ZENITH RADIO CORPORATION

PHONE
BERKSHIRE 7500

CABLE ADDRESS
"ZENITHRAD"
ALL CODES

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
Service Manager

#32A

bedroom 32 ohms 6"
bath 3.4 UC imp. 10 field 5"

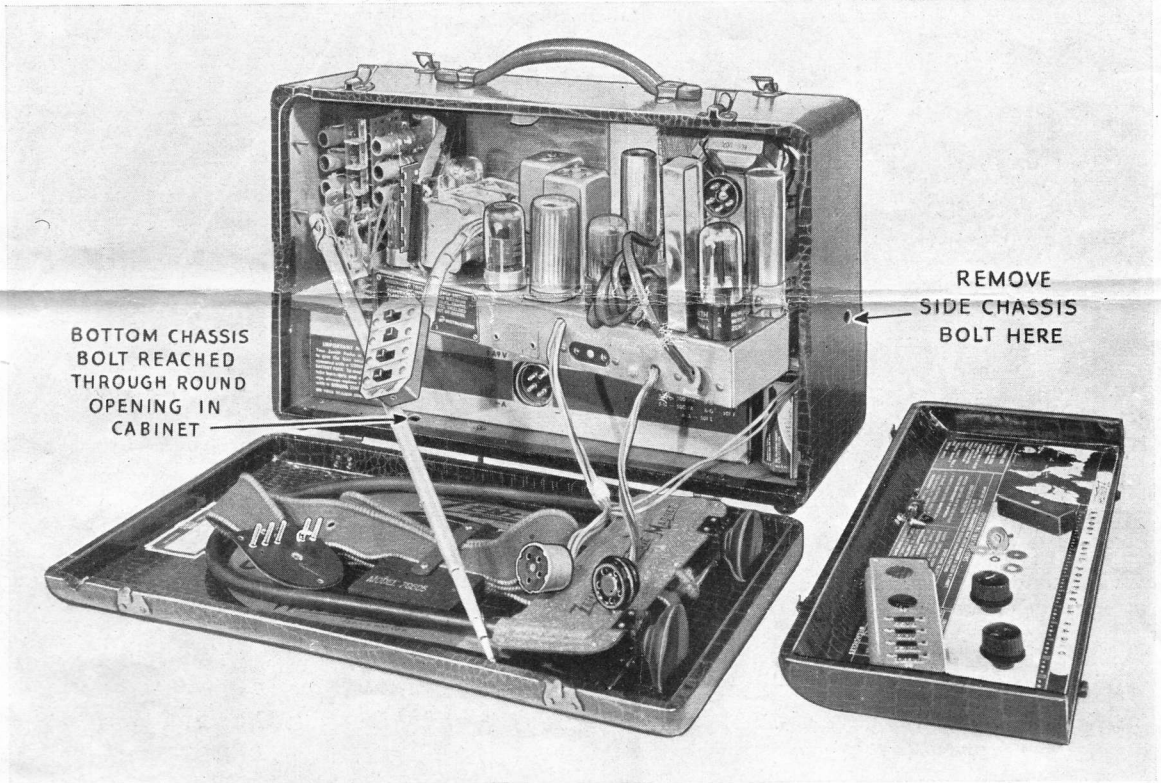


Figure 1

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 beyong 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.

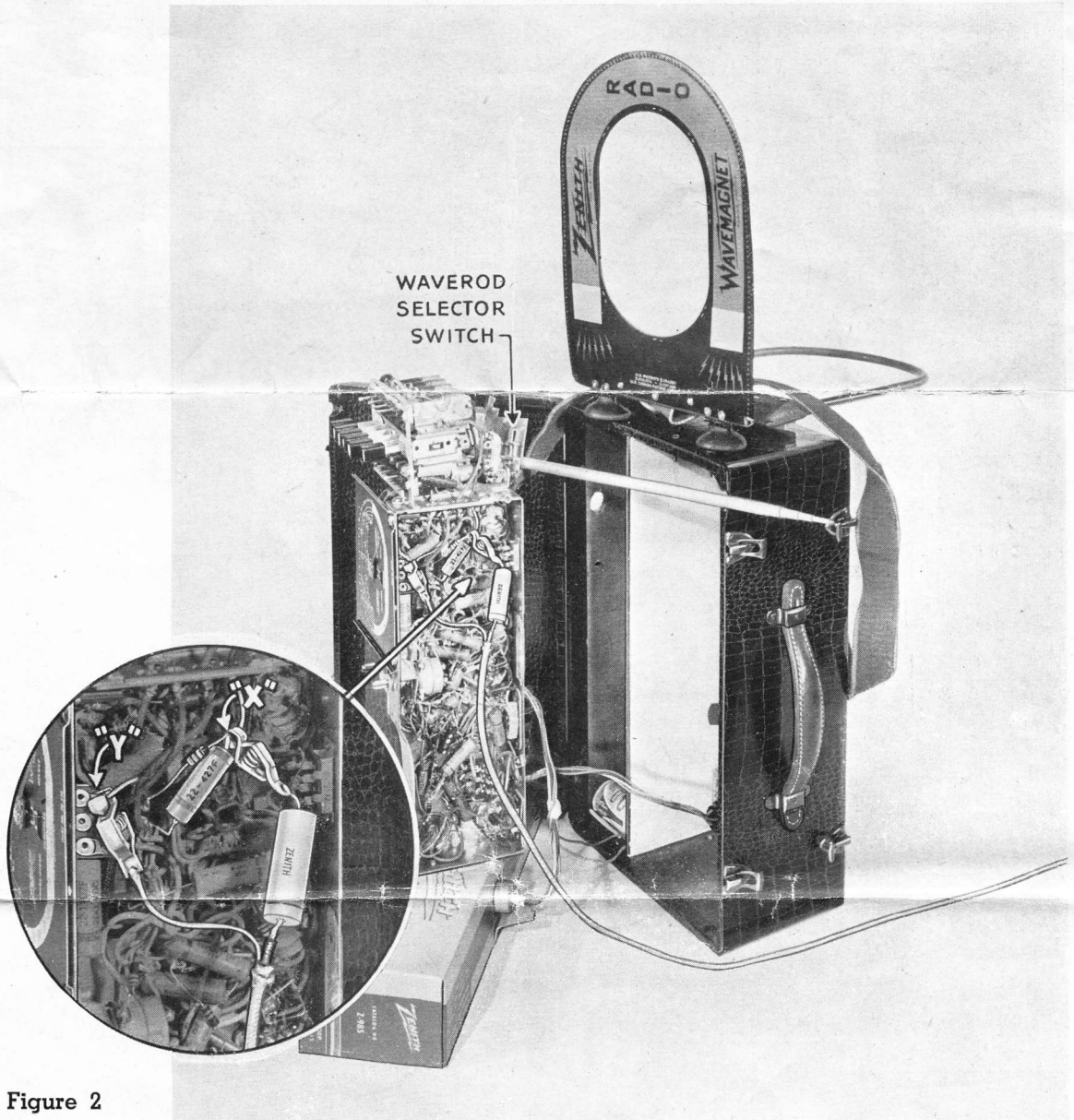


Figure 2

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.

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 ½" 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.

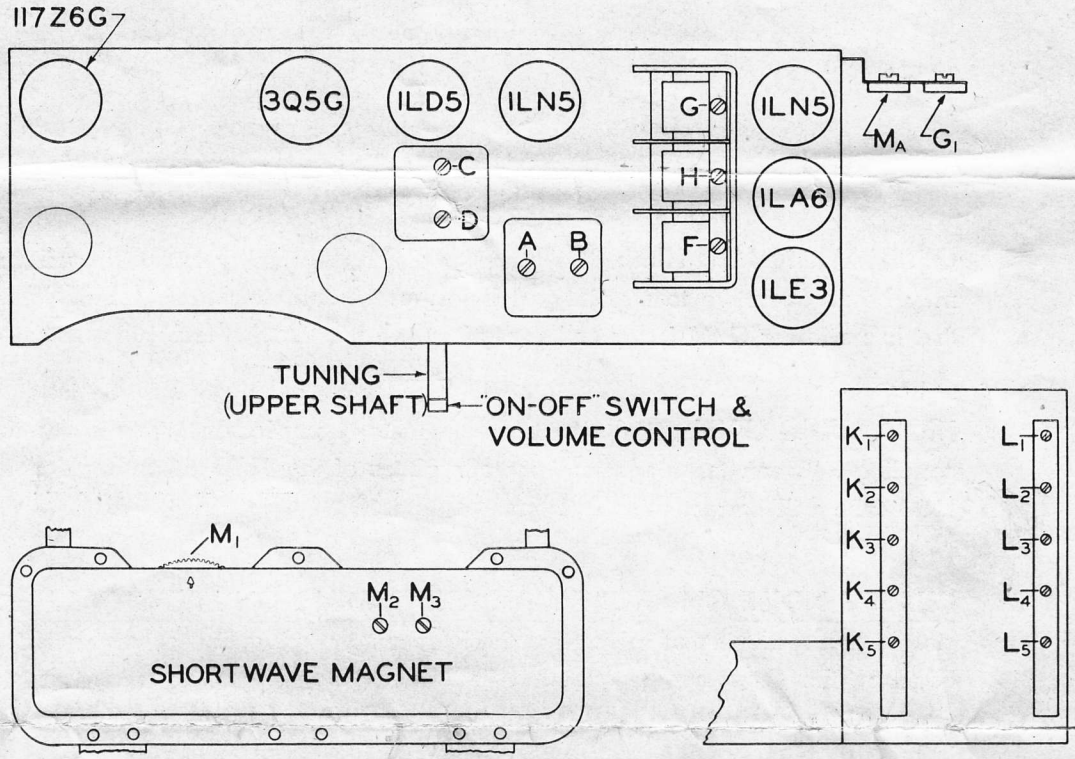
Stage Gains
Bc. and I.F.

Ant. to R.F. grid 5× at 1000 Kc.

R.F. grid to conv. grid 9× at 1000 Kc.

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

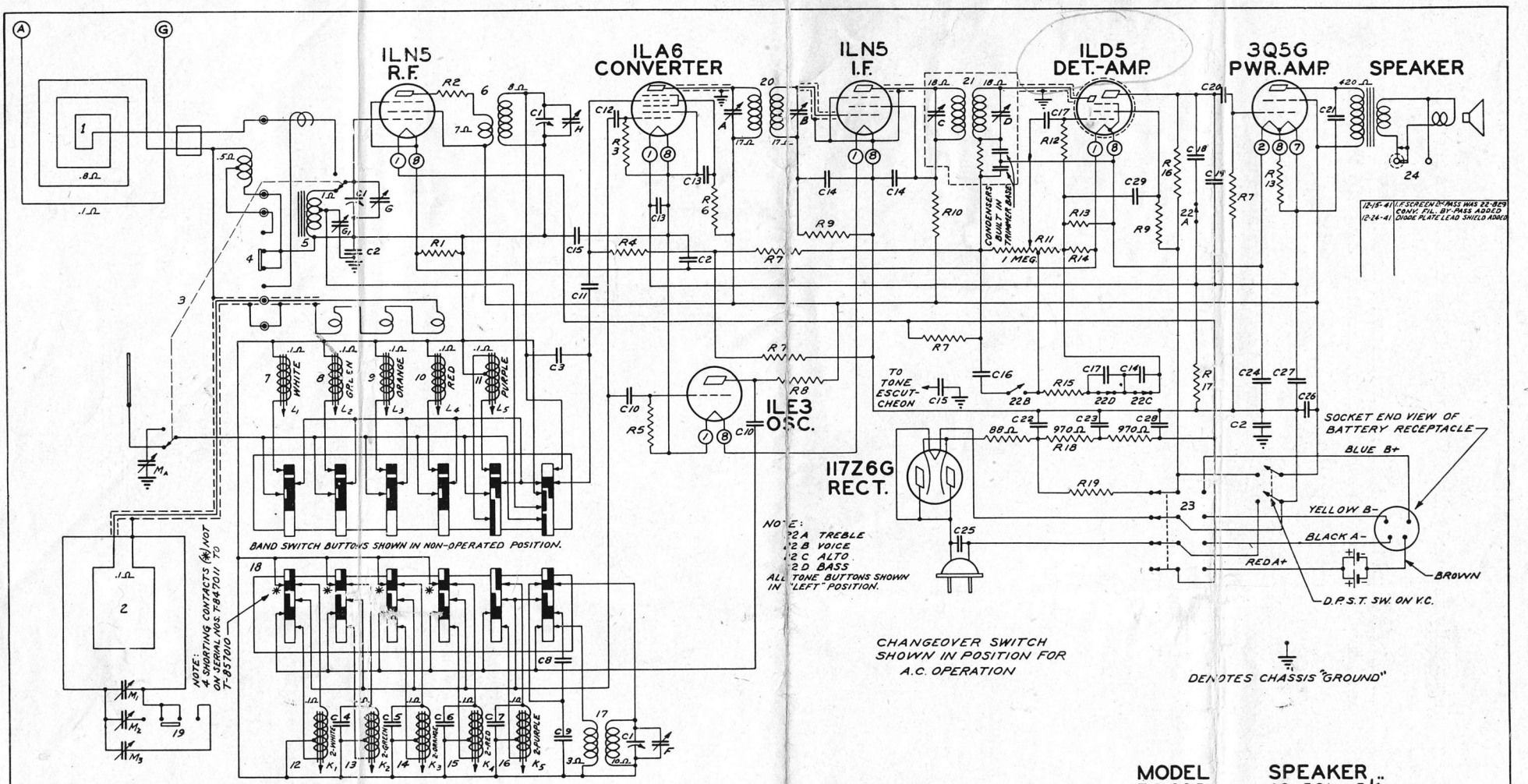
Overall audio 900× at .05 watt, 400 cycles.



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 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 Coupled Loosely to Shortwave Magnet, Waverod Collapsed		15.2 Mc.	19 Met.	15.2 Mc.	M_1-M_3	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_3	



DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION		DIAG Nº	PART Nº	DESCRIPTION	DIAG Nº	PART Nº	DESCRIPTION
C1	22-1308	THREE GANG VARIABLE		C26	22-1288	40 MFD. ELECTROLYTIC	150 V.				24	44-17	HEADPHONE JACK
C2	22-827	.1 MFD.	200 V.	C27	OR	40 MFD. "	25 V.						
C3	22-1130	.15 MMFD.	600 V.	C28	22-1159	20 MFD. "	25 V.	1	S10680	BROADCAST WAVEMAGNET	A		1ST I.F. TRANS. PRI.
C4	22-1312	100 MMFD. COMP.		C29	22-326	.003 MFD.	400 V.	2	S10682	SHORTWAVE WAVEMAGNET	B		1ST I.F. " SEC.
C5	22-1332	200 MMFD. COMP.						3	85-314	ANTENNA POLE SWITCH	C		2ND I.F. TRANS. PRI.
C6	22-705	150 MMFD. COMP.						4	85-225	WAVEMAGNET SWITCH	D		2ND I.F. " SEC.
C7	22-702	250 MMFD. COMP.		R1	63-596	330 M OHM	1/4 W.	5	S10670	ANTENNA COIL ASSEM.	F		BROADCAST OSC. (ON GANG)
C8	22-1311	75 MMFD. COMP.		R2	63-641	10 M OHM	1/4 W.	6	S10298	DETECTOR COIL ASSEM.	G		BROADCAST ANT. (ON GANG)
C9	22-1310	50 MMFD. COMP.		R3	63-773	180 M OHM	1/4 W.	7	S10284	6 MC. ANTENNA COIL ASSEM.	H		BROADCAST DET. (ON GANG)
C10	22-162	.0001 MFD.	600 V.	R4	63-325	150 M OHM	1/4 W.	8	S10289	9 MC. " " "	K1		SHORTWAVE OSC. 6 MC.
C11	22-327	.02 MFD.	200 V.	R5	63-648	47 M OHM	1/4 W.	9	S10288	12 MC. " " "	K2		SHORTWAVE OSC. 9 MC.
C12	22-289	50 MMFD.	600 V.	R6	63-592	33 M OHM	1/4 W.	10	S10296	15 MC. " " "	K3		SHORTWAVE OSC. 12 MC.
C13	22-829	.05 MFD.	200 V.	R7	63-600	2.2 MEGOHM	1/4 W.	11	S10297	18 MC. " " "	K4		SHORTWAVE OSC. 15 MC.
C14	22-826	.01 MFD.	200 V.	R8	63-761	10 M OHM	1/4 W.	12	S10281	6 MC. OSCILLATOR COIL ASSEM.	K5		SHORTWAVE OSC. 18 MC.
C15	22-1207	.07 MFD.	200 V.	R9	63-602	4.7 MEGOHM	1/4 W.	13	S10290	9 MC. " " "	L1		SHORTWAVE DET. 6 MC.
C16	22-887	.001 MFD.	600 V.	R10	63-583	1000 OHM	1/4 W.	14	S10285	12 MC. " " "	L2		SHORTWAVE DET. 9 MC.
C17	22-492	.002 MFD.	600 V.	R11	63-1265	VOLUME CONTROL		15	S10293	15 MC. " " "	L3		SHORTWAVE DET. 12 MC.
C18	22-953	.0002 MFD.	600 V.	R12	63-976	15 MEGOHM	1/4 W.	16	S10294	18 MC. " " "	L4		SHORTWAVE DET. 15 MC.
C19	22-470	.00015 MFD.	600 V.	R13	63-580	330 OHM	1/4 W.	17	S10295	BC. " " "	L5		SHORTWAVE DET. 18 MC.
C20	22-196	.01 MFD.	600 V.	R14	63-577	100 OHM	1/4 W.	18	85-312	AUTOMATIC BAND SWITCH	G1		WAVEROD TRIMMER (SEE NOTE.)
C21	22-448	.004 MFD.	600 V.	R15	63-594	68 M OHM	1/4 W.	19	85-322	SHORTWAVE LOOP SWITCH	MA		WAVEROD COMPENSATOR (SEE NOTE.)
C22	22-1307	40 MFD. ELECTROLYTIC	150 V.	R16	63-271	1 MEGOHM	1/4 W.	20	95-862	1ST I.F. TRANSFORMER	M1		SHORTWAVE ANT. 19 M.
C23	OR	20 MFD. "	150 V.	R17	63-941	390 OHM WIREWOUND	1 W.	21	95-863	2ND I.F. TRANSFORMER	M2		SHORTWAVE ANT. 25 M.
C24	22-1330	40 MFD. "	25 V.	R18	63-1264	THREE SECTION CANDOHM		22	85-313	TONE CONTROL SWITCH	M3		SHORTWAVE ANT. 31 M.
C25	22-869	.05 MFD.	400 V.	R19	63-1156	1800 OHM	1/2 W.	23	85-311	POWER CHANGE-OVER SWITCH	NOTE:		RIMMERS M4 M5 ARE MOUNTED ON STRIP 22-1230

MODEL 7G605 SPEAKER 49-501 5¼

BATTERY PACK Nº Z985

110 V. A.C.-D.C. - BATTERY PACK
UNIVERSAL PORTABLE
I.F. FREQUENCY 455 KC.
7 TUBE SUPERHETERODYNE
CHASSIS Nº 7B04 6 BAND
ZENITH RADIO CORPORATION
CHICAGO, ILL.

Parts List and Schematic Diagram for Chassis 7B04