

# Belmont Radio

## MODEL 6D111

SERIES B

5 TUBE AC-DC  
(Plus rectifier)

BUILT-IN AERIAL

PUSHBUTTON TUNING

### INSTRUCTIONS FOR INSTALLATION, OPERATION, AND SERVICE

#### INSTALLATION AND OPERATION

##### IMPORTANT!

This receiver, unless otherwise marked, must be operated on an AC voltage of 105 to 125 volts, 50 to 60 cycles, or on a DC voltage of 105 to 125 volts. If you are in doubt as to the voltage of your power supply, consult your local power company. **DO NOT INSERT THE PLUG IN THE POWER RECEPTACLE UNLESS YOU ARE SURE THAT THE CORRECT VOLTAGE IS AVAILABLE.** Receivers of this same model which are for use on voltages other than those specified above are so marked.

##### APPLYING POWER TO RADIO

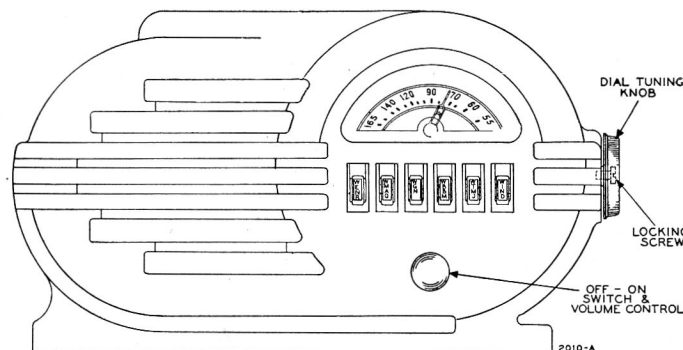
Insert the line plug in the power receptacle. If no sound is heard after one minute, and the set is operating on direct current (DC), reverse the plug. If the set is operating on alternating current (AC), a low steady hum may be noticeable after the set warms up. Reverse the plug and notice whether or not there is any difference. Leave the plug in the position which gives less hum.

The power consumption of this radio is 35 watts, slightly less than that of a 40-watt electric light bulb.

##### CONTROLS

The knob on the front of the radio is both the on-off switch and the volume control. When this control is turned all the way to the left the set is off. A slight rotation to the right will click the switch and turn the set on. The knob may then be used to regulate the volume.

The knob on the right side of the cabinet is the tuning knob; it may be used to tune in (select) any station on the standard broadcast band. Any six of these stations may be tuned in automatically through use of the pushbuttons on the front of the radio (see below).



With the addition of a zero, the numbers on the front of the dial represent kilocycles. The operating frequency (in kilocycles) of each of your local stations is listed in the radio section of your newspaper.

##### SETTING THE PUSHBUTTONS

The pushbuttons may be used, after proper adjustment, for the automatic tuning of any six stations which you select. They can be set up in any order.

1. Turn on the radio. Allow it to warm up for at least one minute.

2. Push out the call letters of the six stations from the call-letter sheets supplied with this manual.

3. Insert one call-letter tab in the rectangular opening in each of the pushbuttons, in any sequence. Press an acetate tab (supplied in small envelope) into each of the pushbuttons.

4. With the screwdriver supplied, check to see that the locking screw in the center of the tuning knob (see illustration) is loose. If it is not, turn it several turns to the left (counterclockwise).

5. Press the first pushbutton down **all the way**. With one hand hold the button down **firmly** and with the other carefully tune in the desired station. Release the pushbutton.

6. Follow this procedure for each of the five other buttons, adjusting each one for a different station.

7. Rotate the tuning knob on the side of the cabinet as far to the right as it will go. Tighten the locking screw in the center of the knob. **IT IS IMPORTANT THAT THIS SCREW BE TIGHTENED VERY FIRMLY.**

8. The pushbuttons are now properly set for automatic tuning. Any of the six stations may now be tuned in simply by pressing the proper button down as far as it will go. If it is desired to reset any of the buttons for a new station, loosen the locking screw in the center of the tuning knob, set the pushbutton as described above, and re-tighten the locking screw.

##### ANTENNA AND GROUND

The antenna (aerial) built into the rear of the cabinet is sufficient for receiving programs from strong local stations and from powerful nearby stations. This antenna may be somewhat directional, that is, reception is improved when the antenna is facing in certain directions. Therefore tune in a station and try the radio in several positions.

In locations remote from broadcasting stations or where receiving conditions are poor, an outside antenna, 50 to 75 feet long, will give best results. The antenna should be erected as high as possible, as far from surrounding objects as is practical, and at right angles to street car lines and

power lines. Connect the antenna lead-in wire to the antenna clip at the rear of the radio (see chassis view on page 3).

Periodic inspection of the antenna is recommended to make sure that all connections are clean and tight and that the antenna is well insulated from the ground at all points.

No ground wire is required with this radio.

## CONDITIONS AFFECTING RECEPTION

Perfect radio reception is not always possible. In some cases where reception is noisy or of insufficient volume the radio itself may be at fault; in other cases conditions of either a local or general nature may be responsible. The chief external causes of unsatisfactory radio reception are: (1) static, caused by atmospheric disturbances; (2) local interference, caused by nearby electrical apparatus; (3) fading, a phenomenon due to certain atmospheric conditions; and (4) station interference.

Static is more evident during lightning storms and especially during the spring and summer months. At times it makes reception of distant stations almost impossible. As yet no method has been devised to eliminate this source of interference with reception in the standard broadcast band.

Local interference is particularly troublesome in the business and industrial areas of cities. In rural areas farm lighting systems, telephone systems, and nearby high tension transmission lines sometimes develop trouble which makes

## TUBES

All the tubes are properly mounted in their sockets when the radio is shipped from the factory. The type number of each tube is stamped on the tube and also on the chassis alongside the tube socket. The chassis view on page 3 shows the location of each of the tubes.

radio reception noisy. Power companies generally are willing to cooperate in eliminating such sources of interference.

Fading occurs most frequently when a weak or distant station is tuned in. A station may be tuned in loud and clear and then, without any change in the adjustment of the set, the program may get weaker and weaker until it dies out entirely. Suddenly the program may increase in volume and become normal again. An automatic volume control incorporated in this set tends to overcome these changes in the volume of the program; however, fading cannot be eliminated entirely.

Station interference results from the fact that within the range of your radio there are two or more stations broadcasting at or near the same frequency. This produces a continuous background noise or whistle. The condition cannot be remedied; avoid tuning in stations on the portion of the dial where it occurs.

## IF YOUR RADIO DOES NOT OPERATE SATISFACTORILY

1. Check the power at the receptacle by inserting the plug of a lamp cord and noticing whether the lamp lights. If the radio is being operated on direct current, try reversing the plug of the radio line cord.

2. If an outside antenna is being used, check all connections to be sure they are clean and tight. Make sure that the antenna is insulated from the ground at all points.

3. Take out the tubes and have them tested. The tubes may be removed as follows: First disconnect the line cord from the power receptacle. Then remove the four buttons which hold the back of the cabinet in place. Unclip the two leads connected to the loop antenna on the inside of the back. Remove each tube by holding it near its base, rocking it back and forth, and pulling upward. **WHEN REPLACING TUBES, BE SURE THAT THE TYPE NUMBER OF EACH TUBE**

**CORRESPONDS TO THE TYPE NUMBER STAMPED ON THE CHASSIS ALONGSIDE THE TUBE SOCKET.**

If for any reason it is found necessary to remove the chassis, proceed as follows: Make sure the line cord is disconnected from the power receptacle. Remove the back as described above. Pull the volume knob off its shaft. Unscrew the locking screw in the center of the tuning knob and pull the tuning knob off its shaft. Remove the four chassis mounting screws from the bottom of the cabinet. Move the chassis toward the back of the cabinet so that the control shafts and tuner assembly clear the holes. The chassis can then be slipped out. After the chassis is replaced the automatic pushbuttons will probably have to be reset.

4. If the trouble cannot be located by following the procedure above, get in touch with your local radio dealer.

## SERVICE DATA FOR PROFESSIONAL SERVICE MEN

### REPLACING DIAL POINTER DRIVE CORD

Six inches of cord are required in the set. Use a piece slightly longer so that knots may be tied at each end. Numbers below correspond to circled numbers in diagram.

1. Rotate tuning knob to extreme clockwise position. This closes tuning condenser. Knob should remain in this position until installation is completed.

2. Tie cord to loop in spring as shown. Wind cord one turn around shaft in direction shown.

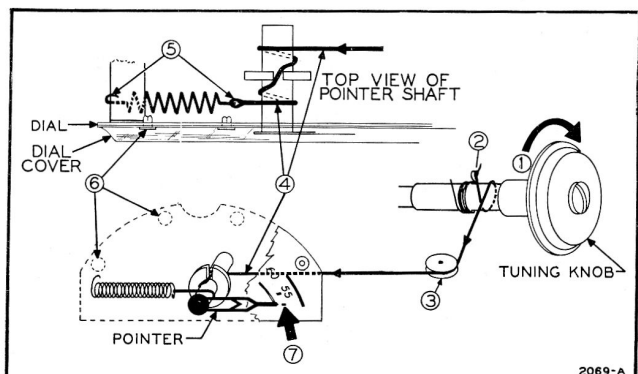
3. Pass cord over idler pulley.

4. Pass cord over pointer shaft; wind it one turn around shaft; pass it through key washer; wind it one more turn around shaft.

5. Hook spring over end of dial support. Tie cord to spring. **IMPORTANT:** Before tying knot stretch spring enough so that full contraction of spring will rotate pointer shaft at least one-half turn.

6. Remove dial crystal by removing Cinch buttons.

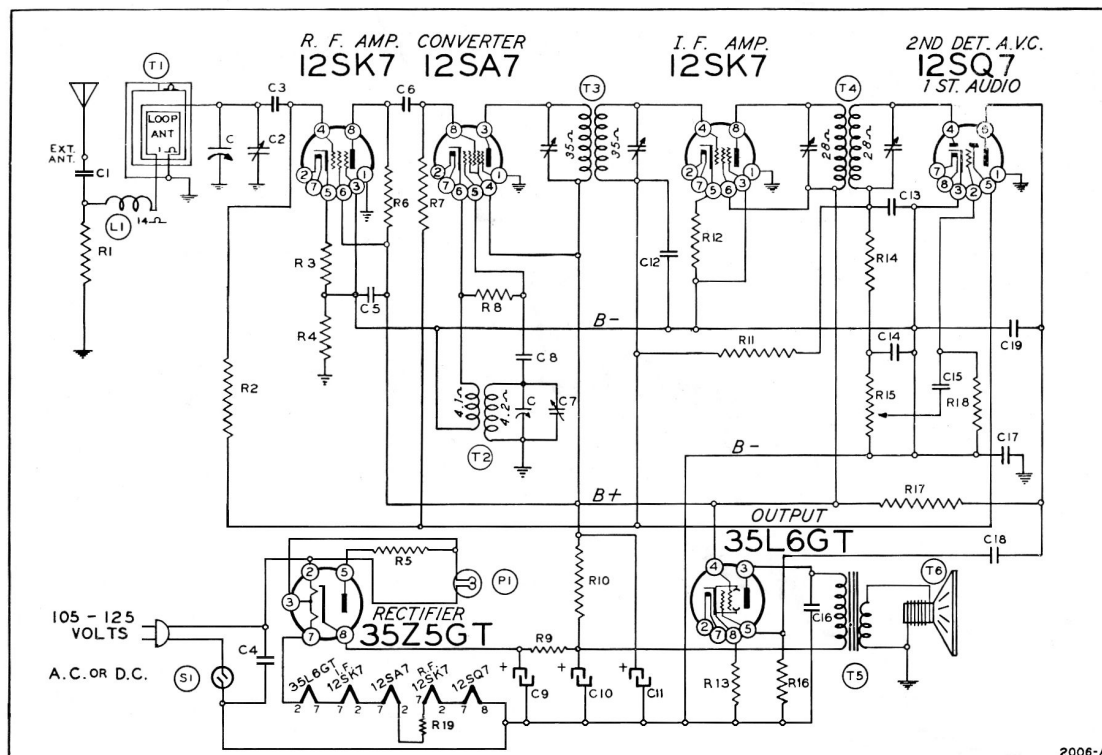
7. Make sure tuning knob is in extreme clockwise position. Then rotate pointer clockwise, against friction of shaft, until it is in horizontal position, as shown.



# TECHNICAL DATA

Tuning range.....530 to 1650 Kc.  
Intermediate frequency.....455 Kc.  
Power consumption.....35 Watts  
Sensitivity (for 0.05 watt output).....10 microvolts average

Selectivity.....55 Kc. broad at 1000 x signal at 1000 Kc.  
Power output (in voice coil)  
Undistorted.....0.8 watt  
Maximum.....1.0 watt  
Voice coil impedance.....3.2 ohms



## RESISTORS

R1 4700 ohms, 1/2 w., ±10%  
R2 1 megohm, 1/2 w., ±20%  
R3 100 ohms, 1/2 w., ±10%  
R4 150,000 ohms, 1/2 w., ±20%  
R5 22 ohms, 1/2 w., ±10%  
R6 4700 ohms, 1/2 w., ±20%  
R7 100,000 ohms, 1/2 w., ±20%  
R8 47,000 ohms, 1/2 w., ±20%  
R9 180 ohms, 1 w., ±10%  
R10 1200 ohms, 1 w., ±10%  
R11 3.3 megohms, 1/2 w., ±20%  
R12 150 ohms, 1/2 w., ±10%  
R13 150 ohms, 1/2 w., ±10%

R14 47,000 ohms, 1/2 w., ±20%  
R15 Volume control, 1 megohm  
R16 470,000 ohms, 1/2 w., ±20%  
R17 220,000 ohms, 1/2 w., ±20%  
R18 4.7 megohms, 1/2 w., ±20%  
R19 33 ohms, 1 w., ±10%

## CONDENSERS

C 2 gang variable  
C1 .002 x 600 volts  
C2 Antenna trimmer on gang  
C3 .0005 mica  
C4 .1 x 400 volts  
C5 .25 x 200 volts  
C6 .0001 mica

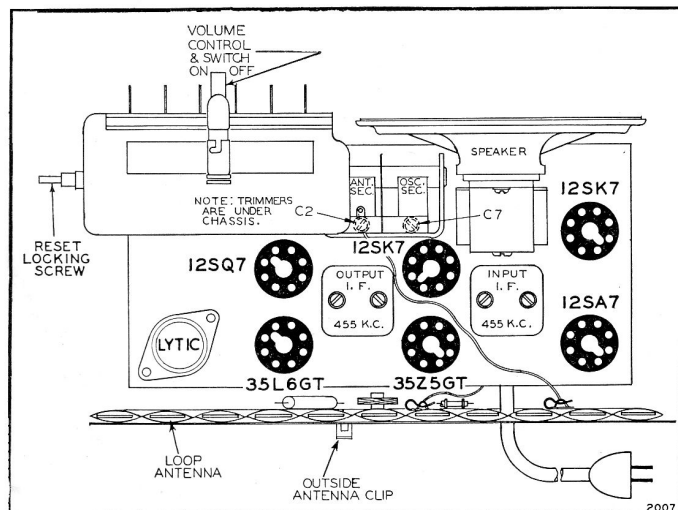
C7 Oscillator trimmer on gang  
C8 .0001 mica  
C9 40 mfd lytic x 150 w.v.  
C10 20 mfd lytic x 150 w.v.  
C11 20 mfd lytic x 150 w.v.  
NOTE: C9, C10, C11 are in same unit. In 25-cycle sets, values are 60 mfd., 40 mfd., 40 mfd.

C12 .05 x 200 volts  
C13 .0001 mica  
C14 .0001 mica  
C15 .002 x 600 volts  
C16 .02 x 400 volts  
C17 .2 x 400 volts

C18 .004 x 600 volts  
C19 .0001 mica

## MISCELLANEOUS

L1 Loading coil  
P1 Pilot light bulb, type T-47  
S1 On-off switch on volume control  
T1 Loop antenna, complete  
T2 Oscillator coil  
T3 Input I.F. coil, 455 Kc.  
T4 Output I.F. coil, 455 Kc.  
T5 Output transformer for speaker  
T6 5-inch P.M. speaker

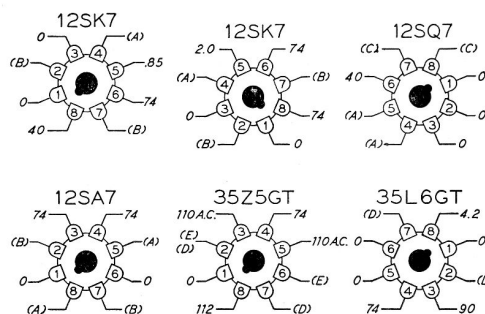


CHASSIS VIEW, SHOWING TUBE LOCATIONS

A-CANNOT BE MEASURED WITH VOLTMETER.

B-12 VOLTS A.C. MEASURED ACROSS PINS 2 & 7.  
C-12 VOLTS A.C. MEASURED ACROSS PINS 7 & 8.  
D-30 VOLTS A.C. MEASURED ACROSS PINS 2 & 7.  
E-117 VOLTS A.C. MEASURED ACROSS PINS 2 & 6.

VOLTAGES MEASURED WITH 1000 OHM PER VOLT VOLTMETER BETWEEN SOCKET TERMINALS & B- LINE VOLTAGE 117 VOLTS AC. VOLUME CONTROL AT MINIMUM.



BOTTOM VIEW OF CHASSIS

VOLTAGES AT TUBE SOCKET TERMINALS

## ALIGNMENT PROCEDURE

- No aligning adjustments should be attempted until all other possible causes of trouble have been checked.
- Chassis must be removed from cabinet for proper alignment. Slight adjustments of the oscillator and antenna circuits can be made, without removing the chassis, through two holes provided on the bottom of the cabinet. The two adjustment screws can be reached with a long insulated screwdriver.
- It is important that during alignment the loop antenna

be maintained at the same distance from the chassis as when the chassis is installed in the cabinet.

- Turn volume control to maximum for all adjustments.
- Connect ground post of signal generator to B— of radio through a 0.1 mfd. condenser.
- Connect dummy antenna value in series with generator output lead.
- Connect output meter across primary of output transformer.

Band	Signal Generator Frequency Setting	Dummy Antenna	Connection to Radio	Tuning Condenser Setting	Adjust for Maximum Output (see chassis view)
I.F.	455 Kc.	0.1 mfd.	Grid of 12SA7	Rotor full open (plates out of mesh)	4 trimmers on input and output I.F. transformers
Broadcast	1650 Kc.	0.1 mfd.	Grid of 12SA7	Rotor full open (plates out of mesh)	Oscillator trimmer C7 on bottom of radio
	1400 Kc.	None	See note A	Set dial at 1400 Kc.	Antenna trimmer C2 on bottom of radio

Note A: Lay output lead of generator in back of loop antenna. Turn up generator output. Loop antenna will pick up energy.

## REPLACEMENT PARTS LIST

When ordering parts, specify part number, schematic symbol when applicable, receiver model number, and series. Use only genuine factory replacement parts.

Part No.	Schematic Symbol	Description
<b>CONDENSERS</b>		
C-8D-10778	C1, C15	.002 x 600 volts, +40%, -15%
1292	C3	.0005, mica, ±20%
1001	C4	.1 x 400 volts, +50%, -10%
1006	C5	.25 x 200 volts, ±20%
1295	C6, C8, C19	.0001, mica, ±20%
11994	C9, C10, C11	Electrolytic (for 60-cycle sets), 40 mfd. x 150 volts, 20 mfd. x 150 volts, 20 mfd. x 150 volts.
A-8C-10946	C9, C10, C11	Electrolytic (for 25-cycle sets), 60 mfd. x 150 volts, 40 mfd. x 150 volts, 40 mfd. x 150 volts.
1009	C12	.05 x 200 volts, ±25%
129161	C13, C14	Dual .0001, mica, +25%, -10%
10026	C16	.02 x 400 volts, ±25%
100110	C17	.2 x 400 volts, +5%, -20%
100106	C18	.004 x 600 volts, ±10%
<b>RESISTORS *</b>		
C-9B1-70	R1	4700 ohms, ½ watt, ±10%
C-9B1-31	R2	1 megohm, ½ watt, ±20%
C-9B1-50	R3	100 ohms, ½ watt, ±10%
C-9B1-26	R4	150,000 ohms, ½ watt, ±20%
C-9B1-42	R5	22 ohms, ½ watt, ±10%
C-9B1-17	R6	4700 ohms, ½ watt, ±20%
C-9B1-25	R7	100,000 ohms, ½ watt, ±20%
C-9B1-23	R8, R14	47,000 ohms, ½ watt, ±20%
C-9B2-53	R9	180 ohms, 1 watt, ±10%
C-9B2-63	R10	1200 ohms, 1 watt, ±10%
C-9B1-34	R11	3.3 megohms, ½ watt, ±20%
C-9B1-52	R12, R13	150 ohms, ½ watt, ±10%
C-9B1-29	R16	470,000 ohms, ½ watt, ±20%
C-9B1-27	R17	220,000 ohms, ½ watt, ±20%
C-9B1-35	R18	4.7 megohms, ½ watt, ±20%
C-9B2-44	R19	33 ohms, 1 watt, ±10%
<b>COILS</b>		
12310	L1	Load coil
B-13E-10242	T1	Loop antenna assembly, complete on back
A-13D-10215	T2	Oscillator coil
108140H	T3	Input I.F. coil in can, 455 Kc.
108145	T4	Output I.F. coil in can, 455 Kc.
<b>SOCKETS</b>		
121210		8-prong octal tube sockets, molded
121171		8-prong socket for 12SK7, laminated
121216		Socket base, bakelite
107271		Pilot light socket assembly
<b>SPEAKER</b>		
114197	T6	5-inch P.M. speaker
105104	T5	Output transformer for speaker

\*The values of all resistors listed above are based on RMA standards. Due to conditions beyond our control some receivers have been shipped with resistors of pre-standardized values. This receiver will operate equally well with resistors of either group. An illustration of the difference follows:

Pre-standardized value—50,000 ohms, ±10%, 1/3 watt  
RMA value—47,000 ohms, ±10%, 1/2 watt

BELMONT RADIO CORPORATION  
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## NOTE ON TUBE REPLACEMENT

Replace a defective metal 12SK7 tube with another metal tube. Replace a glass 12SK7 tube with either a metal tube or with an exact duplicate of the tube now in the set.

Part No.	Schematic Symbol	Description
<b>DIAL PARTS</b>		
115448		End plate (right hand bracket)
115448C		End plate (left hand bracket)
115146		Cams
115143		Key washer (13 used on cam shaft)
117528		Brass spacer (one used on cam shaft)
117602		Brass spacer (four used on cam shaft)
121181		Spring washers, for locking collar
117604		Locking collar
117600		Lever shaft
115361		Lever with roller
120283		Return spring for levers
115449B		Dial bracket assembly
112785		Pointer
A-53A-10989		Drive cord, 6 inches used
A-49A-11087		Spring on tuning shaft, for cord
A-3N-11086		Spacer under above spring
120143		Take-up spring for drive cord
B-6D-10241		Dial scale
112659		Crystal, clear, for dial scale
A-2M-7758		Cinch buttons for fastening scale to bracket
117833		Brass spacer (for spacing pointer from dial)
<b>MISCELLANEOUS</b>		
10798		Line cord and plug
101218	R15	Volume control and switch, 1 megohm
B-8A-10211	C	2-gang variable condenser
107249	P1	Pilot light bulb, type T-47
134123		Rubber bumper (bottom of cabinet)
128495B		Cardboard back
131193		Cinch buttons, for fastening back to cabinet
13141		Cinch buttons, to cover trimmer holes in cabinet
128292B-8		Pushbuttons
112784		Station call letters, set
112606		Acetate tabs for call letters
128473-9		Cabinet, bakelite
128496-8		Knob, volume
A-5B-10994-9		Knob, tuning
A-3F-10995		Locking screw for tuning knob
120388		Locking spring for tuning knob
A-2H-10715		Tube shield (for metal-base 12SA7GT)
A-2H-11271		Tube shield (for bakelite-base 12SA7GT)

Tubes are coded and guaranteed by the tube manufacturer. Better service can be rendered on adjustments if defective tubes are returned directly to the manufacturer rather than through our factory.

We cannot supply speaker cones or fields separately. We can repair or replace a damaged speaker if it is returned to our factory, transportation charges prepaid.

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