V Cal (R590) Comparison at 0-10-0. 1V $\pm .5$ mv at V_c Out jack.
- NOTE: Steps 16 & 17 Interact.
18. Check Comparison Voltage Outer Knob 2V (1-10-0) ± 2.5 mv
 3V (2-10-0) ± 3 mv
 4V (3-10-0) ± 3.5 mv
 5V (4-10-0) ± 3.5 mv
19. Check Comparison Voltage Helidial .1V (0-1-0) thru
 .9V (0-9-0) ± 4 mv

Remove Q945 (Power-off)

Presets

V Range	60V
V CM	10mv
Calibrator	50v
DC Divider	10:1
Inputs (Both)	V
Comparison Voltage	V_c Outer knob between 0&1.
<u>10A1 ON EXTENDER</u>	

20. Adj R106E (+ Input X10 Atten)



No shift when moving + input from V_c to DC.

10A1 Calibration Outline (cont.)Presets

V Range	600V
V _{CM}	.1V
DC Divider	100:1

21. Adj R108D (+ Input X100 Atten)
22. Adj R306E (- Input X10 Atten)
23. Adj R308D (- Input X100 Atten)

No trace shift from V_c to DC.

Same as step 20.

Same as step 21.

Replace Q945 (Power-off)

Presets

1M 1% from V_c Out to + input. Remove all other connections.

V Range	60V
V _{CM}	50mV
Comparison Voltage	5-10-0
- Input	Ground
+ Input	DC

Fluke from + input to grnd

24. Adj R105B (+ Input)

Adj R105B so voltage at + input is same when V Range is moved to 6V & V/CM to 20mV.

25. Adj R305B (- Input)

Same as step 24.

Remove all connections to 10A1 & reinstall in 647.

Presets

V/CM	1mV
Comparison Voltage	5-10-0
Inputs (Both)	Ground

26. Check Common Mode Rejection

Switch both inputs to V. Observe max shift of $\pm .3$ cm. Disregard slow drift.

Presets

Inputs (Both)	Ground
1MC BW	Pushed in
Connect short jumper from grid of V113 to grid of V313. Anode of diodes.	

27. Adj Common Mode Rejection (C1723, C365, C125, C325)

Apply 10MC, 1V sinewave to both inputs. Adj in order given. Interact. **1MV OR LESS.**

28. Adj Common Mode Rejection (C115)

Use 1MC, 10V sinewave. CMR is typically 1.5mV.

one of the most difficult cases of
the kind we have

done. He seemed to want to make up
his mind to do
what he wanted

before he started his
work at school. He never seems to
know what he wants to do

and what he wants

to do at different times and seems to do

nothing. It is always like that
but he does not seem to have
any real will power

He has been
in the hospital
for about six months now
and he is still there

now and seems to have lost
most of his memory
and can't remember

anything about his past

He seems to be

VG
Vf
Vt

but he does not seem to know what he is doing

He seems to be

but he does not seem to know what he is doing

He seems to be

but he does not seem to know what he is doing

He seems to be

but he does not seem to know what he is doing

He seems to be

but he does not seem to know what he is doing

He seems to be

but he does not seem to know what he is doing

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10A1 Calibration Outline (cont.)29. Adj Common Mode Rejection (C111)

Remove short. Use 10MC, 1V sine-wave. If CMR doesn't make 1mv repeat steps 27, 28, 29.

Applied Freq.	Applied Volts	Required CMR	Display Amplitude
20 MC	1V	100:1	10mv
5 MC	2V	2,000:1	1mv
2 MC	5V	5,000:1	1mv
500KC	10V	10,000:1	1mv
100KC	10V	10,000:1	1mv
10 KC	10V	20,000:1	0.5mv
1KC	10V	20,000:1	0.5mv
60cps	10V	20,000:1	0.5mv
DC coupled			
60cps	10V	2,000:1	5mv
AC coupled			

30. Attenuator Compensations

10A1 ON EXTENDER

Use 20pf standardizer & 1KC from 106. Measure output from 106 on test scope for required amplitude given in chart.

106	V _c Range	V/cm	+ Input		- Input	
			Corner	Top	Corner	Top
200mv	6V	1mv	-	C105A	-	C305A
2 V	60V	10mv	C106C	C106A	C306C	C306A
20 V	600V	.1 V	C108C	C108A	C308C	C308A
Max.	600V	5 V	C109C	C109A	C309C	C309A

31. 5mv + Input High Freq Compensations (R540, C540, R213, C213)

4CM of 450 KC from 106. Aberrations not to exceed 3%.

32. 10mv High Freq Compensations (C715)33. 20mv High Freq Compensations (C713A)34. 1mv High Freq Compensations (R410)

Check 2mv compensations at same time.

35. Check - Input ~~compensations~~ Compensations

Aberrations not to exceed 6%.

36. Band Pass (In a 647)

1&2mv : 35MC
5,10,20mv:45MC

37. Check 1MC BW Switch (20mv/cm)

3db down between 900KC & 1.1MC.

38. Check Recovery Time & Error

A 6V, 10kc squarewave, displayed at 1mv/cm should recover to within $\pm 2\text{mv}$ of original level in .3us. At 500cps it should recover to within $\pm .5\text{mv}$ in 1msec. Both inputs.

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TAXABLE INCOME	DEDUCTIONS	BALANCE	TAXES
1000	600	400	200
1000	700	300	150
1000	800	200	100
1000	900	100	50
1000	1000	0	0
1000	1100	-100	50
1000	1200	-200	100
1000	1300	-300	150
1000	1400	-400	200
1000	1500	-500	250
1000	1600	-600	300
1000	1700	-700	350
1000	1800	-800	400
1000	1900	-900	450
1000	2000	-1000	500
1000	2100	-1100	550
1000	2200	-1200	600
1000	2300	-1300	650
1000	2400	-1400	700
1000	2500	-1500	750
1000	2600	-1600	800
1000	2700	-1700	850
1000	2800	-1800	900
1000	2900	-1900	950
1000	3000	-2000	1000
1000	3100	-2100	1050
1000	3200	-2200	1100
1000	3300	-2300	1150
1000	3400	-2400	1200
1000	3500	-2500	1250
1000	3600	-2600	1300
1000	3700	-2700	1350
1000	3800	-2800	1400
1000	3900	-2900	1450
1000	4000	-3000	1500
1000	4100	-3100	1550
1000	4200	-3200	1600
1000	4300	-3300	1650
1000	4400	-3400	1700
1000	4500	-3500	1750
1000	4600	-3600	1800
1000	4700	-3700	1850
1000	4800	-3800	1900
1000	4900	-3900	1950
1000	5000	-4000	2000
1000	5100	-4100	2050
1000	5200	-4200	2100
1000	5300	-4300	2150
1000	5400	-4400	2200
1000	5500	-4500	2250
1000	5600	-4600	2300
1000	5700	-4700	2350
1000	5800	-4800	2400
1000	5900	-4900	2450
1000	6000	-5000	2500

more than a nonresident alien can
also have more than one residence and
still file a consolidated tax return

TAXABLE INCOME	DEDUCTIONS	BALANCE	TAXES
1000	800	200	100
1000	900	100	50
1000	1000	0	0
1000	1100	-100	50
1000	1200	-200	100
1000	1300	-300	150
1000	1400	-400	200
1000	1500	-500	250
1000	1600	-600	300
1000	1700	-700	350
1000	1800	-800	400
1000	1900	-900	450
1000	2000	-1000	500
1000	2100	-1100	550
1000	2200	-1200	600
1000	2300	-1300	650
1000	2400	-1400	700
1000	2500	-1500	750
1000	2600	-1600	800
1000	2700	-1700	850
1000	2800	-1800	900
1000	2900	-1900	950
1000	3000	-2000	1000
1000	3100	-2100	1050
1000	3200	-2200	1100
1000	3300	-2300	1150
1000	3400	-2400	1200
1000	3500	-2500	1250
1000	3600	-2600	1300
1000	3700	-2700	1350
1000	3800	-2800	1400
1000	3900	-2900	1450
1000	4000	-3000	1500
1000	4100	-3100	1550
1000	4200	-3200	1600
1000	4300	-3300	1650
1000	4400	-3400	1700
1000	4500	-3500	1750
1000	4600	-3600	1800
1000	4700	-3700	1850
1000	4800	-3800	1900
1000	4900	-3900	1950
1000	5000	-4000	2000

comes from nonresident aliens
as well?

What makes up the nonresident
aliens' tax liability? What is
the difference between the
nonresident alien's tax liability

and the resident alien's tax liability?
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nonresident alien's tax liability
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NONRESIDENT ALIEN'S TAX LIABILITY

Nonresident aliens are subject to
U.S. tax on their worldwide income

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