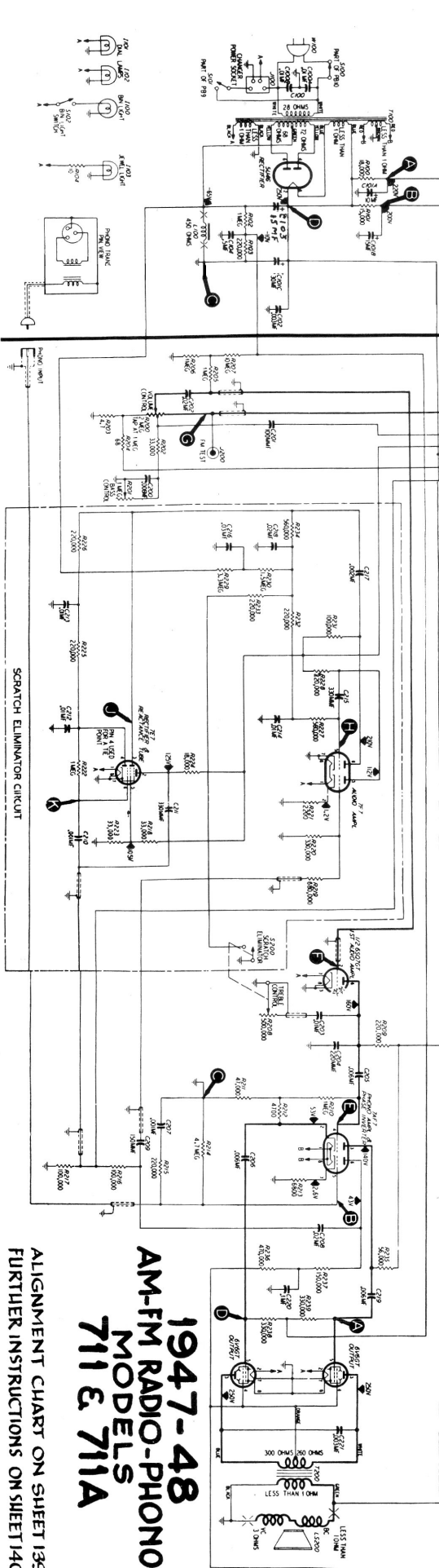


I.F. AM=460KC. FM=9.1MC.

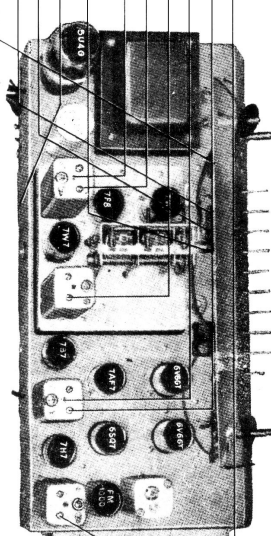


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AM-FM RADIO-PHONO  
MODELS  
711 & 711A

ALIGNMENT CHART ON SHEET 139  
FURTHER INSTRUCTIONS ON SHEET 140

# AM ALIGNMENT CHART

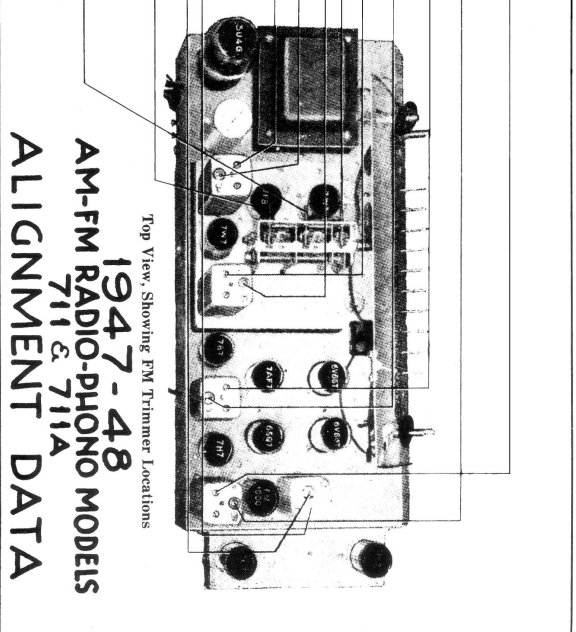
STEP	SIGNAL GENERATOR			RADIO		ADJUST TRIMMER
	CONNECTIONS TO RADIO	DIAL SETTING	PUSH BUTTON	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	Through 1-in. condenser to stator of aerial section of tuning gang.	460 kc.	Depress RC push button (PB3)	1700 kc.	Adjust each trimmer, in order, for maximum output. Do not repeat adjustments.	C303A C302C TC302A C301B C300C TC300A
2	Loosely coupled with loop. See note below.	15 mc.	Depress SW push button (PB2)	15 mc.	Adjust for maximum output. Check for image by tuning set to 14.1 mc.	C411A
3	Same as step 2.	15 mc.	Depress SW push button (PB2)	15 mc.	Adjust for maximum output (rock tuning control).	C401
4	Same as step 2.	1700 kc.	Depress RC push button (PB3)	1700 kc.	Adjust for maximum output.	C411B
5	Same as step 2.	1500 kc.	Depress RC push button (PB3)	1500 kc.	Adjust for maximum output.	C411C
6	Same as step 2.	580 kc.	Depress RC push button (PB3)	580 kc.	Adjust for maximum output (rock tuning control).	C414
7	Repeat steps 4, 5, and 6 in order until no further increase in output is noted. Then repeat step 4.					



NOTE: Make up a six-to-eight-turn, 6-inch diameter loop, using insulated wire; connect to the signal generator leads and place near the radio loop.

# FM ALIGNMENT CHART

STEP	SIGNAL GENERATOR		RADIO		ADJUST TRIMMER
	CONNECTIONS TO RADIO	DIAL SETTING	DIAL SETTING	SPECIAL INSTRUCTIONS	
1	To terminal No. 2 of L407 (see page 15).	9.1 mc.	Gang fully closed	Connect jumper between pin 2 of EX1000 and chassis (see Note 1). Connect loading network (see Note 2) between top of paddler C303D and chassis (see Note 3).	C303B
2	Same as step 1.	9.1 mc.	Same as step 1.	Connect loading network between pin 2 (blue lead) of third i-f tube and chassis.	C303D
3	Same as step 1.	9.1 mc.	Same as step 1.	Connect loading network between pin 6 (green lead) of third i-f tube and chassis.	C302B
4	Same as step 1.	9.1 mc.	Same as step 1.	Connect loading network between pin 2 (blue lead) of second i-f tube and chassis.	C302D
5	Same as step 1.	9.1 mc.	Same as step 1.	Connect loading network between pin 6 (green lead) of second i-f tube and chassis.	C301A
6	Same as step 1.	9.1 mc.	Same as step 1.	Connect loading network between pin 2 (blue lead) of first i-f tube and chassis.	C301C
7	Same as step 1.	9.1 mc.	Same as step 1.	Leave loading network connected as in step 6.	C300D
8	To grid (pin 6) of third i-f tube.	9.1 mc. (modulation off)	Same as step 1.	Remove loading network, and remove jumper from pin 2 of EX1000 and chassis. Connect jumper between pin 4 (blue lead) of EX1000 and junction of R324 and red lead of Z304. Adjust for zero beat.	C300C
9	Same as step 8.	9.1 mc. (modulation on)	Same as step 1.	Remove jumper used in step 8. Adjust trimmer for zero beat (see Note 4).	TC304A
10	To terminal No. 2 of L400 (see Note 5).	105 mc.	105 mc.	Connect jumper between pin 2 of EX1000 and chassis. Adjust for maximum output.	C400C
11	Same as step 10.	88 mc.	88 mc.	Adjust coil L408 for maximum output (see Note 6).	
12	Repeat steps 10 and 11 until no further improvement is noted.				
13	Same as step 10.	105 mc.	105 mc.	Adjust for maximum output (rock tuning control).	C400B
14	See Note 7.	105 mc.	105 mc.	Adjust for maximum output.	C400A
15	Same as step 14.	92 mc.	92 mc.	Adjust coil L407, then L406, for maximum output.	
16	Repeat steps 13, 14 and 15 until no further improvement in sensitivity can be obtained.				



Top View, Showing FM Trimmer Locations

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ALIGNMENT DATA

## ALIGNMENT PROCEDURE

CAUTION: Do not turn on power with speaker disconnected, or the radio may be damaged.

### ALIGNMENT OF AM CIRCUITS

When the complete AM and FM alignment is to be made, the AM alignment should be made **FIRST**; however, if FM alignment is not required, the AM alignment alone may be made.

**OUTPUT METER**—Connect between No. 3 terminal (voice-coil connection) of the aerial terminal panel and the chassis.

**AM SIGNAL GENERATOR**—Connect the ground lead to the chassis, and the output lead as indicated in the chart. Use modulated output.

**OUTPUT LEVEL**—During the alignment, the signal-generator output must be attenuated to maintain the radio output below 1.5 volts, as read on the output meter.

**CONTROLS**—Set the volume control to maximum, the bass tone control fully counterclockwise, the treble tone control fully clockwise, and the signal-generator dial, radio dial, and radio push buttons as indicated in the chart.

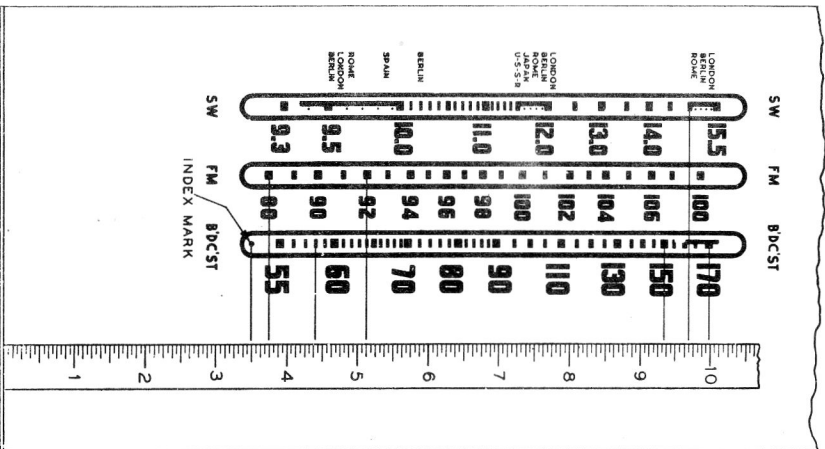
**DIAL POINTER**—With the tuning condenser fully meshed, the dial pointer must coincide with the index mark at the low-frequency end of the dial. See **CALIBRATING DIAL BACKPLATE** for method of meshing backplate for index and calibration marks.

Note:

All pushbuttons except PB8 are shown in out position. All rotary switches are linked to FM pushbuttons. All resistor values are in ohms unless marked otherwise.

Voltages in Section 1 and in audio circuits of Section 2 were taken with BC pushbutton in. Voltages in scratch eliminator circuits of Section 2 were taken with phono pushbutton in and treble control set to scratch eliminator position. Voltages in Sections 3 and 4 were taken with FM pushbutton in.

DIAL BACK PLATE



### ALIGNMENT OF FM CIRCUITS

Align the AM circuits first. **OUTPUT METER**—Connect the output meter between terminal No. 3 of the aerial terminal panel and the chassis.

**AM SIGNAL GENERATOR**—Connect the generator ground lead to the radio chassis; connect the output lead through a .1- $\mu$ f. condenser to the points specified in the chart. Use modulated output.

**CONTROLS**—Set the treble tone control and the volume control fully clockwise, and the bass tone control fully counterclockwise. Depress the FM push button.

**LOCATION OF COILS**—For the location of coils L406, L407, and L408 (steps 11 and 13), refer to the base layout of Section 4, figure 5.

Note 1. When pin 2 of FM1000 is connected to the chassis, the oscillator portion of the FM detector is made inoperative, thereby converting the circuit from an FM to an AM detector.

Note 2. Make the loading network by connecting a 4700-ohm resistor and a .1- $\mu$ f. condenser in series. Attach an alligator clip to each free end of the network. When this network is connected across the primary or secondary winding of an over-coupled i-f transformer, the network loads the circuit so that the transformer is effectively below critical coupling; the unloaded winding may then be correctly peaked at the intermediate frequency.

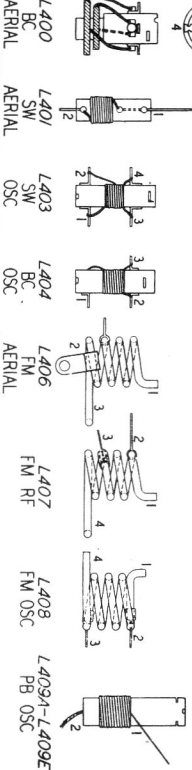
Note 3. The top of padlock C303D can be reached only from the top of the shield can. Slide a length of flat-iron solder or wire down between the ceramic form and the edge of the trimmer plate. Attach the loading network between this connection and the chassis.

Note 4. It is essential that the output from the generator be kept below the point where the oscillator of the FM detector locks in, otherwise an erroneous zero beat will be obtained. When a single very sharp zero-beat point is obtained, the adjustment is correct.

Note 5. The use of a signal generator for steps 10 through 16 is recommended only if the available generator is sufficiently accurate to insure correct frequency settings. Otherwise, an alternate procedure employing FM broadcast-station signals in place of a signal generator is recommended. For the adjustments at the high-frequency end of the band, use the station nearest 105 mc.; for the adjustments at the low-frequency end of the band, use the station nearest 88 mc. or 92 mc., as indicated. If the radio is greatly misaligned, it may be necessary to adjust the padders and coils for maximum noise at each end of the band before station signals can be heard. The FM detector must be made inoperative as directed in step 10 of the "FM ALIGNMENT CHART."

Note 6. Check all coil adjustments with a tuning wand. If inserting the brass end, in or near the coil increases the output-meter reading, spread the turns; if the powder-core end, it increases the output reading, compress the turns. If both ends cause a decrease in output, the coil is correctly tuned. Do not change the coils excessively, since only a small adjustment is required at these frequencies.

Note 7. Make two simple dipole aerials to feed signals from the signal generator to the radio. Each dipole aerial may consist of two 30-inch lengths of rubber-covered wire. Connect one dipole aerial to terminals 1 and 2 on the FM aerial socket of the radio. Connect the other dipole aerial to the output of the signal generator. Place the two dipoles several feet apart.



1. Connect the output meter between terminal No. 3 on the aerial terminal panel and the chassis.
2. Turn the volume control to maximum, and both tone controls fully counterclockwise.
3. Couple the signal generator loosely through a coil of wire to the loop aerial (see Note under "AM ALIGNMENT CHART").
4. Turn on the power, and allow the radio to warm up for 15 minutes before starting the adjustments.
5. Starting with the lowest frequency desired, set the signal generator to the desired frequency (modulation on), push the station-selector push button, and adjust the associated oscillator tuning core and aerial trimmer condenser (marked on rear of chassis) for maximum indication on the output meter. During alignment, the input signal must be attenuated to hold the output-meter reading below 1.5 volts.
6. Reset the signal-generator frequency, and repeat the procedure for each remaining station-selector push button.
7. Turn off the signal generator, and make a final adjustment of all tuning cores and trimmer condensers while listening to the stations for which the adjustments are being made.

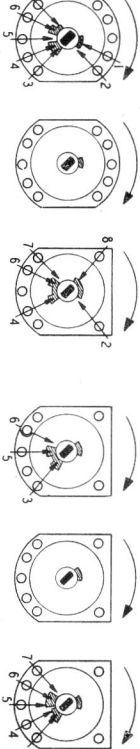
### CALIBRATING DIAL BACKPLATE

When the radio chassis has been removed from the cabinet, dial calibration and alignment points may be marked on the dial backplate below the pointer with a pencil.

The method of measuring for these points is illustrated in figure 1. Hold a rule against the dial backplate, with the start of the rule against the inside of the upturned edge of the backplate.

With the tuning gang fully meshed, the pointer should be adjusted on the dial-drive cord to coincide with the index mark.

### FURTHER DATA ON DATA SHEET 139 CIRCUIT ON SHEET 138



## 1947-48 AM-FM RADIO-PHONO MODELS 711 & 711A

## INSTRUCTION DATA

