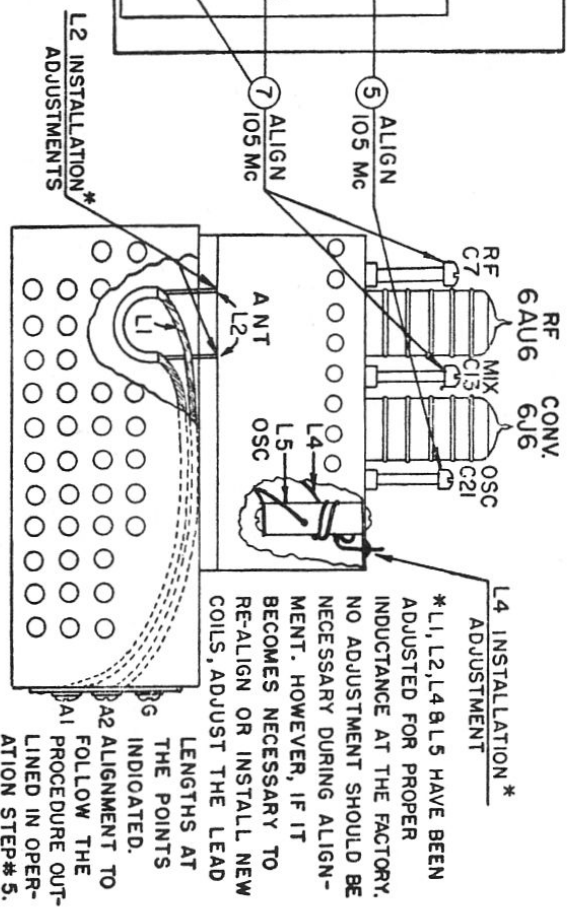


The diagram illustrates the internal components of a radio receiver chassis. Key elements include:

- Top Section:** A large rectangular block labeled "L29 TO L33". To its right are several circular components: 5A24, C88, C55, C56, C57, C58, C42, 6T8, L10, L11, 6BA6, L8, L9, 6AU6, L6, and L7.
- Center Section:** A row of circular components: 6AQ5, 12AT7, L25, L26, L23, L24, 6BE6, and L3. A "VTVM TEST POINT" is indicated near the 6T8 and L10 components.
- Bottom Section:** A row of circular components: 6AQ5, 6AT6, 6BE6, and L3. Below these is a rectangular block containing four vertical slots labeled C3, C4, C5, and C1. To the right of this block is another rectangular block containing four vertical slots labeled C21, 6J6, C13, and 6AU6. A "WAVE RANGE SWITCH" is located at the bottom right.
- Left Side:** A vertical strip containing a "TONE SWITCH", an "ON-OFF SWITCH & VOLUME CONTROL", an "ALIGN 90 Mc" point, a "TUNING CONTROL", and a "WAVE RANGE SWITCH".
- Connections:** Various lines and arrows indicate electrical connections between components. For example, a line connects the "ALIGN 90 Mc" point to the "TUNING CONTROL". Another line connects the "WAVE RANGE SWITCH" to the "WAVE RANGE SWITCH" at the bottom right.



ALIGNMENT OF RECEIVER

EQUIPMENT REQUIRED

Signal Generator: A signal generator or generators capable of supplying AM Signals from 450 kc. to 12.5 Mc., also FM signals from 87 to 109 Mc. If the FM signal generator is not available, the antenna, oscillator and RF interstage circuits can be aligned with an AM signal generator having output frequencies of from 87 to 109 Mc.

Output Meter: A power output meter or a high resistance AC voltmeter.

Vacuum Tube Voltmeter: A vacuum tube voltmeter capable of reading ± 3 volts.

Alignment Tools: Align all IF transformers with a non-metallic screw driver.

SIGNAL GENERATOR (OR GENERATORS)

Allow a sufficient length of time for the signal generator and receiver to become thermally stable before making any tests. Connect the common lead of the signal generator to the chassis base as close as possible to the input signal connection for all operations except the FM-RF alignment. Always be sure to use the specified capacitance or resistance in series with the output lead of the generator as indicated in the alignment chart. Series components are to be connected as close as possible to the receiver.

OUTPUT METER (FOR AM OUTPUT INDICATION)

If a power meter is used, adjust it for 4 ohms impedance and connect it in place of the speaker voice coil. Do not exceed a 500 Milliwatt reading. If an AC voltmeter is used it should be connected across the voice coil, and the output kept below 1.4 volts during alignment. Regulate the signal generator attenuator to keep the output below the above limit.

VACUUM TUBE VOLTMETER

Connect the common lead of the VTVM to the receiver chassis. The zero adjustment of the VTVM must be checked regularly. A.V.C. voltage is to be maintained between 2.5 and 3 volts during RF and IF alignment. This is to be controlled by regulating the signal generators output.

RECEIVER

Set the tone switch to the third position (flat response position). Adjust the dial pointer to correspond to the alignment mark on the dial, when the gang tuning capacitor is fully meshed. The alignment mark is the end of the horizontal lines on the 550 kc. end of the dial scale. Set the volume control to the maximum adjustment for AM alignment. On FM alignment the volume control is normally set so that the alignment signal may be heard, when using an FM signal generator. Disconnect the loop antenna for all alignment other than operation Step 13. Throughout all bands the oscillator operates 455 kc. or 10.7 Mc. HIGHER in frequency than the station carrier frequency.



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ALIGNMENT PROCEDURE CHART

Operation Steps	SIGNAL GENERATOR				METER			RECEIVER				
	Series Component	Connection To Receiver	Frequency	Modulation	Type	Connection To Receiver	Scale	Range Switch	Tuning Capacitor	See Note	Adjust in Stated Order	Adjust For
1	.05 mf.	6BA6 Pin No. 6	455 kc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	AM	Max. Cap.		L26-L25	Max. Output
2	.05 mf.	Stator of C4	455 kc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	AM	Max. Cap.	A	L24-L23	Max. Output
3	.05 mf.	Stator of C13	10.7 Mc.	400c AM at 10 %	VTVM	Junction of R16 and C42	3 volts	FM	Max. Cap.	B	L6, L7, L8, L9, L10	Max. A.V.C. Voltage
4	.05 mf.	Stator of C13	10.7 Mc.	400c AM at 10 %	VTVM	Junction of R16 and C42	3 volts	FM	Max. Cap.	C	L11	Min. Audio Output
5	150 ohm resistor in each lead	Antenna Terminals A1 and A2	105 Mc.	400c FM at 30 % 22.5 kc. swing	VTVM	Junction of R16 and C42	3 volts	FM	105 Mc.	D-E-F	C21	Max. A.V.C. Voltage
6	150 ohm resistor in each lead	Antenna Terminals A1 and A2	90 Mc.	400c FM at 30 % 22.5 kc. swing	VTVM	Junction of R16 and C42	3 volts	FM	90 Mc.	G	L3	Max. A.V.C. Voltage
7	150 ohm resistor in each lead	Antenna Terminals A1 and A2	105 Mc.	400c FM at 30 % 22.5 kc. swing	VTVM	Junction of R16 and C42	3 volts	FM	105 Mc.	H	C13	Max. A.V.C. Voltage
8	150 ohm resistor in each lead	Antenna Terminals A1 and A2	105 Mc.	400c FM at 30 % 22.5 kc. swing	VTVM	Junction of R16 and C42	3 volts	FM	105 Mc.	I	C7	Max. A.V.C. Voltage
9	100 mmf.*	Antenna Terminal A1	600 kc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	AM	600 kc.		C76	Max. Output
10	100 mmf.*	Antenna Terminal A1	1500 kc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	AM	1500 kc.	J	C75	Max. Output
11	100 mmf.*	Antenna Terminal A1	9.65 Mc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	31M	9.65 Mc.	K	C71, C62	Max. Output
12	100 mmf.*	Antenna Terminal A1	11.85 Mc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	25M	11.85 Mc.	K	C72, C61	Max. Output
13	None	Placed near Loop	1500 kc.	400c AM at 30 %	Output	In place of voice coil	4 ohms	AM	1500 kc.	L	C60	Max. Output

* Or a Standard Dummy Antenna with a 200 mmf. Capacitor in Series.

ALIGNMENT NOTES

- After step 2 has been completed, do not readjust L26 and L25.
- The speaker should be connected to the receiver for the FM alignment so that the signal may be heard. The AVC voltage is to be maintained between 2.5 and 3 volts by regulating the signal generator.
- L11 must be aligned for absolute minimum audio output from speaker. After obtaining minimum signal, realign L10 for maximum AVC voltage and then realign L11 for minimum audio signal.
- If the wiring associated with L4 has been altered since the factory installation, it will be necessary to align L4 at 90 Mc. by unsoldering the grounded lead of L4 and sliding it up or down in the hole in the chassis.
- A balanced output frequency modulated signal generator is recommended for RF alignment. If a suitable FM signal generator is not available the RF or "front end" alignment can be done quite well with an AM signal generator capable of supplying frequencies from 87 to 109 Mc. Adjust for maximum AVC voltage.
- The use of a signal generator for steps 5, 6, 7 and 8 is recommended only if the available generator is sufficiently accurate to insure correct frequency settings. Otherwise, an alternative procedure employing FM station signals in place of a signal generator is recommended. For adjustments at the high frequency end of the band, use the station nearest 105 Mc. For adjustments at the low frequency end of the band, use the station nearest 90 Mc. Make certain of the frequency of the FM stations used in alignment, in order that the receiver may be logged correctly. If only one FM station is available in your community, it will have to suffice for RF alignment.
- Check the coil adjustments with a tuning wand. If inserting the brass end in or near the coil increases the AVC reading, spread the coil turns. If the powdered iron end increases the AVC reading, compress the coil turns. If both ends of the tuning wand cause a decrease in the VTVM reading, the coil is correctly adjusted. Do not change the coils excessively, as only a small adjustment is required at these frequencies.
- After aligning C13, repeat operation 6, then recheck C13.
- After aligning C7, check the alignment of L2, if the wiring associated with L2 has been altered. If alignment of L2 is necessary, apply a 90 Mc. signal and slide the coil up or down at the solder connections then realign C7.
- After completing operation 10, repeat operation 9 and then operation 10.
- Align oscillator trimmer for first peak from minimum setting of trimmer.
- After the preceding alignment has been completed, replace the receiver in the cabinet and connect the loop antenna to the chassis.

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