Models 105, 105A

Radio Receivers

Specifications

Frequency Range:

Purple: 120 to 375 K.C.—Long Wave
Buff—.525 to 1.835 megs.—Broadcast
Green—1.755 to 5.85 megs.—Police
Red—5.7 to 18.6 megs.—Short Wave

I.F.:

465 K.C.

Tubes:

Type	Function
6K7	R.F. Amplifier
6A8	1st Detector
6C5	Oscillator
6K7	1st I.F. Amplifier
6K7	2nd I.F. Amplifier
6H6	2nd Detector and A.V.C.
6F5	1st A.F. Amplifier
2-6F6	2nd A.F. Push-Pull Amplifiers
5Z3	Power Rectifier

Power Supply:

Model 105: 105 to 125 volts A.C. 60 cycles
Model 105A: 105 to 125 volts A.C. 25 cycles

A.V.C.:

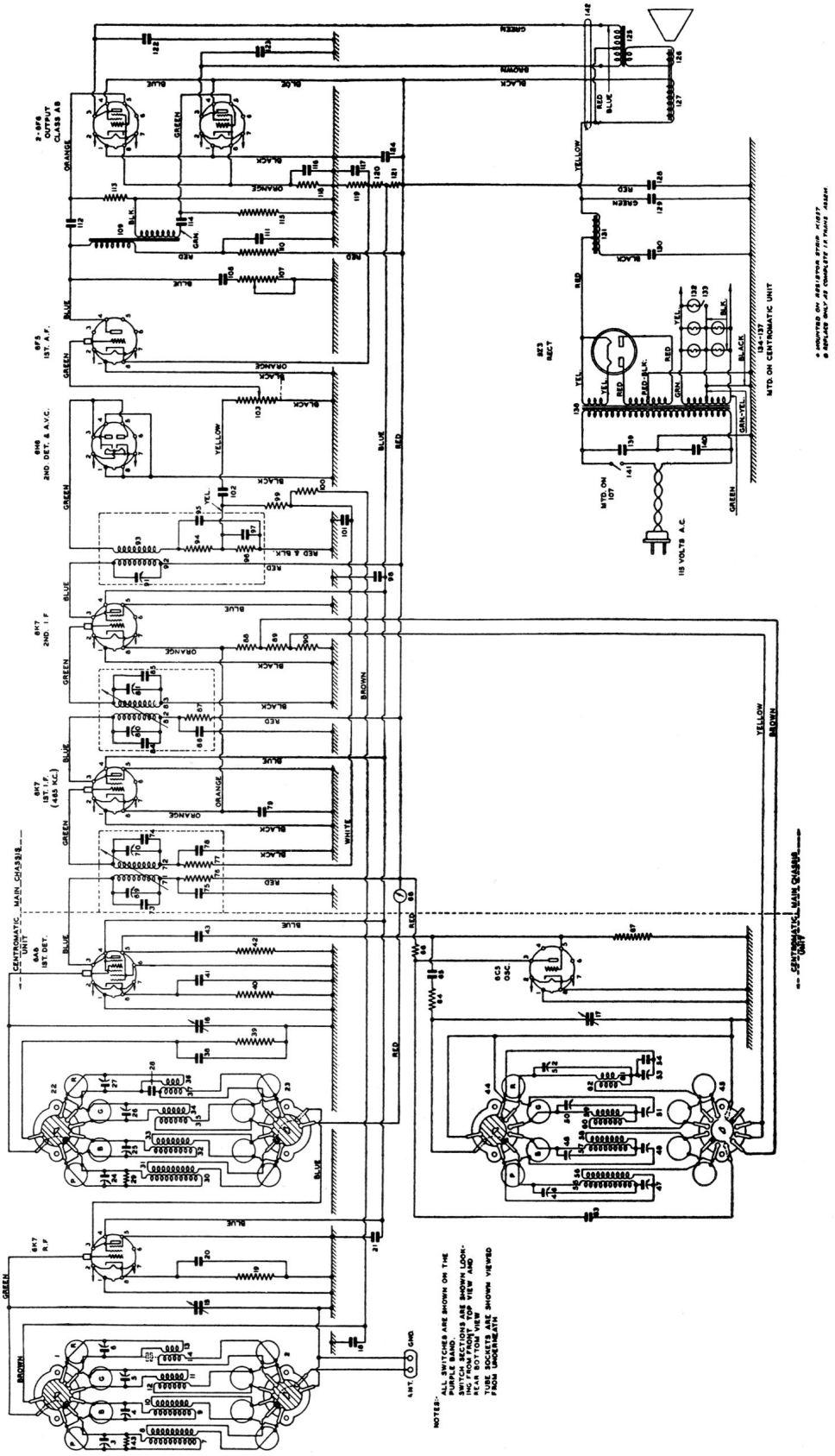
On 6K7, R.F. and 1st I.F., to volume control through item 102.

Controls:

Left to Right: volume control; wave change switch; tuning control; selectivity control, bass compensation, and A.C. switch.

Cabinet:

Console type.



Schematic diagram Model 105 — 105-A Receiver

REPLACEMENT PARTS LIST

Schematic Designation	Value and Description	Part No.
1	Antenna switch, grid section	—
2	Antenna switch, primary section	—
3	Capacitor, variable; 3-25 mmf	K-1458-6
4	Capacitor, variable; 3-25 mmf	K-1458-6
5	Capacitor, variable; 3-25 mmf	K-1458-6
6	Capacitor, variable; 3-25 mmf	K-1458-6
7	Ant. R.F. trans., secondary	Purple band RC-9580-A
8	Ant. R.F. trans., primary	
9	Ant. R.F. trans., secondary	Buff band RC-9577A
10	Ant. R.F. trans., primary	
11	Ant. R.F. trans., secondary	Green band RC-9574-A
12	Ant. R.F. trans., primary	
13	Ant. R.F. trans., secondary	Red band RC-9571-A
14	Ant. R.F. trans., primary	
15	Three gang Capacitor; 448 mmf. max	K-1824-1
16		
17		
18	Capacitor; .05 mf. 175 volts.	K-1831-8
19	Resistor; 300 ohms; ½ watt.	K-2226-20
20	Capacitor; .05 mf; 175 volts.	K-2227-8
21	Capacitor; .05 mf; 175 volts.	K-2227-8
22	R.F. amp. switch; grid section	—
23	R.F. amp. switch; plate section	—
24	Capacitor, variable, 1.5-10 mmf	K-1458-5
25	Capacitor, variable, 1.5-10 mmf	K-1458-5
26	Capacitor, variable, 1.5-10 mmf	K-1458-5
27	Capacitor, variable, 3-25 mmf	K-1458-6
28	Capacitor, fixed; 6 mmf	K-1838
29	Resistor, 1/10 meg; ½ watt	K-2226-5
30	R.F. transformer, secondary	Purple band RC-9581-A
31	R.F. transformer, primary	
32	R.F. transformer, secondary	Buff band RC-9578-A
33	R.F. transformer, primary	
34	R.F. transformer, secondary	Green band RC-9575-A
35	R.F. transformer, primary	
36	R.F. transformer, secondary	Red band RC-9572-A
37	R.F. transformer, primary	
38	Capacitor; .05 mf; 175 volts	K-1831-8
39	Resistor; 5000 ohms; ½ watt	K-2226-12
40	Resistor; 300 ohms; ½ watt.	K-2226-20
41	Capacitor; .05 mf; 175 volts.	K-2227-8
42	Resistor; 1/10 meg; ½ watt.	K-2226-5
43	Capacitor; mica; 65 mmf.	K-1611-8
44	Oscillator switch, grid section	—
45	Oscillator switch, plate section	—
46	Capacitor, 10-35 mmf	dual K-1835-1
47	Capacitor, 6-150 mmf	
48	Capacitor, 5-25 mmf	dual K-1835-2
49	Capacitor, 300-600 mmf	
50	Capacitor, 3-15 mmf.	dual K-1835-4
51	Capacitor, 800-1600 mmf	
52	Capacitor, 1.5-10mmf	dual K-1835-3
53	Capacitor, 800-1600 mmf	
54	Capacitor, 2000 mmf; mica.	K-1952-7
55	Oscillator grid coil	Purple band RC-9582-A
56	Oscillator plate coil	
57	Oscillator grid coil	Buff band RC-9579-A
58	Oscillator plate coil	
59	Oscillator grid coil	Green band RC-9576-A
60	Oscillator plate coil	
61	Oscillator grid coil	Red band RC-9573-A
62	Oscillator plate coil	
63	Capacitor, .05 mf; 175 volts.	K-1831-8
64	Resistor, 50 ohms ½ watt.	K-2226-25
65	Capacitor, 65 mmf. mica.	K-1611-8
66	Resistor, 5000 ohms, 1 watt.	K-2363-1
67	Resistor, 50,000 ohms, ½ watt	K-2226-6
68	Tuning Meter (Res. 1500 ohms)	K-1935-1
69	Capacitor; 250-350 mmf	dual CS-9521
70	Capacitor, 250-350 mmf	
71	1st I.F. trans. primary	IC-9525-A
72	1st I.F. trans. secondary	
73	Capacitor, 100 mmf. mica.	K-1611-2
74	Capacitor, 100 mmf. mica.	K-1611-2
75	Capacitor .005 mf. 350 volts	K-2228-5
76	Resistor, 5000 ohms, ½ watt	K-2226-12
77	Resistor, 1/10 meg. ½ watt.	K-2226-5
78	Capacitor, .005 mf. 350 volts	K-2228-5
79	Capacitor, .05 mf. 175 volts.	K-2227-5

REPLACEMENT PARTS LIST—continued

Schematic Designation	Value and Description	Part No.
80	Capacitor, 250-350 mmf.	dual CS-9521
81	Capacitor, 250-350 mmf.	
82	2nd I.F. trans. primary.	IC-9525-A
83	2nd I.F. trans secondary.	
84	Capacitor, 100 mmf. mica.	K-1611-2
85	Capacitor, 100 mmf. mica.	K-1611-2
86	Capacitor, .005 mf. 350 volts	K-2228-8
87	Resistor, 5000 ohms, ½ watt	K-2226-12
88	Resistor, 1000 ohms, ½ watt	K-2226-16
89	Resistor, 1000 ohms, ½ watt	K-2226-16
90	Resistor, 4000 ohms, ½ watt	K-2226-28
91	Capacitor, 25-100 mmf, var.	K-1368-6
92	3rd I.F. trans. primary.	K-1927-1
93	3rd I.F. trans. secondary.	
94	Resistor, 1/10 meg, ½ watt.	K-6222-5
95	Capacitor, 50 mmf, mica.	K-1611-1
96	Resistor, ½ meg. ½ watt.	K-2226-3
97	Capacitor 100 mmf, mica.	K-1611-2
98	Capacitor, .05 mf. 175 volt.	K-2227-8
99	Resistor 1 meg. ½ watt.	K-2226-2
100	Resistor, ¼ meg. ½ watt.	K-2226-4
101	Capacitor, .05 mf. 175 volt.	K-2227-8
102	Capacitor, .02 mf. 350 volt.	K-2228-7
103	Volume control, 1 meg. var.	K-1649-3
104-106	Inclusive omit.	—
107	Tone control ¼ meg. var.	K-1923-2
108	Capacitor, .02 mf. 350 volt.	K-2228-7
109	A.F. Transformer.	K-1881-1
110	Resistor, 5000 ohms, ½ watt	K-2226-12
111	Capacitor, .02 mf. 350 volt.	K-2228-7
112	Capacitor, .02 mf. 350 volt.	K-2228-7
113	Resistor, ½ meg. ½ watt.	K-2226-3
114	Capacitor, .02 mf. 350 volt.	K-2228-7
115	Resistor, ½ meg. ½ watt.	K-2226-3
116	Capacitor, 10 mf. (D.E.) 25 volt.	K-1892
117	Capacitor, 10 mf. (D.E.) 25 volt.	
118	Divider resistor, 400 ohms, tapped vitreous.	K-1886
119	Divider resistor, 100 ohms, tapped vitreous.	
120	Divider resistor, 6000 ohms, tapped vitreous.	
121	Divider resistor, 6700 ohms, tapped vitreous.	
122	Capacitor, .002 mf. 350 volt.	K-2228-2
123	Capacitor .002 mf. 350 volt.	K-2228-2
124	Capacitor, .05 mf. 350 volt.	K-2228-8
125	Output transformer.	K-1858-1
126	Voice coil & diaphragm assembly (3.5 ohms).	102283
127	Field coil (1875) ohms.	K-1860-1
128	Capacitor W.E. (Regulating) 18 mf 300 volt.	K-1856
129	Capacitor filter, 8 mf, 450 volts.	K-1855
130	Capacitor filter, 8 mf. 450 volts.	K-1855
131	Filter choke.	K-1878-1
132	Dial lamp 3.2 volt. (Tuning meter).	K-1024-5
133	Switch for tuning meter Light. Part of.	K-1986
134	Inclusive Dial lamps 3.2 volt	K-1024-5
135		
136		
137		
138	Power Transformer 60 cycles	K-1851-1
138	Power Transformer 25 cycles	K-1851-2
139	Capacitor (A.C. Line) .025 mf. 1100 volt.	K-1750
140	Capacitor (A.C. Line) .025 mf. 1100 volt.	
141	A.C. on-off switch part of.	K-1923-2
142	Cable for loudspeaker.	K-1866-1

MISCELLANEOUS:—(Not included in schematic designations)

Complete turret assembly (centromatic unit), including base, tuning gang, 3 tube sockets, 3 coil shields, 3-coil switch sections	K-1819-2
Coil-switch assembly-ant. R.F. Trans.	K-1818-1
Coil-switch assembly R.F. Amplifier.	K-1818-2
Coil-switch assembly-oscillator.	K-1818-3
Shield cans for coil-switch sections (unpainted).	CV-9586
Antenna terminal strip.	K-1916-1
Dial Lamp Sockets.	K-1428-6
Dial Assembly complete (incl. square housing assembly).	K-1844-1
Dial indicator disc.	SI-9524
Dial band shutter.	DC-953-A
Washer (.01") (Between dial indicator & shutter).	K-1945
Wave Change switch shaft only.	SH-9520
Bronze Cable Assembly (21-¾" long) (Cut to length).	K-1928
Spring retainers.	FL-952
Spring.	SP-9514
Main Drive Disc.	DC-951
Set screw for drive disc (10/32 x 5/16")	K-1849-5
Spring buttons (trimounts).	SP-1005
Pulley assembly (eccentric).	PU-958-A
Reduction drive assembly (including shaft).	K-1815
Knob for tuning or selectivity control (large base portion only) (with set screw).	K-1278-1
Knob for tuning (vernier) or tone control & A.C. on-off switch (with set screw).	K-1278-3

REPLACEMENT PARTS LIST—continued

Value and Description	Part No.
Knob for wave change switch	K-1278-5
Knob for volume control	K-1278-4
Retaining spring cover for K-1815 reduction drive	K-1988
Set screw for K-1278-1 knob (per doz.)	K-1521-5
Set screw for K-1278-3 (per doz.)	K-1521-9
Set screw for K-1278-5 (per doz.)	K-1521-7
Grid clips for metal tubes	K-1821
Tube sockets (octal base)	K-1924-1
Tube sockets (four contact, rectifier)	K-1194-2
Screw for chassis mounting	K-1122-12
Washer for chassis mounting	K-1129
Tuning wrench	K-836
Replacement tube for K-836	K-836-A
1st I.F. Transf. assy. (variable) mounted complete with trimmers, but less can	K-1875-1
2nd I.F. Transf. assy. (variable) mounted complete with trimmers but less can	K-1875-2
Washer for dial	K-1206-13
Rubber wheels only (friction drive)	BG-9514
Shield Cans for variable I.F. trans. assemblies	K-1781-1
Lever & Bracket Assembly for variable selectivity control	K-1940
Cam shaft assembly for variable selectivity control	K-1946
Cable for variable selectivity control (48" long)	K-1694-5
Bowser Cleats for cable tension (var. sel. control)	HP-958
Hook for variable selectivity control cable (on lever)	K-1930

REALIGNING INSTRUCTIONS

REALIGNING DETAILS:—

I. F. ALIGNMENT:—

(*a*) Set Signal Generator to 465 K.C., and connect output through a 0.1 mf. condenser to the grid cap of the first detector, type 6A8.

(*b*) Turn expander control all the way in a counter-clockwise direction. (Most selective position). (This is very important. Two peaks will be obtained if alignment is attempted with the control in the "broad" position. These peaks can be used for alignment checking only with oscilloscope equipment similar to what is used in the original factory alignment.)

(*c*) Align trimmers, items 69, 70, 80, 81 and 91 for maximum output.

(*d*) Reduce the output from the oscillator to as low a value as will give an output reading, and check the adjustments. All trimmers should peak properly.

PURPLE BAND:—

(*a*) Connect signal generator to antenna terminal through a 200 mmf., (0.002 mf.) mica capacitor. Connect ground terminal to ground.

(*b*) Set signal generator and receiver to 350 K.C., and adjust trimmers, items 46, 24 and 3, for maximum output.

(*c*) Set signal generator and set to 140 K.C., and adjust lag capacitor 47, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 350 K.C., and check alignment.

BROADCAST, OR BUFF BAND:—

(*a*) With signal generator still connected as above, set generator and receiver to 1600 K.C., with wave-change switch in broadcast position.

(*b*) Adjust trimmers, items 48, 25 and 4, for maximum output.

(*c*) Set generator and receiver for 600 K.C., and adjust lag capacitor, item 49, at the same time slowly rocking the tuning condenser back and forth until the point of maximum sensitivity is obtained.

(*d*) Go back to 1600 K.C., and check alignment.

GREEN BAND:—

(*a*) Connect signal generator to antenna terminal of receiver through a 400-ohm Carbon Resistor. Connect receiver ground terminal to ground. Put wave-change switch in green band position.

(*b*) Set generator and receiver to 5000 K.C., and adjust trimmers, items 50, 26 and 5, for maximum output.

(*c*) Set generator and receiver to 2000 K.C., and adjust lag capacitor, item 51, at the same time rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

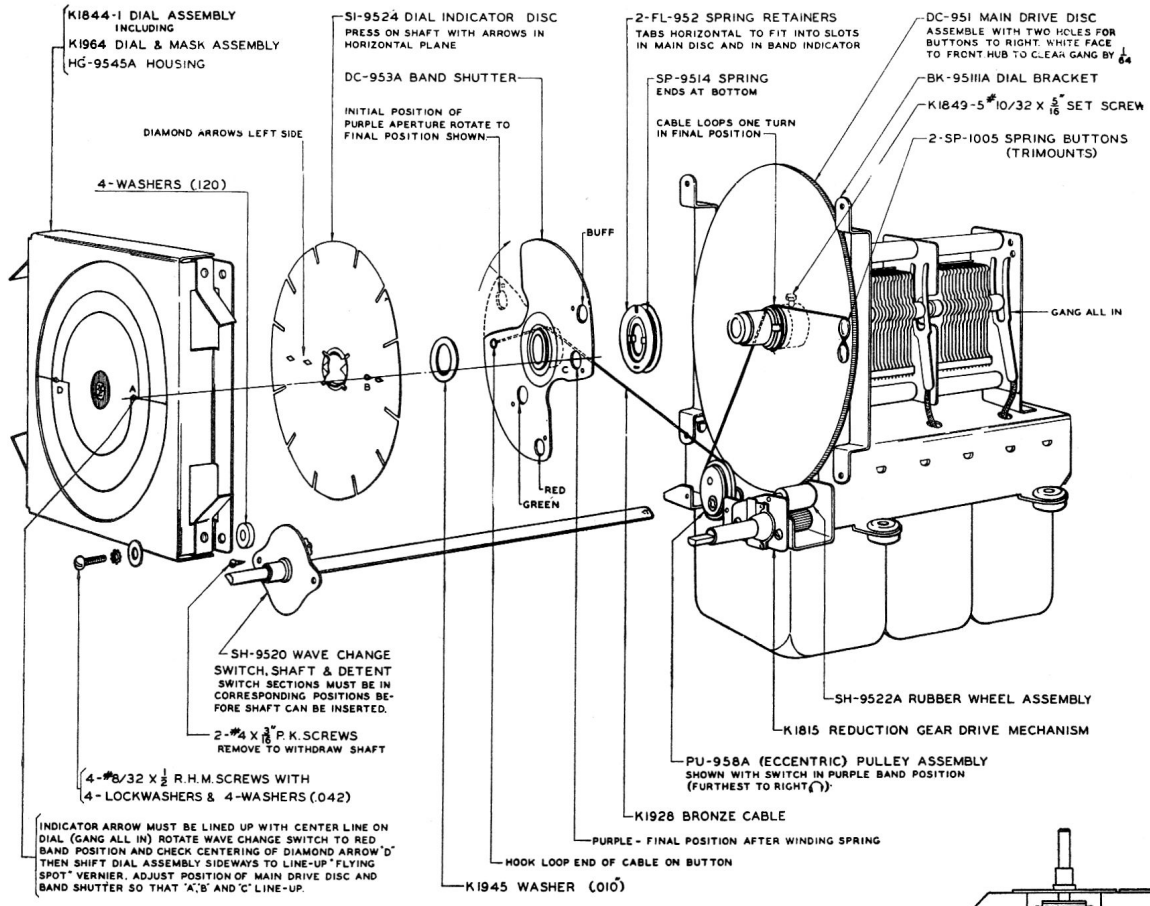
(*d*) Go back to 5000 K.C., and check the alignment.

RED BAND:—

(*a*) With generator still connected as for the green band, set wave-change switch for red band.

(*b*) Set signal generator and receiver to 18000 K.C., and adjust oscillator trimmer, item 52, to bring in maximum signal. Adjust trimmers, items 27 and 6, each in turn, at the same time slowly rocking the tuning capacitor back and forth until the point of maximum sensitivity is obtained.

(*c*) Set generator and receiver for 6500 K.C., and adjust the lag capacitor, item 53, at the same



Exploded View of Dial Assembly Parts.

REALIGNMENT OF DIAL

ASSEMBLY OF DIAL FOR REALIGNMENT:—If it is necessary in service work to disturb the dial mechanism, the following directions should be followed in re-assembly and in adjusting the dial for correct dial scale alignment.

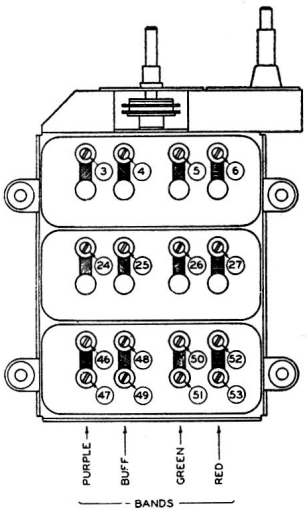
(1) For complete re-assembly first turn the capacitor gang all in. Place the main cast aluminum drive gear on the gang drive shaft with the painted face towards the front of the set and with the set screw facing upwards. Hub of main disc should clear gang by 1/64 . . . The disc should be located so that the two small holes with the spring buttons near its periphery are to the right.

(2) Next put on the assembly of spring and two spring retainers. The tabs on the spring retainer will fit into slots on the disc hub and on the hub of the butterfly shaped band shutter, which should be assembled next. The hooked ends of the spring should be below the disc hub and not above it. This ensures free movement of the bronze cable without fouling on the end of the spring.

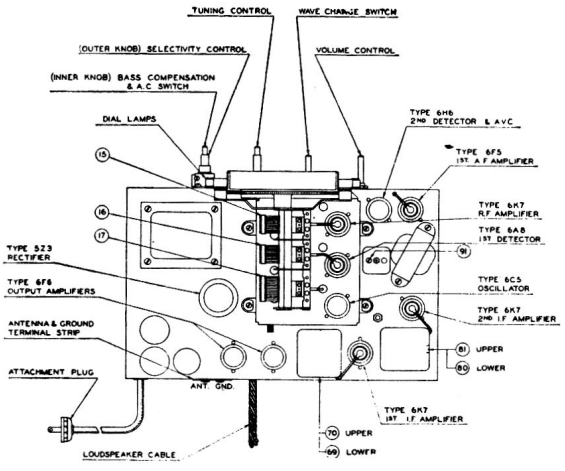
(3) The band shutter should be put on with the green and red colours on the right side.

(4) Then assemble the thin washer and press on the thin indicator shutter disc firmly with the arrows in a horizontal plane, and with the diamond-shaped ones to the left. A small amount of thin oil or vaseline can be used on the bearing surfaces.

(5) With the wave-change switch in the purple (long-wave) band position (farthest clockwise rotation) the eccentric pulley should have its axis pointing upward, slightly to the left of vertical.



Centromatic unit showing lower Realigning Positions.



Chassis Layout Model 105 Receiver showing realigning positions

ADJUSTMENT OF VARIABLE SELECTIVITY CONTROLS:—If, for any reason, the cable operating the variable I.F. transformers has been removed, or the transformers themselves replaced, re-adjustment will have to be made.

The stops, against which the coils come in the broad selectivity position (control farthest to the right and with tuning meter light off), are in the can and are fixed at the factory, and should under no condition be altered. The selectivity control should be turned all the way in a clockwise direction and the slack taken out of the cable by adjusting the cleats until the coils are just touching their stops.

Then turn the selectivity control to the left as far as it will go, and adjust the travel limit screw, located on the bracket that holds the selectivity control shaft at the front of the set, so that the shafts in the transformers and the control shaft on the front of the set come up against their stops at the same time.

VOLTAGE & CURRENT READINGS:—These readings were made on a production Model 105 chassis with tone control treble, volume control maximum, wave-change switch in the broadcast position, and the gang capacitor closed. Voltage readings may be duplicated with a Weston Model 663 Volt-Ohm-meter, or any other good voltmeter having a resistance of 1000 ohms per volt.

Current readings may be duplicated on any good analyzer, such as the Weston Model 566 Analyzer, used with the Model 666-1A Adapter. Line voltage was 115 at time of test.

NOTE:—When taking current readings with the analyzer attachment, a 0.1 mf. capacitor should be connected between the grid of the tube being tested and ground, at the set, to prevent oscillation.

VOLTAGE AND CURRENT READINGS

TUBE	Heater Voltage (A.C.)	Plate Volts	Screen Volts	Cathode to Ground Volts	Screen Current M.A.	Plate Current	
						Normal Bias	Bias Red. 4.5 volts
Type 6K7 R.F. Amplifier	6.7	245	100	2.4	2.0	8.0	11
Type 6A8 1st Detector	6.7	210	90	3.5	6.0	7.0	10
Type 6C5 Oscillator	6.7	190	—	0	—	16.0	27
Type 6K7 1st I.F. Amplifier	6.7	245	100	8	0.4	1.75	3.0
Type 6K7 2nd I.F. Amplifier	6.7	250	100	8	0.25	1.9	3.2
Type 6H6 2nd Det. & A.V.C.	6.7	—	—	—	—	—	—
Type 6F5 1st Audio Amplifier	6.7	245	—	1.7	—	1.5	4.5
Type 6F6 Output	6.7	360	250	20	4.7	22	27
Type 6F6 Output	6.7	360	250	20	4.7	22	27
Type 5Z3 Power Rectifier	5.1	—	—	375 (D.C.)	—	—	—