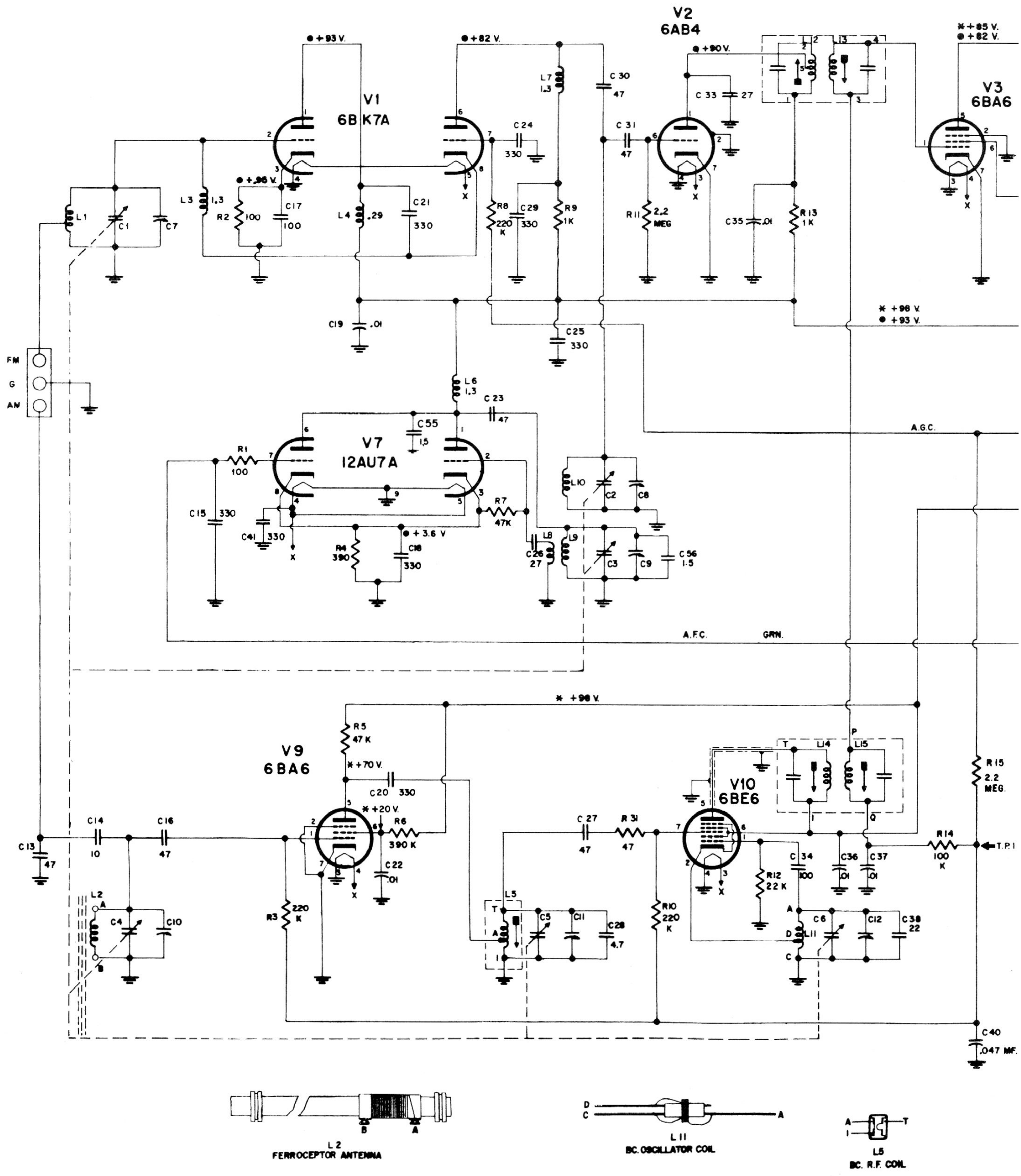
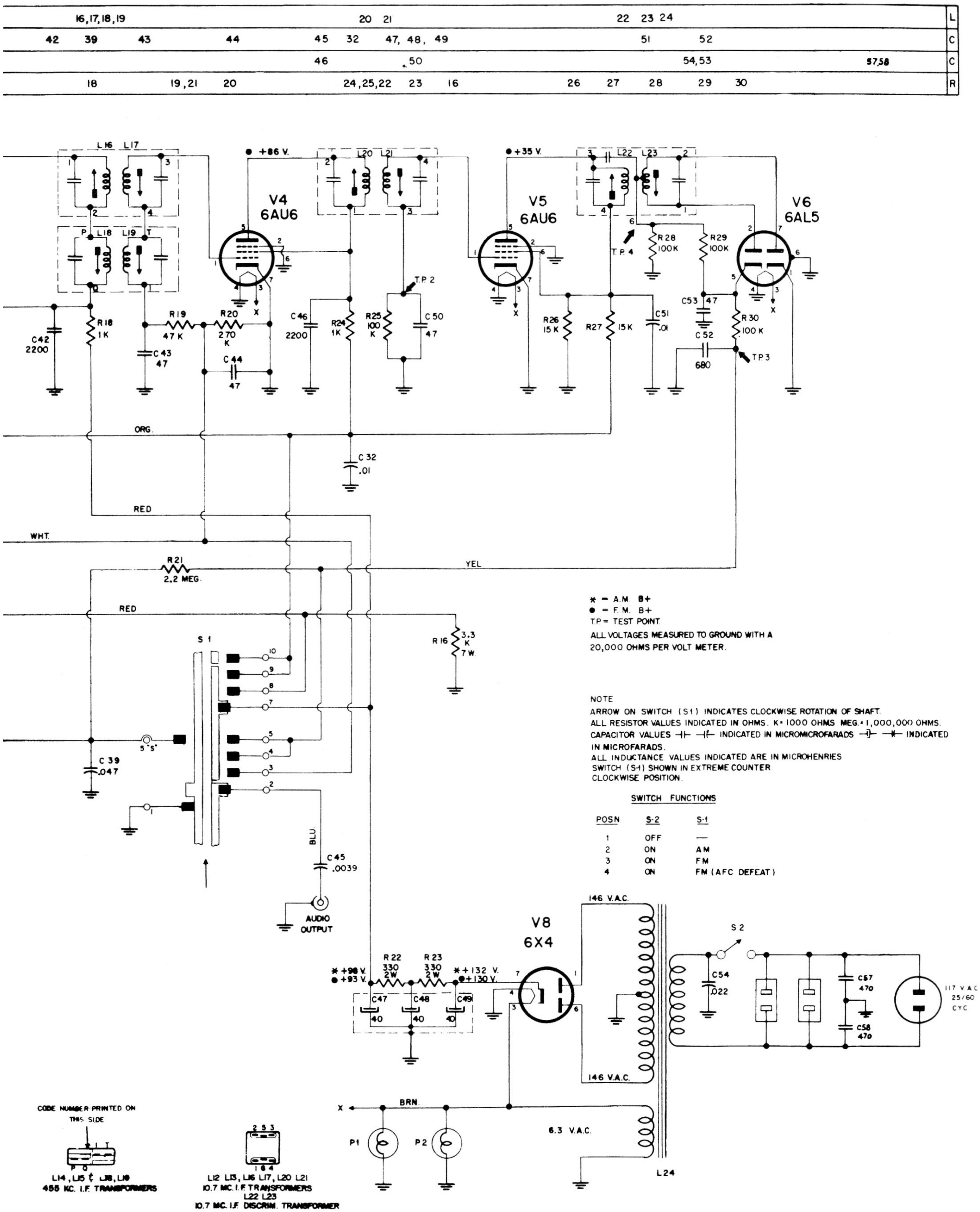
L	1 2 3 4 6 5 8 7 9 10 11, 12, 14, 13, 15
C	13 1 7, 10 15 17 19 18, 55 23, 24, 26 11 2, 28, 8 56 33 34 6 12 38 40
C	14 4 16 41 22, 20, 21 29, 5, 25, 27, 3, 30, 31, 9 35 36, 37
R	1, 2 3 4 5, 6 7 8 9 31, 11, 10 12 13 14 15



Philips / Rogers Majestic AFT-1 AM/FM Tuner



* = A.M. B+
● = F.M. B+
T.P. = TEST POINT
ALL VOLTAGES MEASURED TO GROUND WITH A 20,000 OHMS PER VOLT METER.

NOTE
ARROW ON SWITCH (S1) INDICATES CLOCKWISE ROTATION OF SHAFT.
ALL RESISTOR VALUES INDICATED IN OHMS. K = 1000 OHMS MEG. = 1,000,000 OHMS.
CAPACITOR VALUES INDICATED IN MICROMICROFARADS; INDICATED IN MICROFARADS.
ALL INDUCTANCE VALUES INDICATED ARE IN MICROHENRIES
SWITCH (S-1) SHOWN IN EXTREME COUNTER CLOCKWISE POSITION.

SWITCH FUNCTIONS

POSN	S-2	S-1
1	OFF	—
2	ON	AM
3	ON	FM
4	ON	FM (AFC DEFEAT)

CONTROL FUNCTION

The right hand control #2 operates the tuning for both AM and FM bands.

The left hand control #1 is the function switch and has four positions. Starting from full counterclockwise: position 1. - OFF; position 2. - AM; position 3. - FM: position 4. - AFC OFF. The power supply is automatically switched on in the positions 2, 3 and 4.

The two power outlets on the back of the chassis are not operated by the switch.

To receive an AM broadcast station, set the function switch to the AM position and tune in the signal on the desired frequency.

Turn the tuning knob back and forth slightly to be sure that the station is properly tuned.

To receive an FM broadcast station, turn the function switch to the AFC OFF position and approximately tune the desired station. Next turn the function switch to FM position. In the FM position the automatic frequency control is operating and keeps the tuner properly tuned to the desired station.

A station may be tuned in on the FM band by setting the function switch to FM position and rotating the tuning knob until the desired station is received with good quality output. Exact setting of the dial pointer to the frequency of the station is not required, as the automatic frequency control properly tunes in the signal.

ALIGNMENT OF RECEIVER

EQUIPMENT REQUIRED:

Signal Generator(s) capable of supplying:

(a) AM modulated RF signals from 450 Kc. - 1700 Kc.

(b) Unmodulated RF signals from 10.6 Mc. - 10.8 Mc.

(c) FM modulated RF signals from 87 Mc. - 109 Mc.

Vacuum Tube Volt Meter:

Capable of measuring a.c. and d.c. voltages of about 3 volts.

ALIGNMENT PROCEDURE:

NOTES:

A. Set the generator output at a level to maintain approximately -3 volts AGC. Reduce input as necessary during alignment. Repeat adjustment as required for maximum gain.

B. Repeat steps 2 and 3 until no further improvement results.

C. Set the generator output at a level to maintain approximately -2 volts limiter bias. Reduce input as necessary during alignment.

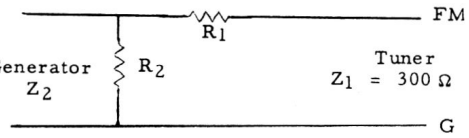
D. Inject 10.625 and 10.775 Mc. and adjust L16 and L17 to equalize the voltage at the test point. A voltage difference of 0.1V is allowed. Readjust L21, L20 and L13, L12 for maximum output as in step 4 and repeat step 5.

E. Repeat step 6 and 7 until no further adjustment is required.

F. The FM signal generator is to be connected to the tuner via an unbalanced L pad. Use the following equations to find the correct values to match your FM generator to the tuner input.

$Z_1 = 300\,\Omega$ = input impedance tuner: Z_2 = output impedance generator.

$$R_1 = 300\sqrt{1 - \frac{Z_2}{300}} \qquad R_2 = \frac{Z_2}{\sqrt{1 - \frac{Z_2}{300}}}$$



Example: For a 50 Ω generator: $R_1 = 270\,\Omega$; $R_2 = 56\,\Omega$

G. Adjust C8 for max. voltage at TP_2 and readjust C9 for zero voltage at TP3.

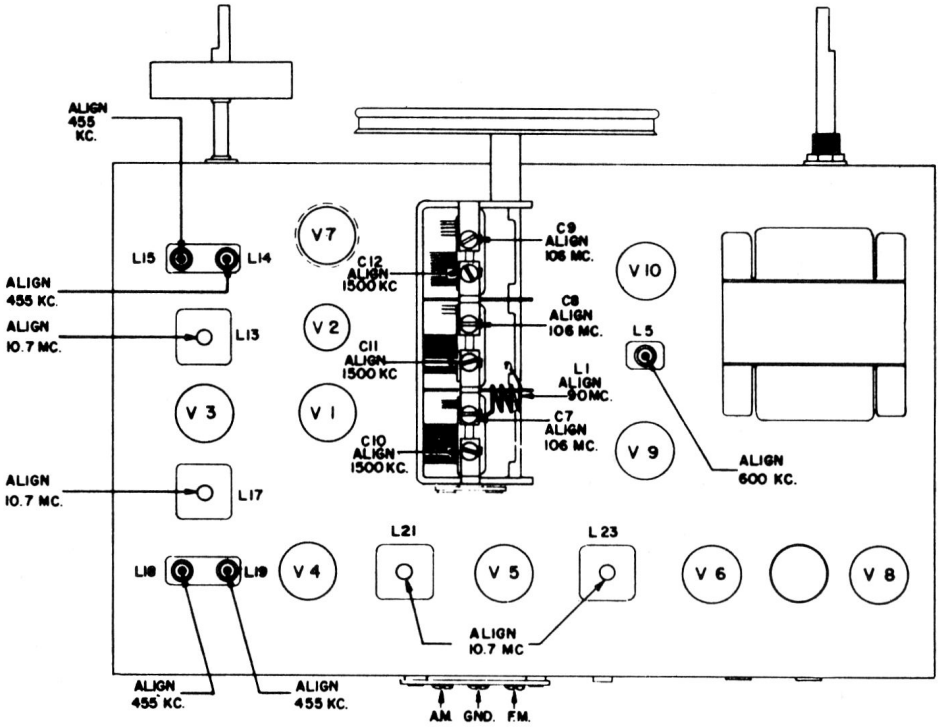
H. L1, L9 and L10 are to be adjusted by compressing or expanding turns axially. This adjustment will only be necessary if one of the coils needs to be replaced.

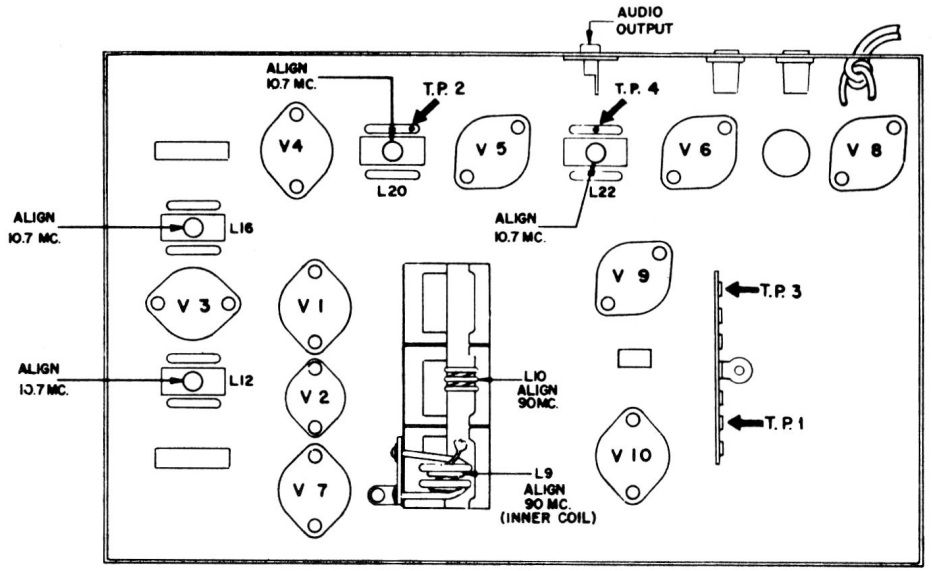
I. After adjusting L10 correct frequency with L9 if necessary.

J. Repeat steps 8, 9, 10 and 11 as required.

K. Check if tuner tunes through 88 Mc. and 108 Mc.

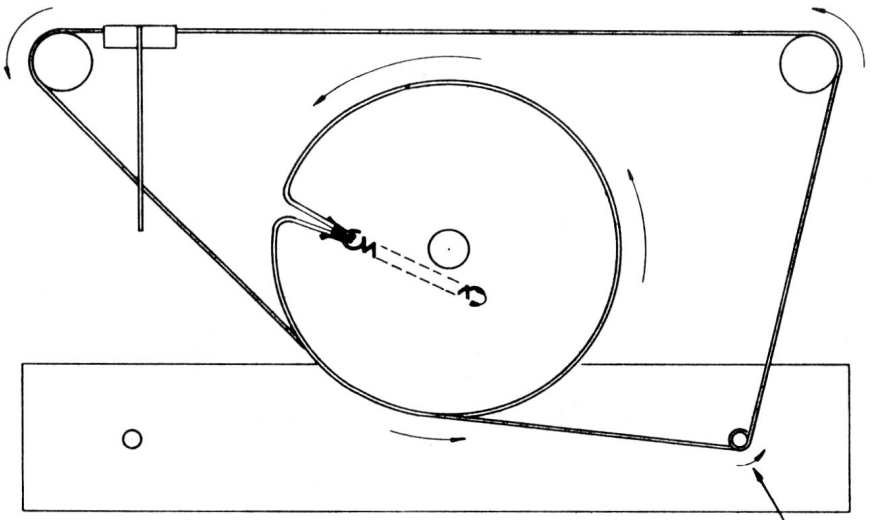
L. The tuner is to be tuned for 0 volts at TP3.





GANG CONDENSER AT MAXIMUM CAPACITY
DIAL DRUM IN POSITION SHOWN.
POINTER AT LOW FREQUENCY END OF DIAL.
COILS OF SPRING EXTENDED TO 1 3/8"
LENGTH OF DIAL CORD APPROX. 48"

TOP VIEW
OF CHASSIS



BOTTOM VIEW
OF CHASSIS

3 1/4 TURNS
AROUND SHAFT

Philips / Rogers Majestic AFT-1 Alignment Data

	Signal Generator				Meter			Receiver				
Operation Steps	Series Component	Connection to tuner	Frequency	Modulation	Type	Connection to tuner	Scale	Range Switch	Tuning Capacitor	See Notes	Adjust in Stated Order	Adjust For
1	.05 μF	Stator C5	455 Kc.	30% AM at 400 c/s	VTVM	TP-1	-3V	AM	Minimum Capacitance	A	L19-L18-L15 -L14	Max.
2	100 μμF *	Antenna term. AM	1500 Kc.	30% AM at 400 c/s	VTVM	TP-1	-3V	AM	1500 Kc.		C-12-C11-C10	Max.
3	100 μμF *	Antenna term. AM	600 Kc.	30% AM at 400 c/s	VTVM	TP-1	-3V	AM	600 Kc.	B	L5	Max.
4	None	Stator C2	10.7 Mc.	None	VTVM[t]	TP-2	-3V	AFC off	Minimum Capacitance	C	L21-L20-L17 -L16-L13-L12	Max.
5	None	Stator C2	10.625 Mc. 10.775 Mc.	None	VTVM[t]	TP-2	-3V	AFC off	Minimum Capacitance	D	L16-L17	See note D
6	None	Stator C2	10.7 Mc.	None	VTVM[t]	TP-4	-3V	AFC off	Minimum Capacitance		L22	Max.
7	None	Stator C2	10.7 Mc.	None	VTVM[t]	TP-3	±3V	AFC off	Minimum Capacitance	E	L23	Zero
8	Matching Pad	Antenna term. FM	106.0 Mc.	22 1/2 Kc. dev. at 400 c/s	VTVM[t]	TP-3	-3V	FM	106.0 Mc.	F	C9	Zero
9	Matching Pad	Antenna term. FM	106.0 Mc.	22 1/2 Kc. dev. at 400 c/s	VTVM[t]	TP-2	-3V	FM	106.0 Mc.	G	C8: See note G C7	Max.
10	Matching Pad	Antenna term. FM	90.0 Mc.	22 1/2 Kc. dev. at 400 c/s	VTVM[t]	TP-3	-3V	FM	90.0 Mc.	H	L9	Zero
11	Matching Pad	Antenna term. FM	90.0 Mc.	22 1/2 Kc. dev. at 400 c/s	VTVM[t]	TP-2	-3V	FM	90.0 Mc.	I J	L10-L1	Max.
12	Matching Pad	Antenna term. FM	88 Mc. 108 Mc.	22 1/2 Kc. dev. at 400 c/s				FM	See Note	K		
13	None	Stator C2	10.7 Mc.	None	VTVM[t]	TP-3	±3V	AFC off	Minimum Capacitance		L23	Zero
14	Matching Pad	Antenna term. FM	90.0 Mc.	12 1/2 Kc. dev. at 400 c/s	VTVM[t]	TP-2	-3V	FM	90.0 Mc. See Note	L	L12-L13	Max.
15	Matching Pad	Antenna term. FM	90.0 Mc.	12 1/2 Kc. dev. at 400 c/s	VTVM	Output Terminal	3V AC	FM	90.0 Mc.		L22	Max.

* Or a standard Dummy Antenna with a 200 μμF condenser in series.

t The VTVM should be used with a 470 KΩ resistor in series with the hot meter lead, at the test point.