

ZENITH RADIO CORPORATION

PHONE
BERKSHIRE 7500

ZENITH
RADIO
600 DICKENS AVENUE
CHICAGO, U.S.A.

CABLE ADDRESS
"ZENITHRAD"
ALL CODES

DEC 6 1942

Special

Service and alignment data on the 7B04 shortwave portable chassis.

The 7G605 shortwave portable receiver was designed to fulfill a great need for a truly portable receiver capable of receiving foreign broadcasts. A receiver incorporating such features as Band-Spread tuning, Waverod for shortwave and broadcast reception as well as tuneable shortwave and broadcast band Wave-magnets requires careful and accurate alignment to assure maximum performance.

Since this receiver is the first of its type to reach the open market, we feel that additional data pertaining to service and alignment will be helpful. Therefore, we have compiled this special bulletin elaborating on the proper alignment procedure and have added service suggestions to assist the service man in obtaining the excellent performance of which this receiver is capable.

Yours very truly
ZENITH RADIO CORPORATION

F. E. Smolek
F. E. Smolek
Service Manager

#32A

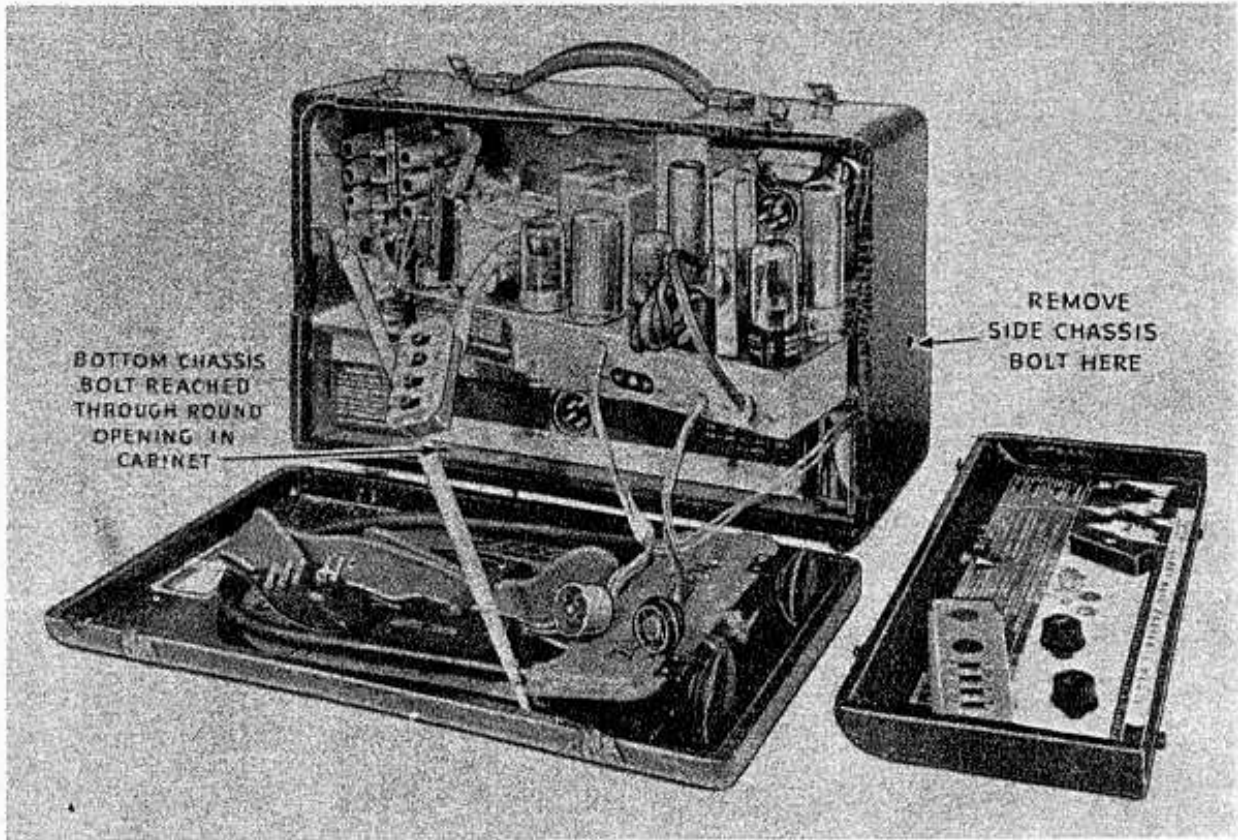


Figure 1

REMOVING THE CHASSIS: The chassis may be removed for alignment in the following manner:

Remove the radiorgan escutcheon plate and place the radiorgan switch and cable assembly to the rear of the chassis.

Remove the 2 chassis bolts reached through the opening at the bottom and at the side of the cabinet (See figure 1).

Disconnect the wavemagnet, speaker and battery plugs.

Remove the chassis by retracting the right end sufficiently to clear the cabinet and then apply a sideward movement so that the chassis will clear the Waverod support bolts (See figure 1).

Place the chassis in the position illustrated in figure 2 and connect the Wavemagnet, speaker and battery plugs. The receiver should now be ready for Alignment on BATTERY POWER.

CONNECTING THE GENERATOR: Connect the antenna terminal of the signal generator through a .1 mfd. condenser to the converter grid at the junction of the 150,000 ohm resistor and the .02 mfd. condenser C11 (point "X," figure 2). Connect the generator ground lead to the 1LA6 No. 8 filament lead at the standoff insulator (point "Y," figure 2). Connect an output meter across the voice coil (Green and Black wires of the speaker plug). Align the I.F. trimmers A, B, C and D for maximum response as outlined in the alignment instructions.

NOTE!—Read the following paragraph carefully and study the R.F. alignment procedure before attempting alignment beyond the I.F. circuits.

The oscillator tuned circuit for the broadcast band tracks in the conventional manner, 455 Kc. above the converter frequency. However, band-spread tuning with the oscillator circuit tracking 455 Kc. below the converter frequency has been incorporated on the shortwave bands in the 7BO4 chassis. The sensitivity at the high frequencies depends on correctly aligning the converter stage at the highest frequency peak (furthest out). The recommended procedure for obtaining the correct peak is to screw the oscillator slugs (K) all the way in and the converter slugs (L) all the way out, then aligning for the first peak reached as the oscillator slugs are backed out and the converter slugs are screwed in. The shortwave converter adjustments are broad; therefore, the lowest AC scale of the output meter is recommended. To prevent false peaks, always keep the signal generator output below the level where the A. V. C. action of the receiver takes effect.

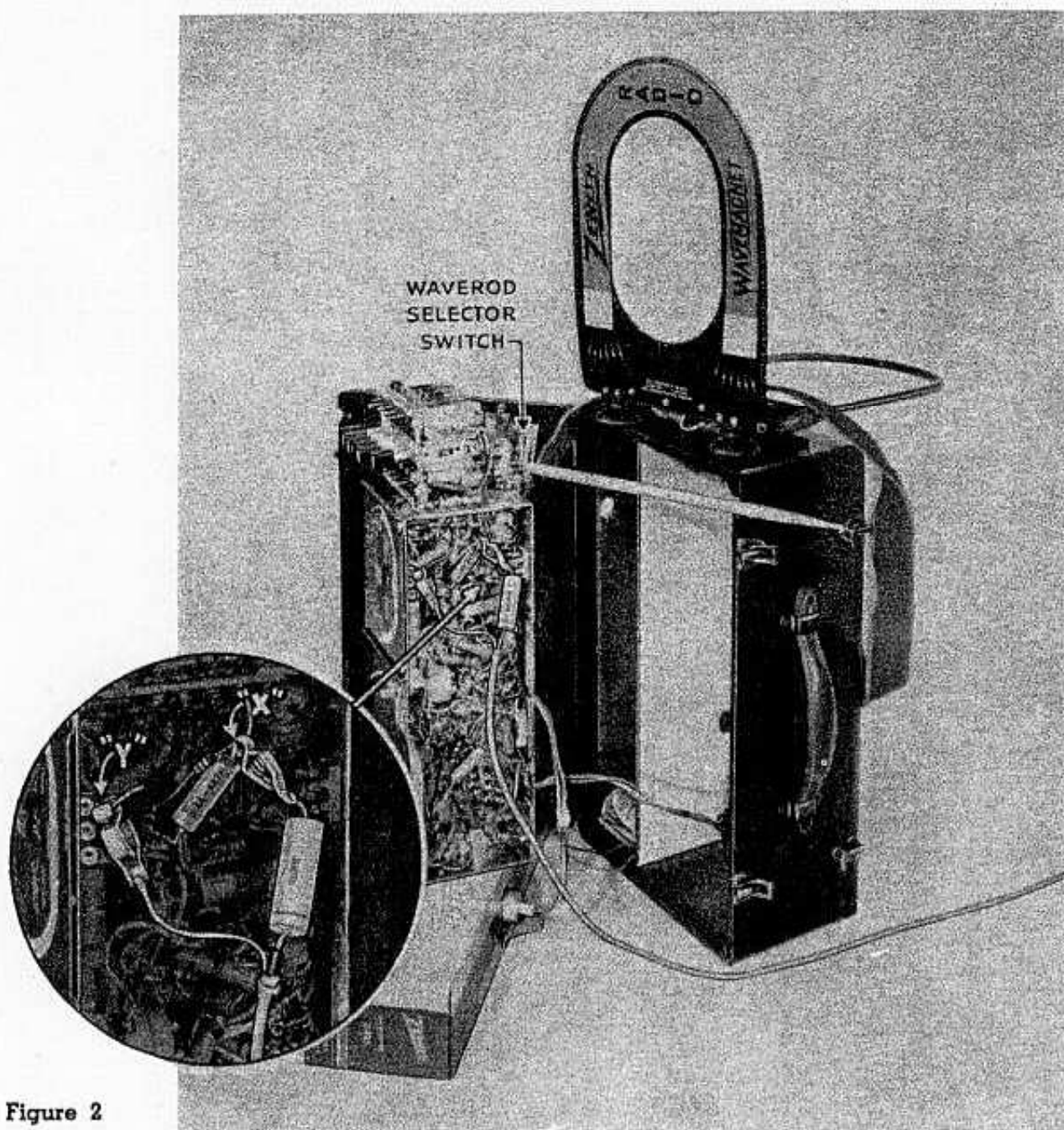
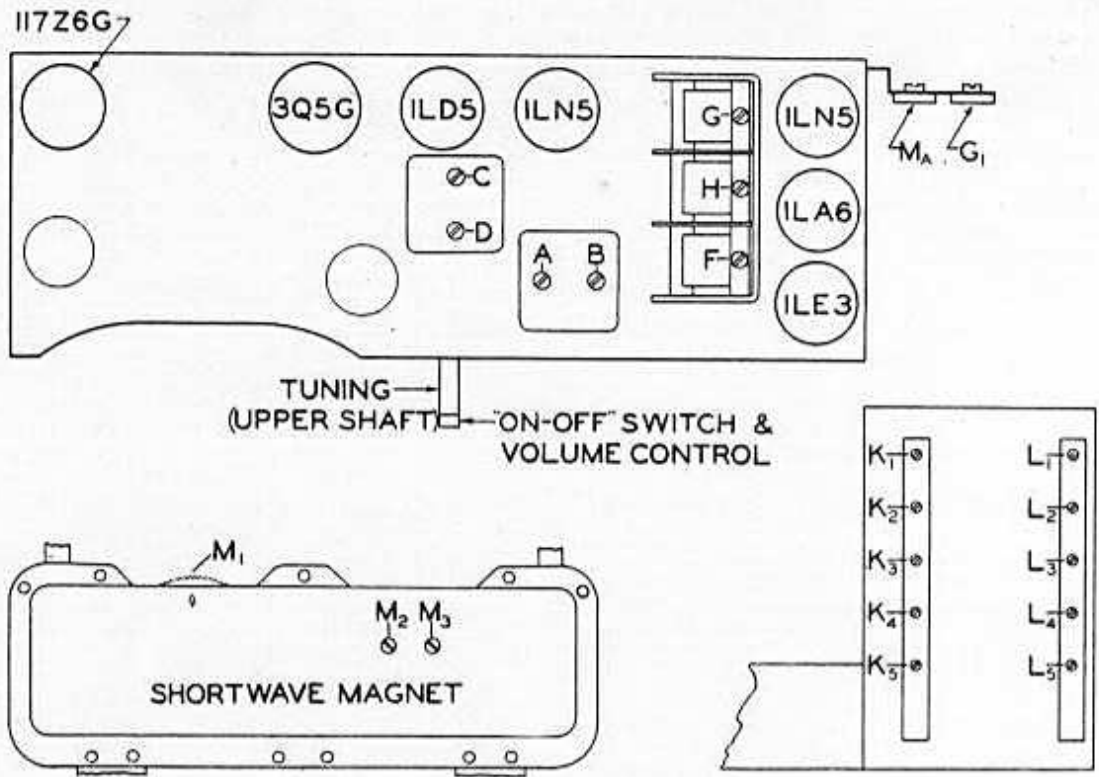


Figure 2

The Waverod selector switch (see figure 2) may be locked in position for Waverod or Wavemagnet operation during alignment by inserting a screw in the switch plunger opening.

Stage Gains
Bc. and I.F.

Ant. to R.F. grid 5X at 1000 Kc.
R.F. grid to conv. grid 9X at 1000 Kc.
Conv. grid to I.F. grid 66X at 455 Kc.
Overall audio 900X at .05 watt, 400 cycles.



TUBE AND TRIMMER LOCATIONS

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Conv. grid and 1LA6 filament pin # 8	.1 mid.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	One Turn Loop Coupled Loosely to Broadcast Wavemagnet		1600 Kc.	BC	1600 Kc.	F	Set oscillator to scale
3			1400 Kc.	BC	1400 Kc.	H	Alignment of detector section
4			1400 Kc.	BC	1400 Kc.	G	Alignment of B.C. Wavemagnet
5			1400 Kc.	BC	1400 Kc.	G ₁	B.C. waverod alignment
6			6.2 Mc.	49 Met.	6.2 Mc.	K ₁ -L ₁	Alignment of S.W. Oscillators and Antenna Trimmers
7	9.6 Mc.	31 Met.	9.6 Mc.	K ₂ -L ₂			
8	11.8 Mc.	25 Met.	11.8 Mc.	K ₃ -L ₃			
9	15.2 Mc.	19 Met.	15.2 Mc.	K ₄ -L ₄			
10	17.8 Mc.	16 Met.	17.8 Mc.	K ₅ -L ₅			
11	One Turn Loop Coupled Loosely to Shortwave Magnet, Waverod Collapsed		15.2 Mc.	19 Met.	15.2 Mc.	M ₁ -M ₂	Alignment of shortwave magnet
12			11.8 Mc.	25 Met.	11.8 Mc.	M ₂	
13			9.6 Mc.	31 Met.	9.6 Mc.	M ₁	

Service Notes



OSCILLATION AND HISS: This condition can be caused by excessive gain in the I.F. circuit which may be regenerative to a point just below oscillation. Replacing the 1LN5 I.F. tube with another that has a lower G/M factor and realigning the I.F. transformers will stabilize the circuit.

HIGH AUDIO LEVEL: The inability to attenuate strong local stations is due to the internal capacity coupling between the diode and pentode plates of the 1LD5 tube. Replacement with a new type 1LD5 tube will correct this condition.

CHASSIS NOISE ON SHORTWAVE AND FADING ON BROADCAST: Care should be exercised when removing or reinserting the Wavemagnet plug. Excessive pressure may break the solder bond on the shortwave magnet lug (2nd from bottom), causing raspy noise and fading on shortwave bands. Removing the 1LN5 R.F. tube will allow clearance for resoldering this bond if it is broken.

NOISY WHEN JARRED: A short strip of 1/2" surgical tape applied to the front of the chassis will prevent the speaker from touching the receiver, causing noise when the set is jarred.

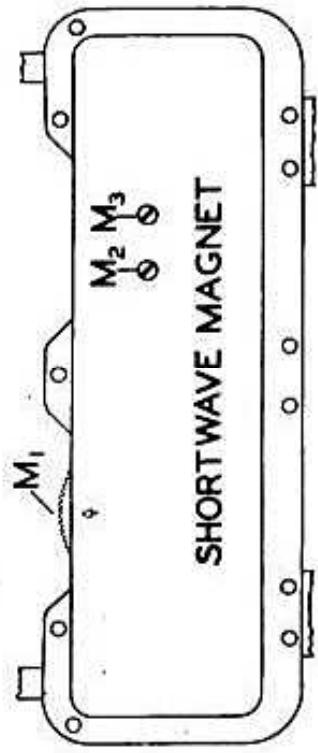
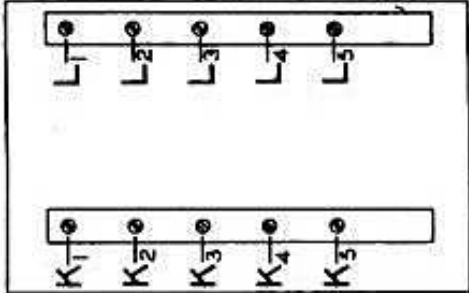
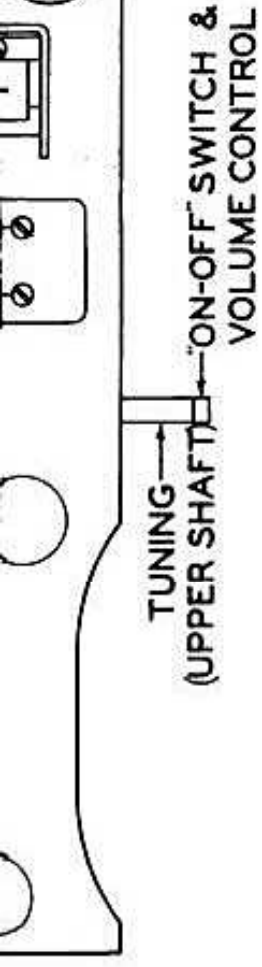
MICROPHONISM: Check the 1LA6 and 1LD5 tubes.

WEAK ON SHORTWAVE: Lack of sensitivity on the shortwave bands may be attributed to moisture penetrating the trimmer condensers in the high frequency R.F. and oscillator circuits. A simple remedy for this condition is to expose the opened back of the receiver to the sun or an electric heating unit. Care should be exercised to avoid excessive heat which will melt the wax impregnation from tubular condensers, coils, etc..

A more thorough inspection will be necessary where salt air has left a film of corrosion at the terminal lugs on the coils and between the plates of the trimmer condensers. The corrosive film may be removed by applying a small brush saturated with carbontetrachloride (carbona) to the affected parts, then wiping them off with a clean cloth. The receiver must be thoroughly dehydrated, as outlined above, before removing the corrosion.

BROAD TUNING: Check the I.F. alignment as outlined on pages 2, 3 and 4 of this bulletin.

ILE3



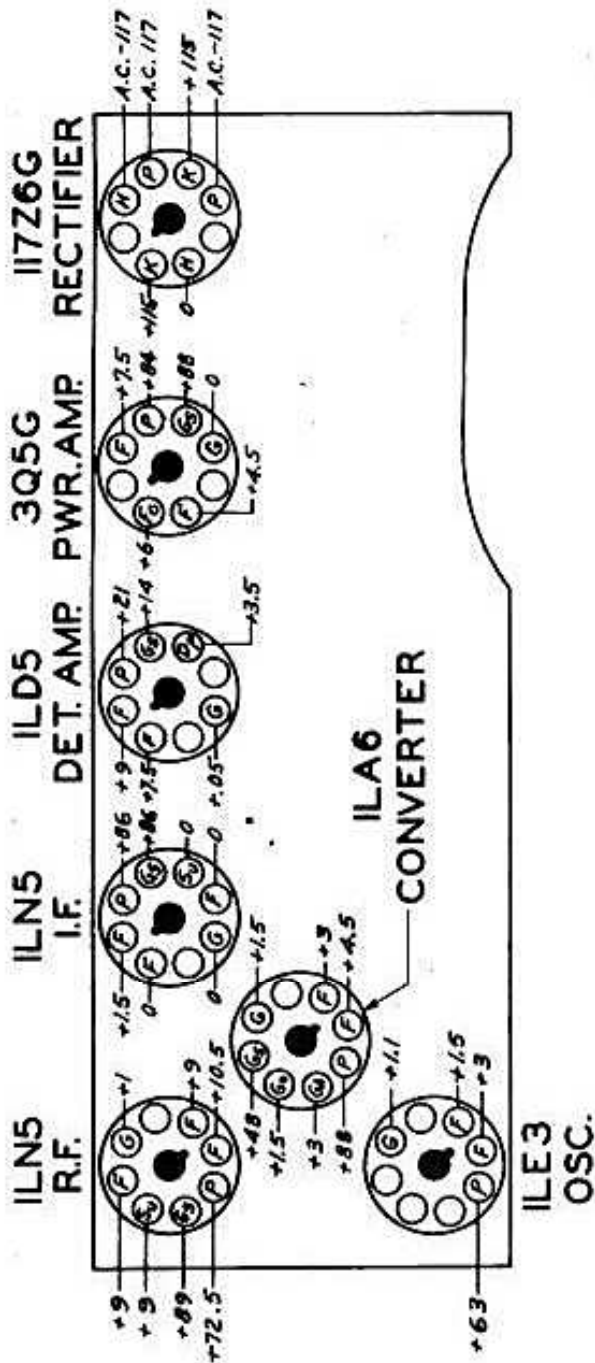
TUBE AND TRIMMER LOCATIONS

ALIGNMENT PROCEDURE

Operation	Connect Oscillator to	Dummy Antenna	Input Signal Frequency	Band	Set Dial At	Trimmers	Purpose
1	Conv. grid	.1 mfd.	455 Kc.	BC	600 Kc.	A, B, C, D	Align I.F.
2	One Turn Loop Coupled		1600 Kc.	BC	1600 Kc.	F	Set oscillator to scale
3	Loosely to Broadcast		1400 Kc.	BC	1400 Kc.	H	Alignment of detector section
4	Wavemagnet		1400 Kc.	BC	1400 Kc.	G	Alignment of B.C. Wavemagnet
5	3 Feet of Wire		1400 Kc.	BC	1400 Kc.	G ₁	B.C. waverod alignment
6	Approximately		6.2 Mc.	49 Met.	6.2 Mc.	K ₁ -L ₁	Alignment of S.W. Oscillators and Antenna Trimmers
7	1 Foot from		9.6 Mc.	31 Met.	9.6 Mc.	K ₂ -L ₂	
8	Extended		11.8 Mc.	25 Met.	11.8 Mc.	K ₃ -L ₃	
9	Waverod		15.2 Mc.	19 Met.	15.2 Mc.	K ₄ -L ₄	
10			17.8 Mc.	16 Met.	17.8 Mc.	K ₅ -L ₅	
11	One Turn Loop		15.2 Mc.	19 Met.	15.2 Mc.	M ₁ -M ₃	Alignment of shortwave magnet
12	Coupled Loosely to		11.8 Mc.	25 Met.	11.8 Mc.	M ₂	
13	Shortwave Magnet, Waverod Collapsed		9.6 Mc.	31 Met.	9.6 Mc.	M ₃	

Model 7G605

Chassis 7B04



SOCKET VOLTAGES—BOTTOM SIDE UP

All voltages measured with a 20,000 ohm per volt meter from B minus to socket contact indicated.

All voltages are positive D.C. unless marked otherwise.

Volume control full on.

Line voltage 117 A.C. or D.C. 25 to 80 cycle or Battery Pack Z-985 and two flashlight cells.

Power consumption 25 watts.

Power output .35 watts.

Tuning ranges:

540 to 1620 Kc.

6.0 to 6.5 Mc.

9.4 to 9.8 Mc.

11.7 to 11.9 Mc.

15.1 to 15.3 Mc.

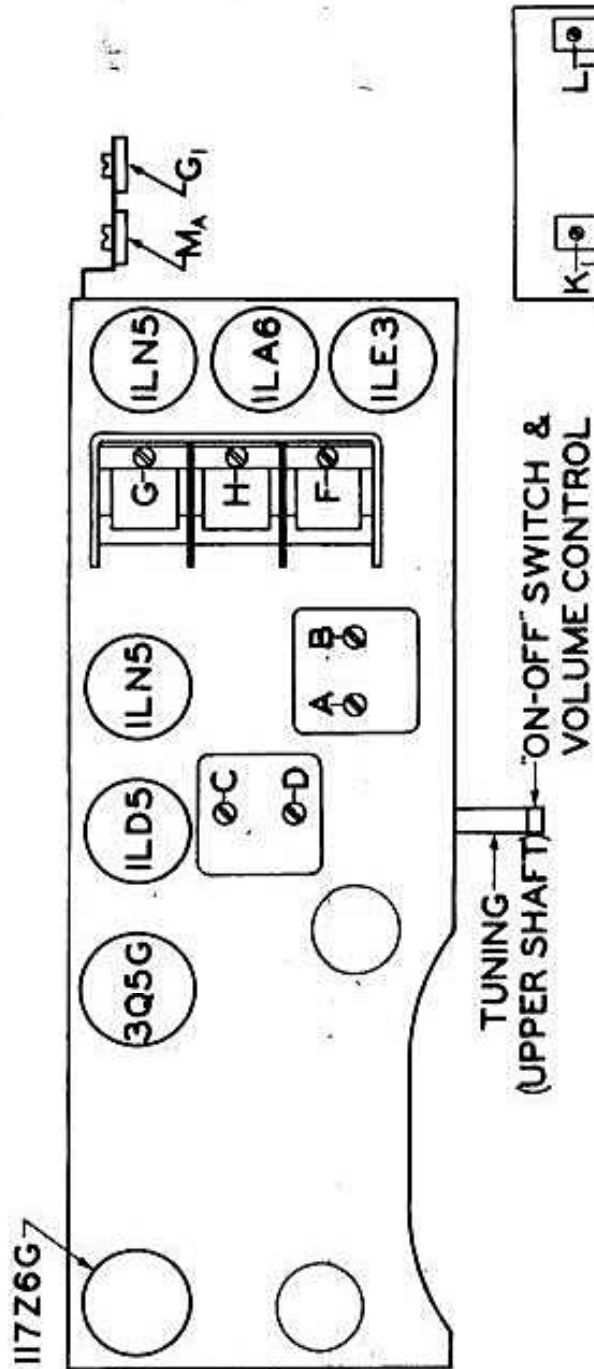
17.6 to 18.0 Mc.

Stage Gains
Bc. and I.F.

Anti. to R.F. grid 5X at 1000 Kc.
R.F. grid to conv. grid 9X at 1000 Kc.

Conv. grid to I.F. grid 66X at 455 Kc.

Overall audio 900X at .05 watt, 400 cycles.



TUNING—UPPER SHAFT
ON-OFF SWITCH & VOLUME CONTROL