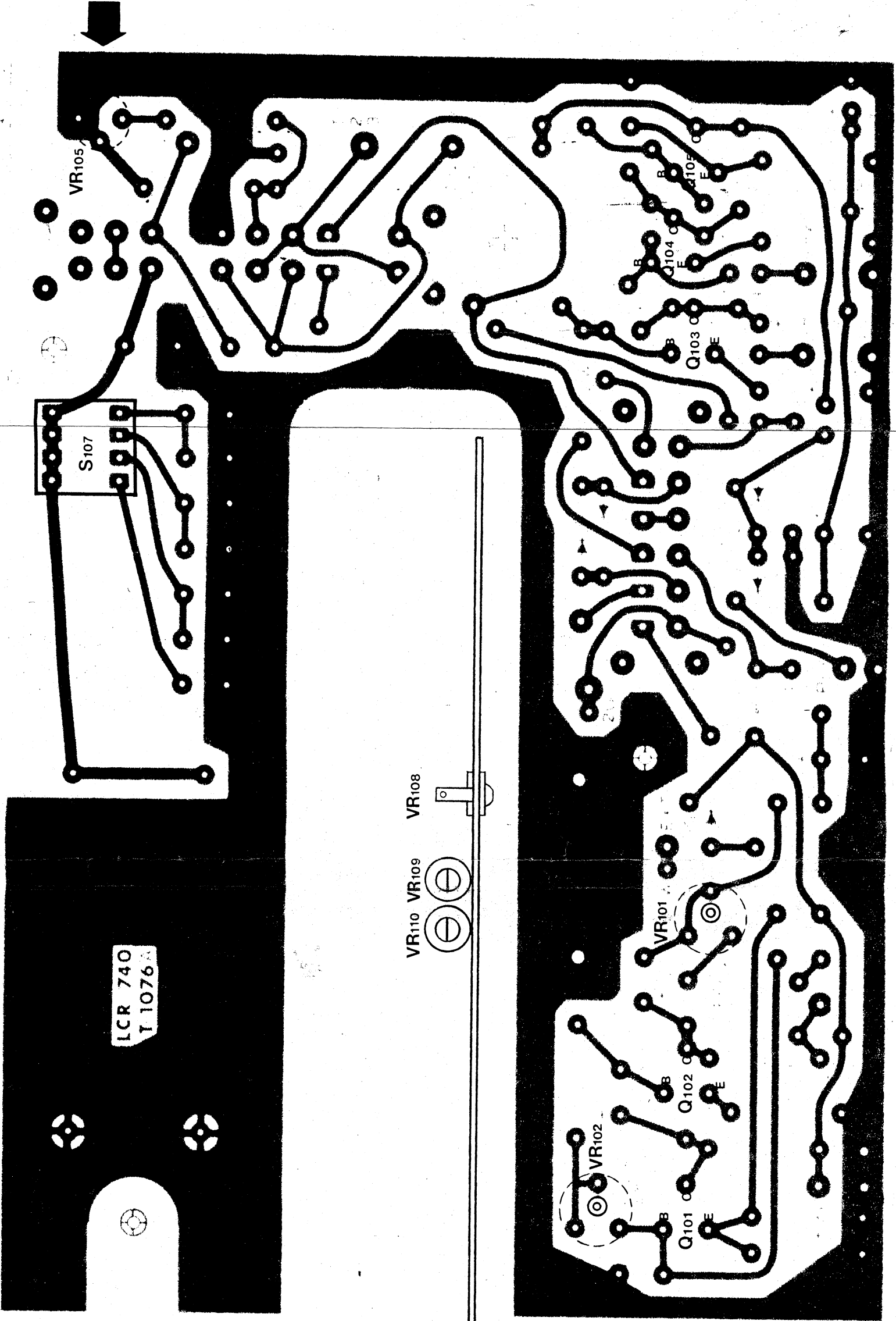




VR107

VR110 VR109 VR108

LCR 740
T 1076A

VR105

S107

Q101

Q102

Q103

Q104

Q105

VR101

VR102

VR103

VR104

LCR-740

LCR BRIDGE

SERVICE MANUAL



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BarTender: CASA-100x30L-Address_R801.btw

LEADER

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TEST EQUIPMENT REQUIRED

Description	Minimum Spec.
Voltmeter	DC: 0 ~ 10V
Standard Resistor	$1\Omega \pm 0.1\%$ no inductance $10\Omega \pm 0.1\%$ no inductance $100\Omega \pm 0.1\%$ no inductance $2K\Omega \pm 0.1\%$ no inductance $4K\Omega \pm 0.1\%$ no inductance $6K\Omega \pm 0.1\%$ no inductance $8K\Omega \pm 0.1\%$ no inductance
Standard Capacitor	$1\mu F \pm 0.3\%$ ($D < 0.1$ If possible.)
Standard Inductor	$1mH \pm 0.3\%$ ($Q > 10$ If possible.)
Oscilloscope	LB0-507A
Frequency Counter	LDC-821

OUTLINE OF PROCEDURE

Proceed as directed in the following steps, when maintaining.

STEP		ADJUSTMENT	PAGE
1	BIAS ADJ.	VR 102	4
2	1KHz ADJ.	VR 101	4
3	1KΩ RANGE ADJ.	VR 105	5
4	+1.00 RANGE ADJ.	VR 107	5
5	0.1Ω RANGE ADJ.	VR 108	5 ~ 6
6	1Ω RANGE ADJ.	VR 109	6
7	10Ω RANGE ADJ.	VR 110	6 ~ 7
8	1μF RANGE ADJ.	S 107	7

1. POWER SUPPLY

CHECK: V_{BB} is approximately +9V.
 V_B is approximately +8V.

2. INTERNAL OSC

SET: SELECTOR	R
RANGE MULTIPLIER	0.1 Ω
SOURCE	AC
R.C.L dial	$\boxed{0} . \boxed{0} \boxed{0}$ (CCW.)
Rx terminal	Short (Use brass wire more than 2 ϕ , if possible.)
SENSITIVITY knob	PWR ON
EXT. SIG IN terminal (inside green line)	Connect to V-IN terminal of Oscilloscope.

a) CHECK: Voltage is between 0.8V and 1V at Q_{101-E}

ADJUST: BIAS ADJ. (VR102) to be between 0.8V and 1V
at Q_{101-E}

b) CHECK: Frequency is 1KHz ± 30 Hz.

ADJUST: FREQ. ADJ. (VR101) for 1KHz ± 30 Hz.

c) CHECK: Output signal waveforms at 1KHz make reference
to the waveform chart $\diamond 5$

ADJUST: BIAS ADJ. (VR102) so that distortion may slightly
leave nearly at the top of the waveform.

d) Repeat the steps a through c).

3. 1K Ω RANGE FULL SCALE ADJ.

SET: RANGE MULTIPLIER	1K Ω
NORMAL $\leftrightarrow$ +1.00	NORMAL
R.C.L dial	☐ . ☐ ☐ (CW)
Rx terminal	Connect to Standard Resistor of 10K Ω .
PHONE terminal (inside hot line)	Disconnect oscilloscope from EXT. SIG IN terminal, and connect it.

The other setup is the same as above.

CHECK: No further reduction in meter indication can be obtained by controlling NULL SET VR105 in condition of sensitivity as high as possible.

ADJUST: NULL SET VR105 for no further reduction in meter indication in the same condition as above.

4. +1.00 RANGE SCALE ADJ.

SET: NORMAL $\leftrightarrow$ +1.00	+1.00
R.C.L dial	☐ 9 . ☐ ☐ ☐

The other setup is the same as above.

CHECK: Minimum meter indication can be obtained by controlling +1.00 RANGE NULL SET VR107 in condition of sensitivity as high as possible.

ADJUST: VR107 for minimum meter indication in the same condition as above.

5. 0.1 Ω RANGE FULL SCALE ADJ.

SET: RANGE MULTIPLIER	0.1 Ω
NORMAL $\leftrightarrow$ +1.00	NORMAL
R.C.L dial	☐ . ☐ ☐ (CW)
R.C.L dial lock	lock
Rx terminal	Connect to standard resistor of 1.00 Ω

The other setup is the same as above.

CHECK: Minimum meter indication can be obtained by controlling 0.1 Ω RANGE NULL SET VR108 in condition of sensitivity as high as possible.

ADJUST: VR108 for minimum meter indication in the same condition as above.

* NOTE: Tighten a screw with VR108 before checking this step and adjusting.

6. 1 Ω RANGE FULL SCALE ADJ.

SET: RANGE MULTIPLIER	1 Ω
Rx terminal	Connect to standard resistor of 10 Ω .

The other setup is the same as above.

CHECK: Minimum meter indication can be obtained by controlling 1 Ω RANGE NULL SET VR109 in condition of sensitivity as high as possible.

ADJUST: VR109 for minimum meter indication in the same condition as above.

7. 10 Ω RANGE FULL SCALE ADJ.

SET: RANGE MULTIPLIER	10 Ω
Rx terminal	Connect to standard resistor of 100 Ω .

The other setup is the same as above.

CHECK: Minimum meter indication can be obtained by controlling 10 Ω RANGE NULL SET VR110 in condition of sensitivity as high as possible.

ADJUST: VR110 for minimum meter indication in the same condition as above.

8. 1 μ F RANGE FULL SCALE ADJ.

SET: SELECTOR	C
RANGE MULTIPLIER	0.1 μ F
D.Q range X1 $\leftrightarrow$ X10	X1
D.Q dial	CCW.
Cx terminal	Connect to standard capacitor of 1 μ F.

The other setup is the same as above.

CHECK: R.C.L dial reading is between 9.975 and 10.025 μ F, when minimum meter indication can be obtained by controlling R.C.L dial and D.Q dial.

ADJUST: R.C.L dial for minimum meter indication, while controlling D.Q dial and finding out proper combination of Cx Selector (S107). R.C.L dial reading should be between 9.975 and 10.025 μ F, when finished adjusting.

9. STRAY CAPACITANCE CHECK

SET: RANGE MULTIPLIER	100pF
Cx terminal	Open

The other setup is the same as above.

CHECK: R.C.L dial reading is less than 4pF, when minimum meter indication can be obtained by controlling R.C.L dial and D.Q dial.

10. STRAY RESISTANCE CHECK

SET: SELECTOR	R
RANGE MULTIPLIER	0.1 Ω
Rx terminal	Short (Use brass wire more than 2, if possible)

The other setup is the same as above.

CHECK: R.C.L dial reading should be less than 4m Ω , when minimum meter indication can be obtained by controlling R.C.L dial.

11. STRAY INDUCTANCE CHECK

SET: SELECTOR	L
RANGE MULTIPLIER	10 μ H
Lx terminal	Short

The other setup is the same as above.

CHECK: R.C.L dial reading should be less than 0.4 μ H, when minimum meter indication can be obtained by controlling R.C.L dial and D.Q dial.

12. R.C.L DIAL LINEARITY CHECK

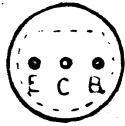
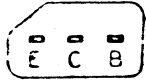
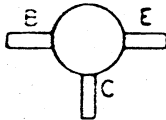
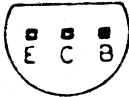
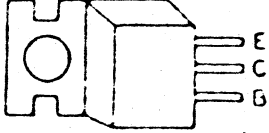
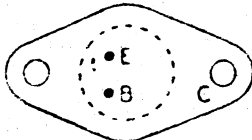
SET: SELECTOR	R
RANGE MULTIPLIER	1K Ω
Rx terminal	8K Ω

CHECK: R.C.L dial reading should be between 7.99K Ω and 8.01K Ω , when minimum meter indication can be obtained by controlling R.C.L dial.

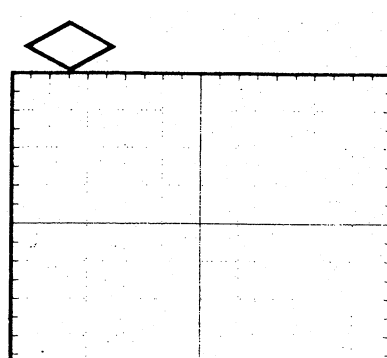
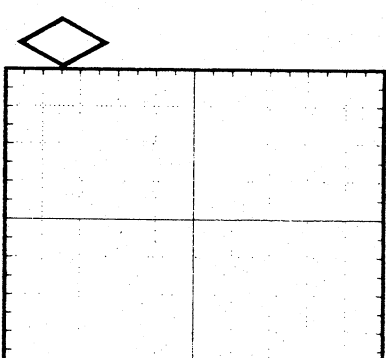
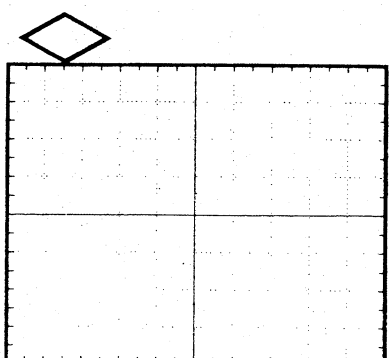
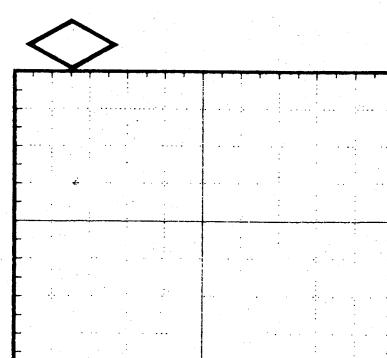
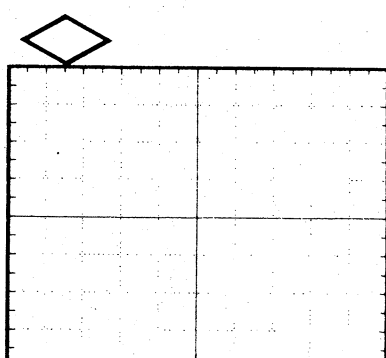
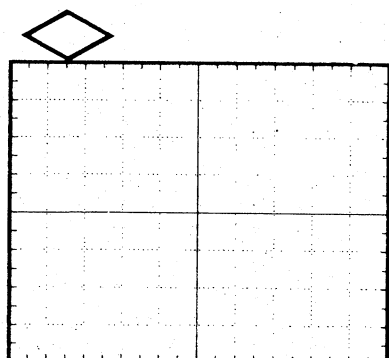
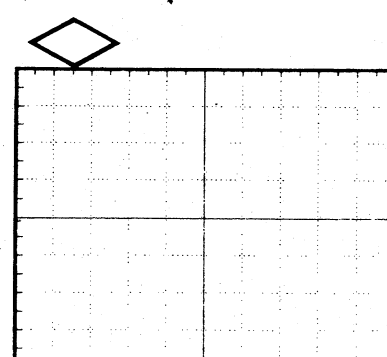
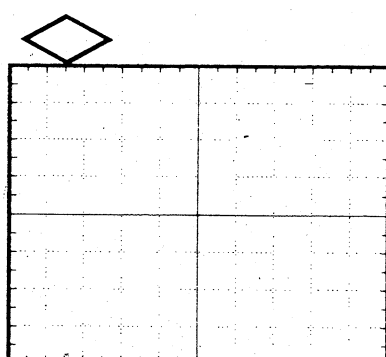
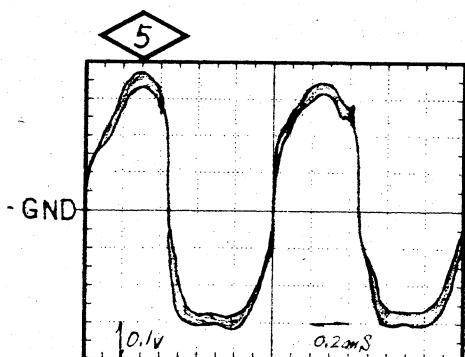
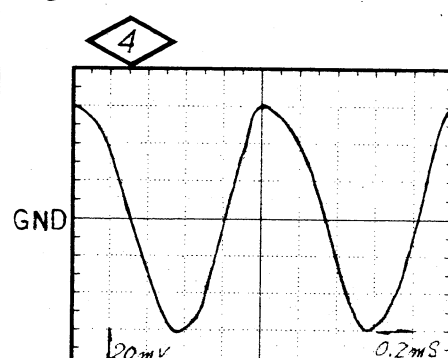
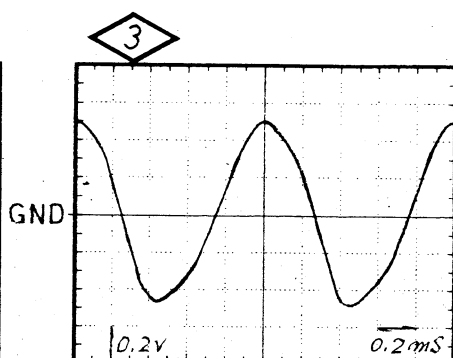
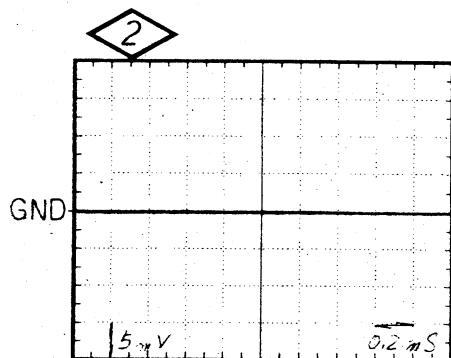
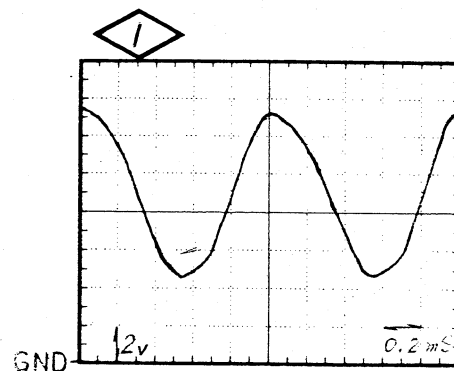
At each respective resistance, R.C.L dial reading should be within tolerances listed in Table as below.
Replace VR105 with a new one, if out of tolerance.

Rx	R.C.L dial reading		
10K	9.995	~	10.005K Ω
8K	7.99	~	8.01 K Ω
6K	5.99	~	6.01 K Ω
4K	3.99	~	4.01 K Ω
2K	1.99	~	2.01 K Ω

PIN CONNECTION, TRANSISTOR and CRT

name	type	connection
2SA-495	PNP	
2SA-561		
2SC-372 2SC-780A	NPN	
2SC-373 2SC-387A		
2SC-752	PNP	
2SA-628		
2SA-725		
2SA-726		
2SA-678	PNP	
S-A92	PNP	
2SA-497	PNP	
2SA-711		
2SC-507	NPN	
2SC-1012A		
2SC-1216		
2N-3866	NPN	
2SC-288A		
2SC-641	NPN	
2SC-1279 2SC-1313	NPN	
2SC-1215		
2SC-1312		
2SC-1569 2SD-235	NPN	
2SC-1625		
2SD-315	NPN	
2SK-30A	PET	

SET: SELECTOR : R
 SOURCE : AC
 NORMAL $\leftrightarrow$ +1.00 : NORMAL
 Rx : 8.2K
 RCL dial : 8.19K (in the case of Rx = 8.2K)
 RANGE MULTIPLIER : 1K



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