

PHILCO

Model 38-690—Code 125

Alignment of Compensators

A. Viewing each instrument from the front, set the receiver and signal generator controls as follows:

1. Volume Control (Maximum)
2. Bass Control (Counter-Clockwise)
3. Magnetic Tuning Switch (Off)
4. Selectivity-fidelity control (Clockwise)
5. Set the remaining controls and adjust the compensators for maximum output as follows:

RANGE SWITCH POSITION	RECEIVER DIAL	SIGNAL GENERATOR DIAL	SIGNAL GENERATOR CONNECTION	ADJUST COMPENSATORS IN ORDER	NOTES
1	600 K.C.	470 K.C.	Grid 1st 6K7G-I.F.	(70B), (70A), (49B), (49A), (48B), (48A)	Insert .1 mfd. cond. in series with generator output lead
1	600 K.C.	470 K.C.	Grid 6A8G-Det.	(47B), (47A)	"
1	600 K.C.	470 K.C.	"	Turn Selectivity-fidelity control counter-clockwise and check for two equal peaks (Note "A").	
1	1550 K.C.	1550 K.C.	Red & Black Terminals Ant.	(40), (22B), (22A)	Remove .1 mfd cond. from generator output lead
1	580 K.C.	580 K.C.	"	(39)	Roll Tuning Condenser (Note "B")
1	1550 K.C.	1550 K.C.	"	(40), (22B), (22A)	
5	18 M.C.	18 M.C.	"	(40B), (20), (6)	Note B. Check image at 17.060
4	11 M.C.	11 M.C.	"	(40B)	
3	7.0 M.C.	7.0 M.C.	"	(39A)	
2	4.5 M.C.	4.5 M.C.	"	(40A)	
5	18 M.C.	18 M.C.	"	(40C), (20), (6)	Roll Tuning Condenser (Note "B")

MAGNETIC TUNING CIRCUIT ADJUSTMENT

a. Set the Magnetic Tuning switch in the "out" position (counter-clockwise).

b. Volume control maximum (extreme clockwise).

c. Turn Treble-Selectivity control to the Selective position (extreme clockwise).

d. Now turn the signal generator indicator to the 1000 K. C. mark and adjust the "Attenuator" control for a weak signal. Then adjust the receiver dial for maximum output at this frequency.

NOTE: The receiver dial **MUST** be tuned very accurately to the 1000 K. C. signal in order to make the following adjustments correctly.

e. After adjusting the receiver dial, turn the Magnetic Tuning Switch "on". Advance the "Attenuator" and "Multiplier" controls of the signal generator for a strong signal.

f. Now, turn compensator 85B slightly to the right or left (about ¼ turn) and proceed with adjustment "g".

g. Adjust compensator 77A and 85A for minimum-output. Now set the "Attenuator" and "Multiplier" controls for a weak signal; then re-adjust compensator 85B for maximum output.

h. The above adjustments are now checked for accuracy as follows:

Frequency Test:

With the 1000 K. C. signal tuned for maximum output turn the Magnetic Tuning control back and forth; that is, from the "out" to "in" position. The reading of the output meter should not change in either position. If the output meter reading changes, the above magnetic tuning circuit adjustments should be repeated.

A further check on the magnetic tuning adjustment is to very carefully tune in a broadcasting station and then turn the magnetic tuning switch from the "out" to the "in" position. With the switch in either position, the tone of the station should not change. If a change of tone or hiss develops repeat the above Magnetic Tuning Adjustments.

Sensitivity Test:

1. To check the magnetic tuning circuit for sensitivity, turn the magnetic tuning switch to the "off" position, and tune in the 1000 K. C. signal. Then adjust the "attenuator" control of the signal generator for a good audible signal,—approximately 20 volts on the output meter.

2. Now detune the signal (first above and then below the 1000 K. C. mark) to a point at which the signal is weakly heard. At each point turn the magnetic tuning control "ON". When the control is turned "ON" the signal should return to normal output strength. If the magnetic tuning circuit does not pull the signal into resonance, compensators 77A and 85A should be carefully readjusted.

NOTE "A"—Slowly shift signal generator indicator between 460 and 480 K. C. As the indicator is turned, two peaks will be noted on the Output Meter; one about 465 K. C. and the other about 475 K. C. These peaks should give the same deflection or reading on the output meter. If the peaks are unequal, Compensator 79 A must be slightly readjusted to the right or left (not more than 1/4 of a turn) until the peaks are equalized. Each time the compensator is set in another position, rotate the signal generator through the 460 or 480 K. C. range and note the reading of each peak. This adjustment is used to compensate for slight differences between peaks. If the compensator must be turned more than 1/4 of a turn in either direction to equalize the peaks, all padders should be carefully readjusted as given under "Intermediate Frequency Circuit" adjustment procedure.

NOTE "B"—When adjusting the low frequency compensator of Range 1 (Broadcast) or the antenna and R. F. compensators of the high frequency tuning range, the receiver Tuning Condenser must be adjusted (rolled) as follows: First tune the compensator for maximum output, then vary the tuning condenser of the receiver for maximum output about the frequency dial mark being used. Now turn the compensator slightly to the right or left and vary the receiver tuning condenser for maximum output. If the out reading increases, turn the compensator in the same direction a trifle more, and again vary the tuning condenser for maximum output. If the output decreases, set the compensator in the opposite direction. This procedure of first setting the compensator and then varying the tuning condenser is continued until there is no further gain in output reading.

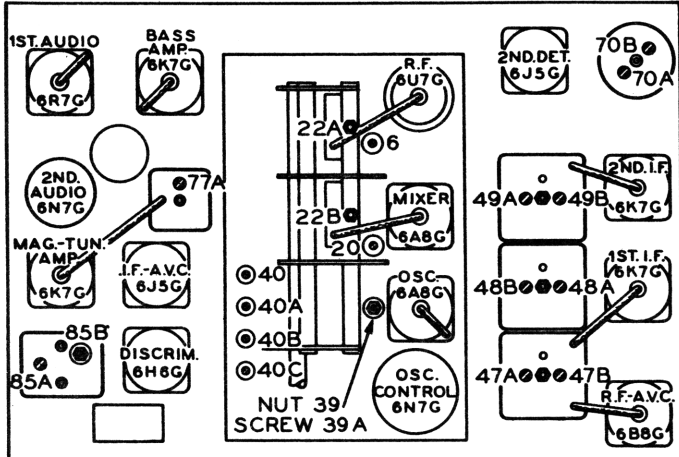


FIG. 2 COMPENSATOR LOCATIONS (TOP OF CHASSIS)

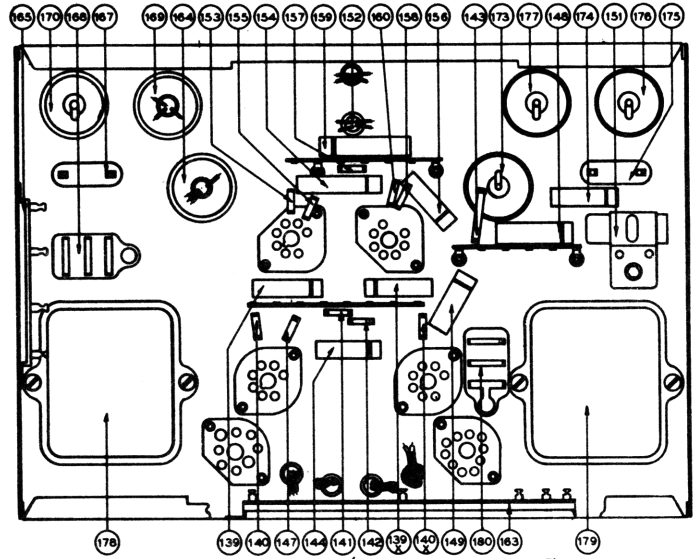


FIG. 3 PART LOCATIONS (UNDERSIDE OF POWER UNIT)

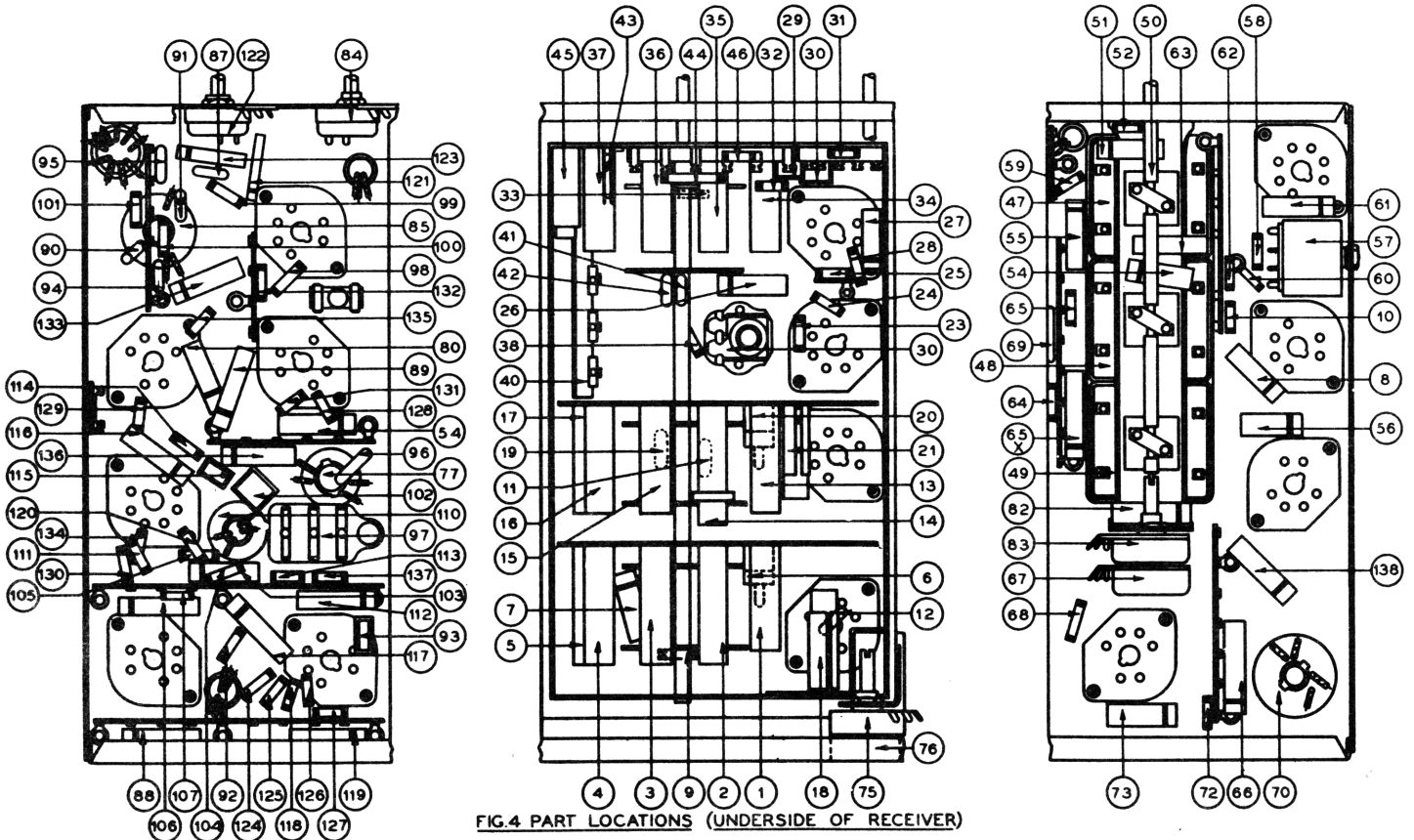
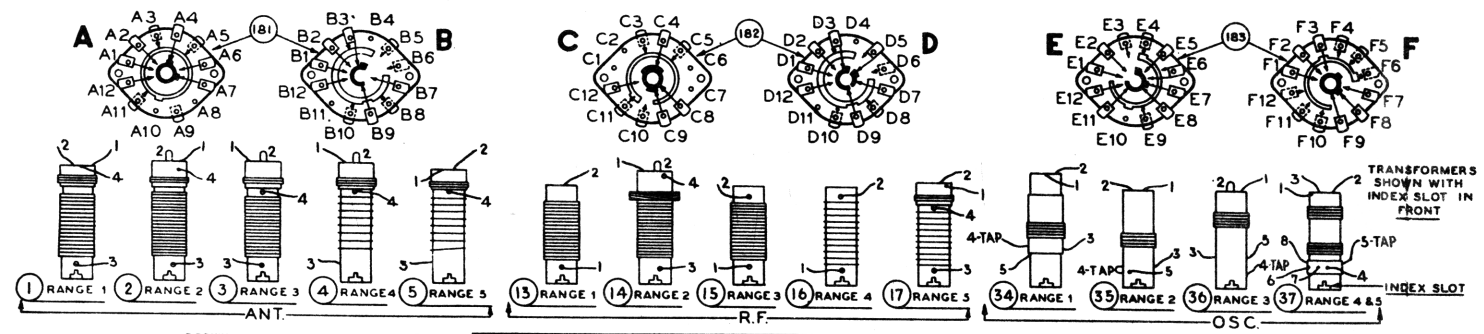
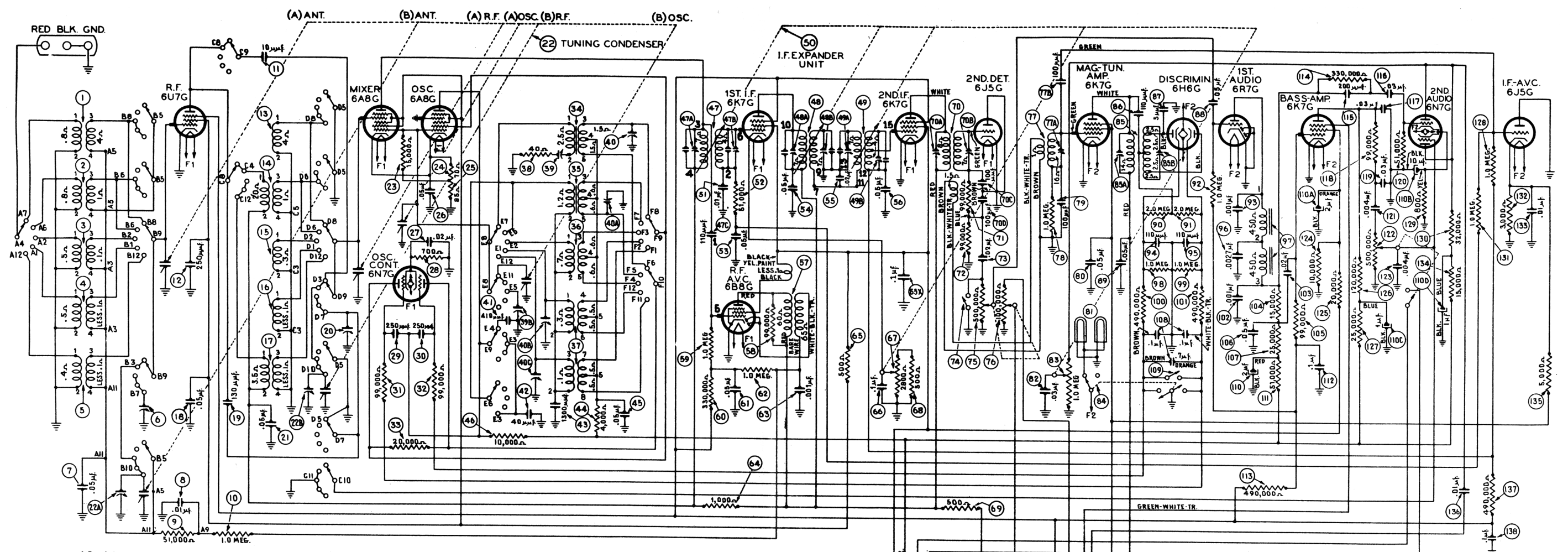
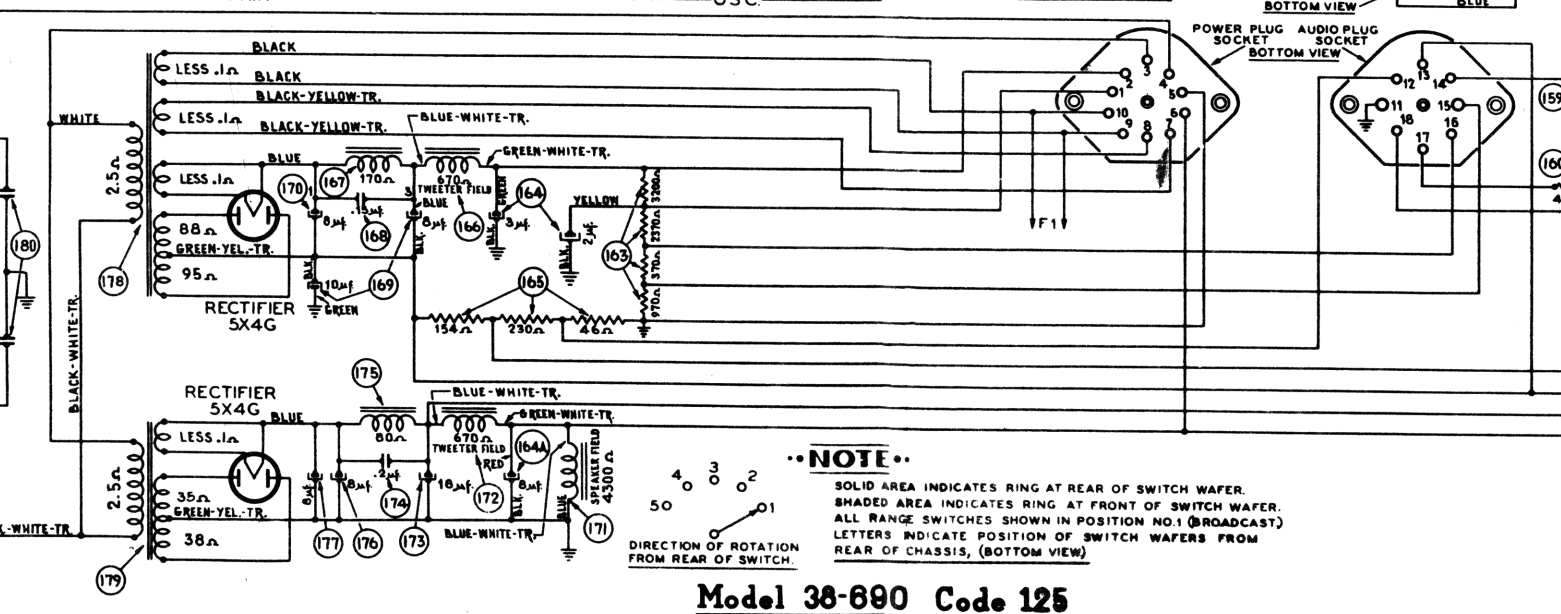
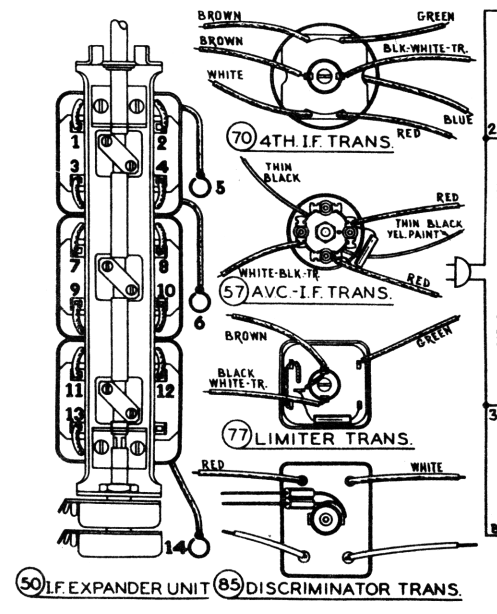


FIG. 4 PART LOCATIONS (UNDERSIDE OF RECEIVER)

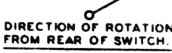


I.F. = 470 KC.



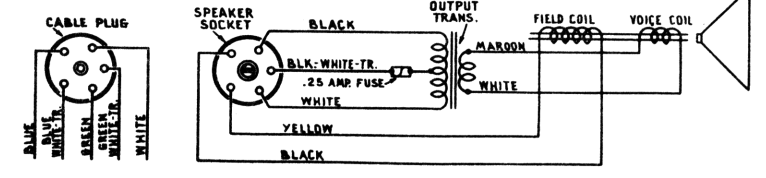
NOTE

SOLID AREA INDICATES RING AT REAR OF SWITCH WAFER.
 SHADED AREA INDICATES RING AT FRONT OF SWITCH WAFER.
 ALL RANGE SWITCHES SHOWN IN POSITION NO. 1 (BROADCAST).
 LETTERS INDICATE POSITION OF SWITCH WAFERS FROM REAR OF CHASSIS, (BOTTOM VIEW)



Model 38-690 Code 125

Fig 1



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REPLACEMENT PARTS

Schem. No.	Description	Part No.	Schem. No.	Description	Part No.
1.	Ant. Trans. (Range 1)	32-2615	94.	Condenser (110 mmf. mica)	30-1031
2.	Ant. Trans. (Range 2)	32-2616	95.	Condenser (110 mmf. mica)	30-1031
3.	Ant. Trans. (Range 3)	32-2617	96.	Condenser (.0027 mf. mica)	30-1096
4.	Ant. Trans. (Range 4)	32-2618	97.	10 K.C. filter coil	32-2752
5.	Ant. Trans. (Range 5)	32-2619	98.	Resistor (1.0 meg. 1/2 w)	33-510339
6.	Compensator (Range 5)	31-6084	99.	Resistor (1.0 meg. 1/2 w)	33-510339
7.	Condenser (.05 mf. tubular)	30-4519	100.	Resistor (490,000 ohms, 1/2 w)	33-449339
8.	Condenser (.01 mf. tubular)	30-4514	101.	Resistor (490,000 ohms, 1/2 w)	33-449339
9.	Resistor (51,000 ohms 1/2 watt)	33-351339	102.	Condenser (.001 mf. mica)	30-1007
10.	Resistor (1.0 meg. 1/2 watt)	33-510339	103.	Condenser (.02 mf. tubular)	30-4516
11.	Condenser (10 mmf. mica)	30-1065	104.	Resistor (15,000 ohms, 1/2 w)	33-315339
12.	Condenser (250 mmf. mica)	30-1032	105.	Resistor (39,000 ohms, 1/2 w)	33-399339
13.	R.F. Trans. (Range 1)	32-2620	106.	Condenser (.05 mf. tubular)	30-4518
14.	R.F. Trans. (Range 2)	32-2621	107.	Resistor (25,000 ohms, 1/2 w)	33-325339
15.	R.F. Trans. (Range 3)	32-2622	108.	Condenser (.1 - .1 - .7 mf.)	30-4542
16.	R.F. Trans. (Range 4)	32-2623	109.	A.F.C. shorting switch (Part of Auto. Tuner-See Bulletin 273)	45-2330
17.	R.F. Trans. (Range 5)	32-2624	110.	Electrolytic Cond. (2-2-1-1-10 mf)	30-2247
18.	Condenser (.05 mf. tubular)	30-4123	111.	Resistor (51,000 ohms, 1/2 w)	33-449339
19.	Condenser (130 mmf. mica)	30-1036	112.	Condenser (.1 mf. tubular)	30-4499
20.	Compensator	31-6084	113.	Resistor (490,000 ohms, 1/2 w)	33-449339
21.	Condenser (.05 mf. tubular)	30-4123	114.	Resistor (330,000 ohms, 1/2 w)	33-433339
22.	Tuning Condenser	31-2036	115.	Condenser (200 mmf mica)	30-1047
23.	Resistor (15,000 ohms, 1/2 watt)	33-315339	116.	Condenser (.03 mf. tubular)	30-4449
24.	Resistor (70 ohms, 1/2 watt)	33-070339	117.	Condenser (.03 mf. tubular)	30-4449
25.	Resistor (85 ohms, 1/2 watt)	33-085339	118.	Resistor (99,000 ohms, 1/2 w)	33-399339
26.	Condenser (.05 mfd. tubular)	30-4444	119.	Condenser (.03 mf. tubular)	30-4449
27.	Condenser (.02 mfd. tubular)	30-4215	120.	Resistor (51,000 ohms, 1/2 w)	33-351339
28.	Resistor (700 ohms, 1/2 watt)	33-170339	121.	Condenser (.004 mf. tubular)	30-4334
29.	Condenser (250 mmf. mica)	30-1032	122.	Audio Bass Control and A.C. switch)	32-5247
30.	Condenser (250 mmf. mica)	30-1032	123.	Condenser (.004 mf. tubular)	30-4334
31.	Resistor (99,000 ohms, 1/2 watt)	33-399339	124.	Resistor (10,000 ohms, 1/2 w)	33-310339
32.	Resistor (99,000 ohms, 1/2 watt)	33-399339	125.	Resistor (20,000 ohms, 1/2 w)	33-320339
33.	Resistor (20,000 ohms, 1/2 watt)	33-320339	126.	Resistor (120,000 ohms, 1/2 w)	33-412339
34.	Osc. Trans. (Range 1)	32-2625	127.	Resistor (25,000 ohms, 1/2 w)	33-325339
35.	Osc. Trans. (Range 2)	32-2626	128.	Resistor (1.0 meg. 1/2 w)	33-510339
36.	Osc. Trans. (Range 3)	32-2627	129.	Resistor (800 ohms, 1/2 w)	33-180339
37.	Osc. Trans. (Ranges 4 & 5)	32-2628	130.	Resistor (32,000 ohms, 1/2 w)	33-332339
38.	Resistor (40 ohms, 1/2 watt)	33-040339	131.	Resistor (1.0 meg. 1/2 w)	33-510339
39.	Compensator (2 sections)	31-6100	132.	Resistor (3,000 ohms, 1/2 w)	33-230339
40.	Compensator (4 sections)	31-6200	133.	Condenser (.01 mf. tubular)	30-4169
41.	Condenser (410 mmf mica)	30-1089	134.	Resistor (15,000 ohms, 1/2 w)	33-315339
42.	Condenser (40 mmf mica)	30-1095	135.	Resistor (5,000 ohms, 1/2 w)	33-250339
43.	Condenser (1300 mmf mica)	31-6205	136.	Condenser (.01 mf. tubular)	30-4169
44.	Resistor (4,000 ohms, 1 watt)	33-240439	137.	Resistor (490,000 ohms, 1/2 w)	33-449339
45.	Condenser (.05 mfd. tubular)	30-4123	138.	Condenser (.1 mf. tubular)	30-4499
46.	Resistor (10,000 ohms, 1/2 watt)	33-310339	139.	Condenser (.1 mf. tubular)	30-4455
47.	1st I.F. Trans.	32-2772	139X.	Condenser (.1 mf. tubular)	30-4455
48.	2nd I.F. Trans.	32-2293	140.	Resistor (25,000 ohms, 1/2 watt)	33-325339
49.	3rd I.F. Trans.	32-2291	140X.	Resistor (25,000 ohms, 1/2 watt)	33-325339
50.	I.F. Expander Unit Assembly	38-9064	141.	Resistor (3,500 ohms, 1/2 w)	33-235339
51.	Condenser (.01 mf. tubular)	30-4514	142.	Resistor (3,500 ohms, 1/2 w)	33-235339
52.	Resistor (51,000 ohms, 1/2 watt)	33-351339	143.	Resistor (2,000 ohms, 1 watt)	33-220439
53.	Condenser (.05 mf. tubular)	30-4519	144.	Condenser (.004 mf. tubular)	30-4185
54.	Condenser (.05 mf. tubular)	30-4518	145.	Output Trans.	32-7905
55.	Condenser (.02 mf. tubular)	30-4516	146.	Cone & Voice Coil Assembly (W6 Speaker)	36-3647
56.	Condenser (.05 mf. tubular)	30-4519	147.	Resistor (85 ohms, 1/2 w)	33-085339
57.	1st A.V.C. I.F. Trans.	32-2769	148.	Condenser (.25 mf. tubular)	30-4134
58.	Resistor (99,000 ohms, 1/2 watt)	33-399339	149.	Condenser (.004 mf. tubular)	30-4185
59.	Resistor (1 meg. 1/2 watt)	33-510339	150.	Cone & Voice Coil Assembly (C B Speaker)	36-3654
60.	Resistor (330,000 ohms, 1/2 watt)	33-433339	151.	Condenser (1 mf.)	30-4538
61.	Condenser (.05 mf. tubular)	30-4519	152.	Input Trans.	32-7876
62.	Resistor (1.0 meg., 1/2 watt)	33-510339	153.	Resistor (99,000 ohms, 1/2 w)	33-399339
63.	Condenser (.001 mf. tubular)	30-4453	154.	Condenser (.02 mf. tubular)	30-4419
64.	Resistor (1,000 ohms, 1/2 watt)	33-210339	155.	Resistor (160,000 ohms, 1/2 w)	33-416339
65.	Resistor (500 ohms, 1/2 watt)	33-150339	156.	Condenser (.1 mf. tubular)	30-4499
65X.	Condenser (.1 mf. tubular)	30-4455	157.	Resistor (490,000 ohms, 1/2 w)	33-449339
66.	Condenser (.1 mf. tubular)	30-4499	158.	Resistor (1.0 meg. 1/2 w)	33-510339
67.	Potentiometer - dual (Contains 83)	33-5241	159.	Condenser (.3 mf. tubular)	30-4465
68.	Resistor (500 ohms, 1/2 watt)	33-150339	160.	Resistor (490,000 ohms, 1/2 w)	33-449339
69.	Resistor (500 ohms, 1 watt)	33-1213	161.	Audio Cable	41-3342
70.	4th I.F. Trans.	32-2765	162.	Power Cable	41-3340
71.	Resistor (99,000 ohms, 1/2 watt) Part of 70		163.	Resistor (4 sections - wire wound)	33-3323
72.	Resistor (99,000 ohms, 1/2 watt)	33-399339	164.	Electrolytic Condenser (3-2-8 mf.)	30-2249
73.	Condenser (.02 mf. tubular)	30-4516	165.	Resistor (3 sections - wire wound)	30-3324
74.	Audio Shorting Switch - Part of Automatic Tuner - See parts (6) and (16) Service Bulletin 273		166.	Field Coil, CB2 Speaker	36-3995
75.	Volume Control (dual)	33-5240	167.	Choke	32-7115
76.	Potentiometer - (Part of 75)		168.	Condenser (.15 mf. bakelite)	62878U
77.	Limiter Trans. (Magnetic Tuning Circuit)	32-2767	169.	Electrolytic Condenser (8-10 mf.)	30-2201
78.	Resistor (1.0 meg. 1/2 w (Part of 77))	33-510339	170.	Electrolytic Condenser (8 mf.)	30-2025
79.	Condenser (100 mmf. - Part of 77)		171.	Field (W6 speaker)	36-3782
80.	Condenser (.05 mf. tubular)	30-4444	172.	Field (CB2 speaker, (Same as 166))	
81.	Flood & Pilot lamps	34-2064	173.	Electrolytic Condenser (18 mf.)	30-2200
82.	Condenser (.03 mf. tubular)	30-4449	174.	Condenser (.2 mf. tubular)	30-4536
83.	Potentiometer (Part of 67)		175.	Choke	32-7056
84.	A.F.C. switch	42-1216	176.	Electrolytic Condenser (8 mf.)	30-2025
85.	Discrim. Trans. (Magnetic Tuning Circuit)	32-2661	177.	Electrolytic Condenser (8 mf.)	30-2025
86.	Condenser (110 mmf. - Part of 85)		178.	Power Transformer (115 v - 60 cycles)	32-7888
87.	Condenser (5 mmf. mica)	30-1097		Power Transformer (115 v-25 to 40 cycles)	32-7889
88.	Condenser (.05 mf. tubular)	30-4519		Power Transformer (115-230 v - 60 cycles)	32-7890
89.	Condenser (.05 mf. tubular)	30-4444	179.	Power Transformer (115 V-60 cycles)	32-7885
90.	Resistor (2.0 meg. 1/2 w)	33-520339		Power Transformer (115-25 to 40 cycles)	32-7886
91.	Resistor (2.0 meg. 1/2 w)	33-520339		Power Transformer (115-230V - 60 cycles)	32-7887
92.	Resistor (1.0 meg. 1/2 w)	33-510339	180.	Condenser (.015 mf. - .015 mf. bakelite)	37930D
93.	Condenser (.001 mf. mica)	30-1007	181.	Wave Switch (Ant.)	42-1354
			182.	Wave Switch (R.F.)	42-1355
			183.	Wave Switch (Osc.)	42-1356

* I.F. Expander Unit Assembly contains (47), (48), (49), (67), (82) and (83)