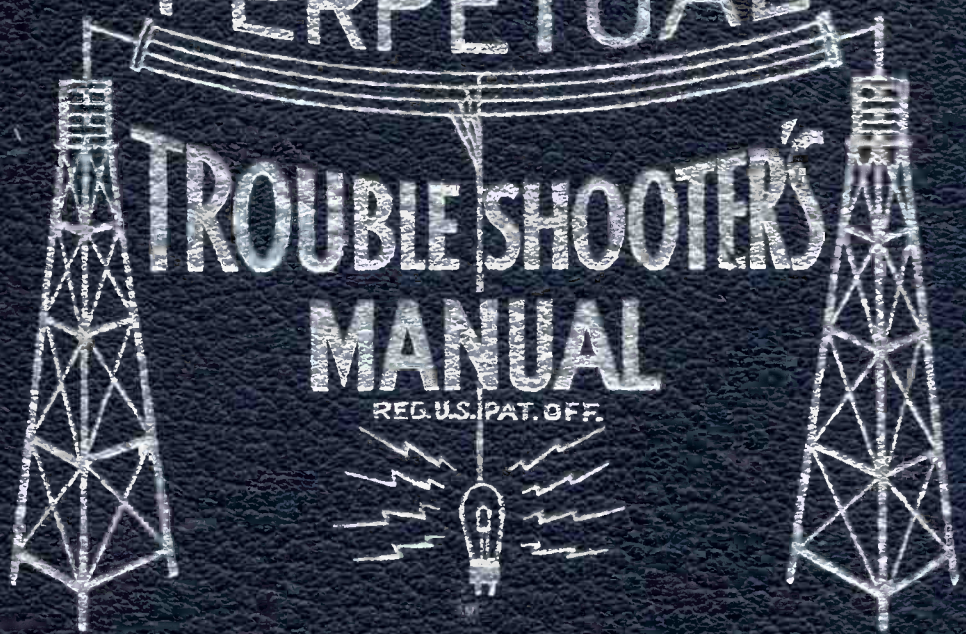
VOLUME XIII

PERPETUAL TROUBLE SHOOTER'S MANUAL

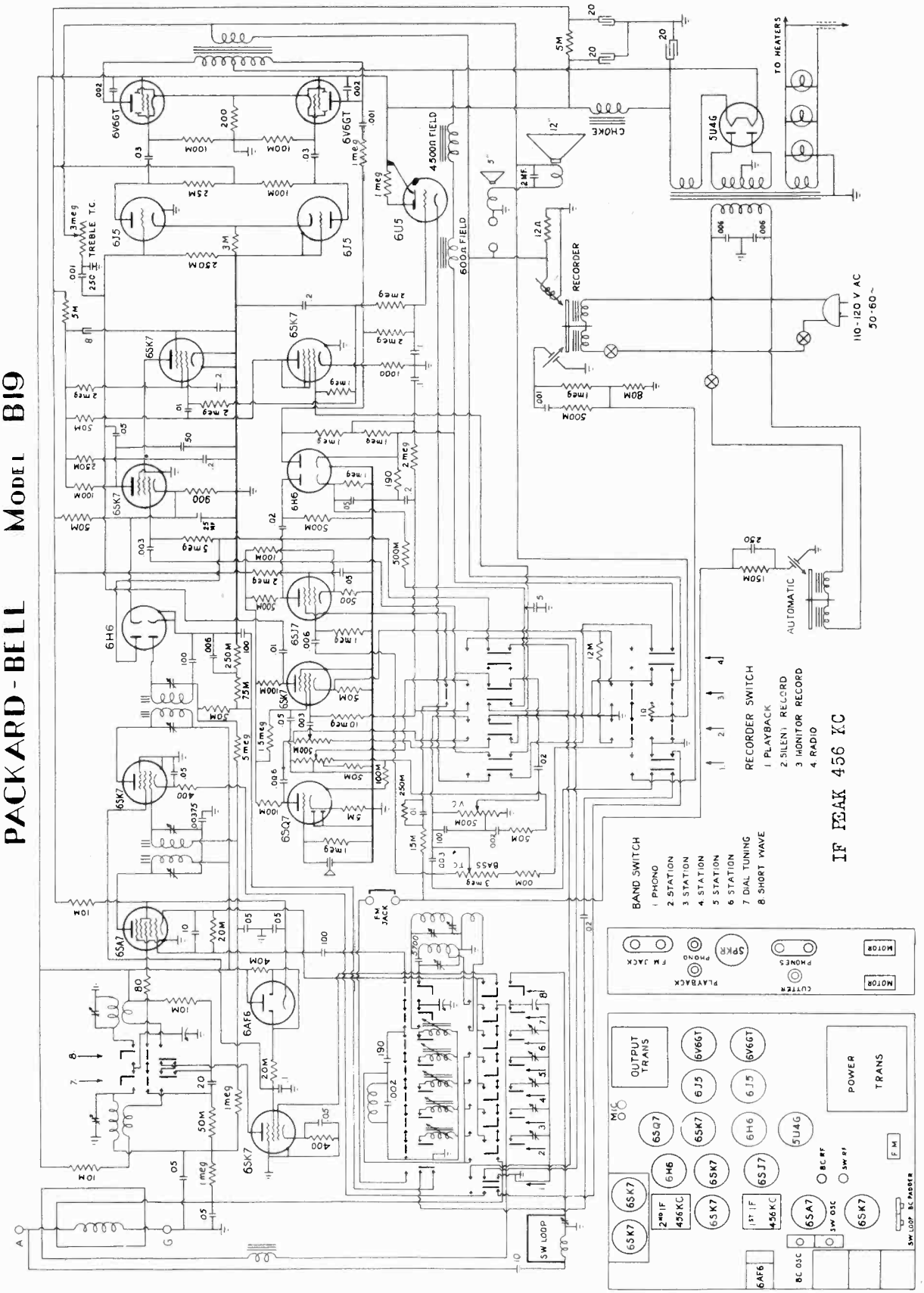
REG. U.S. PAT. OFF.



JOHN F. RIDER

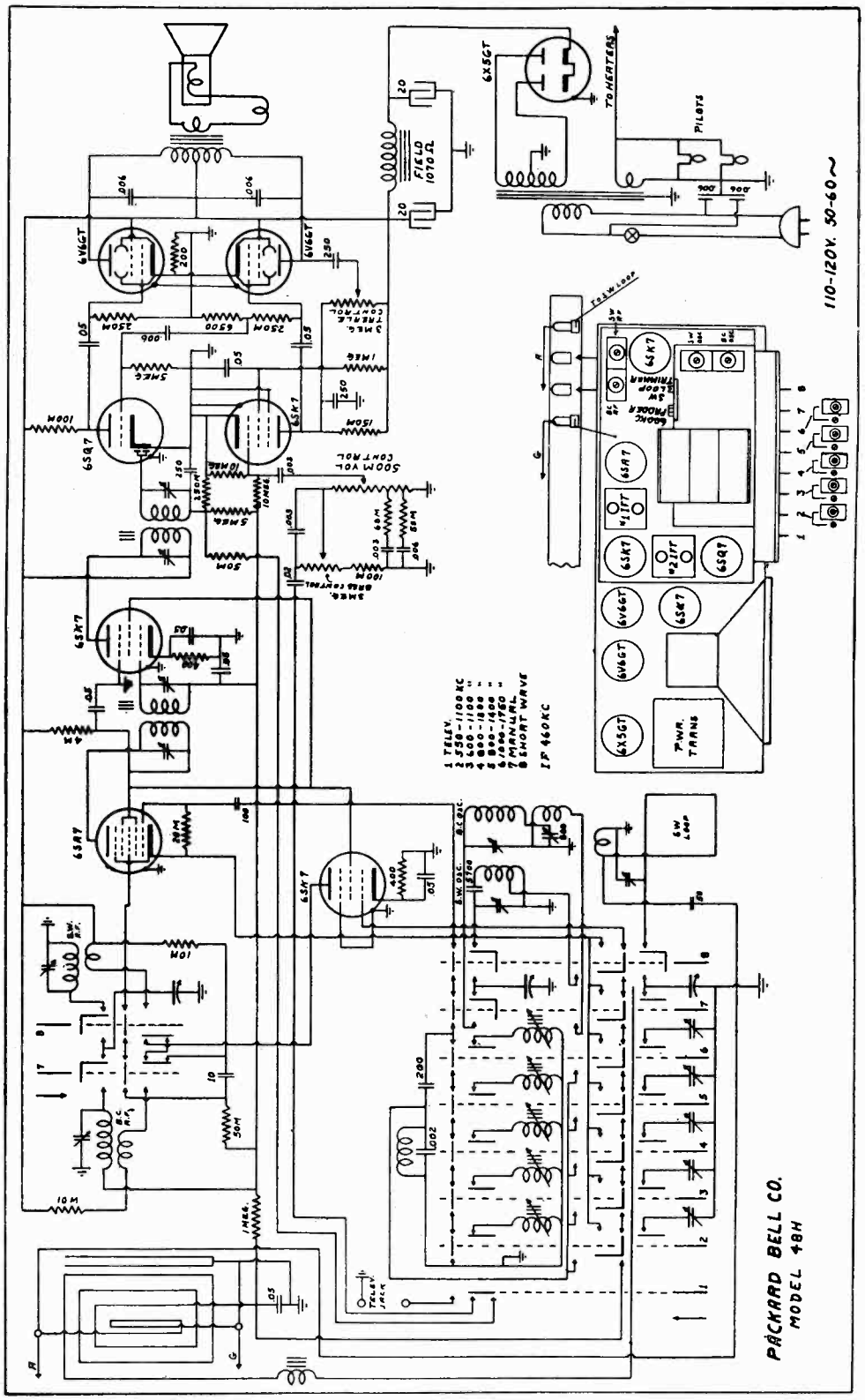
MODEL B19

PACKARD BELL CO.



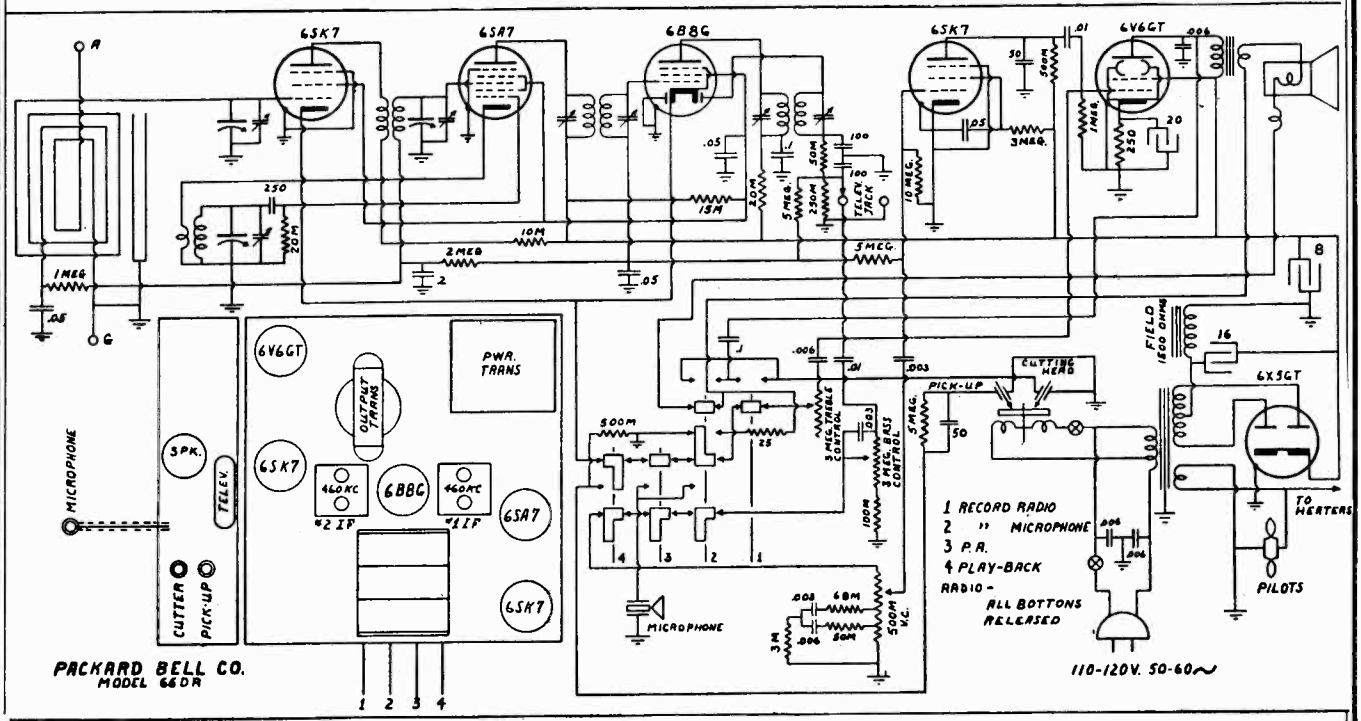
MODEL 48H

PACKARD BELL CO.

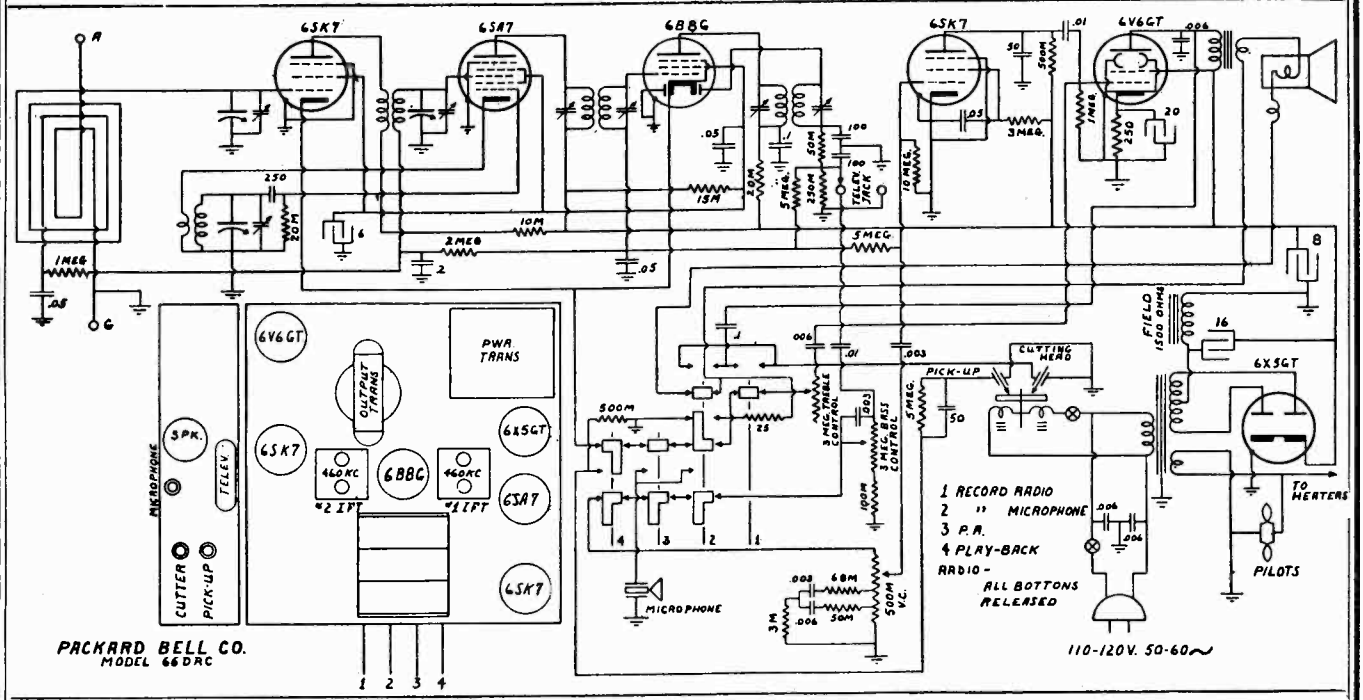


PACKARD BELL CO.

MODEL 66DR
MODEL 66DRC

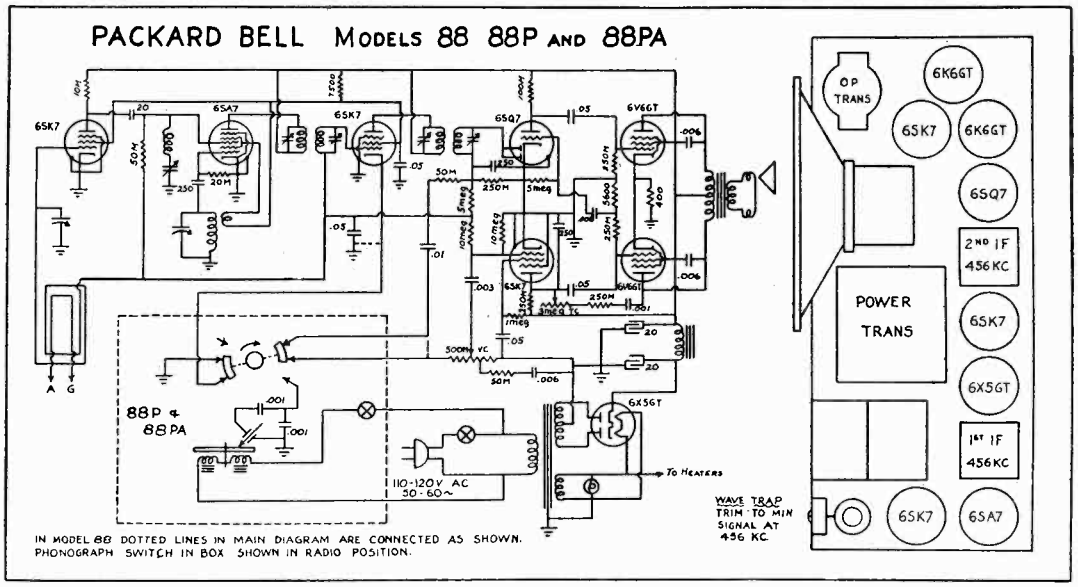


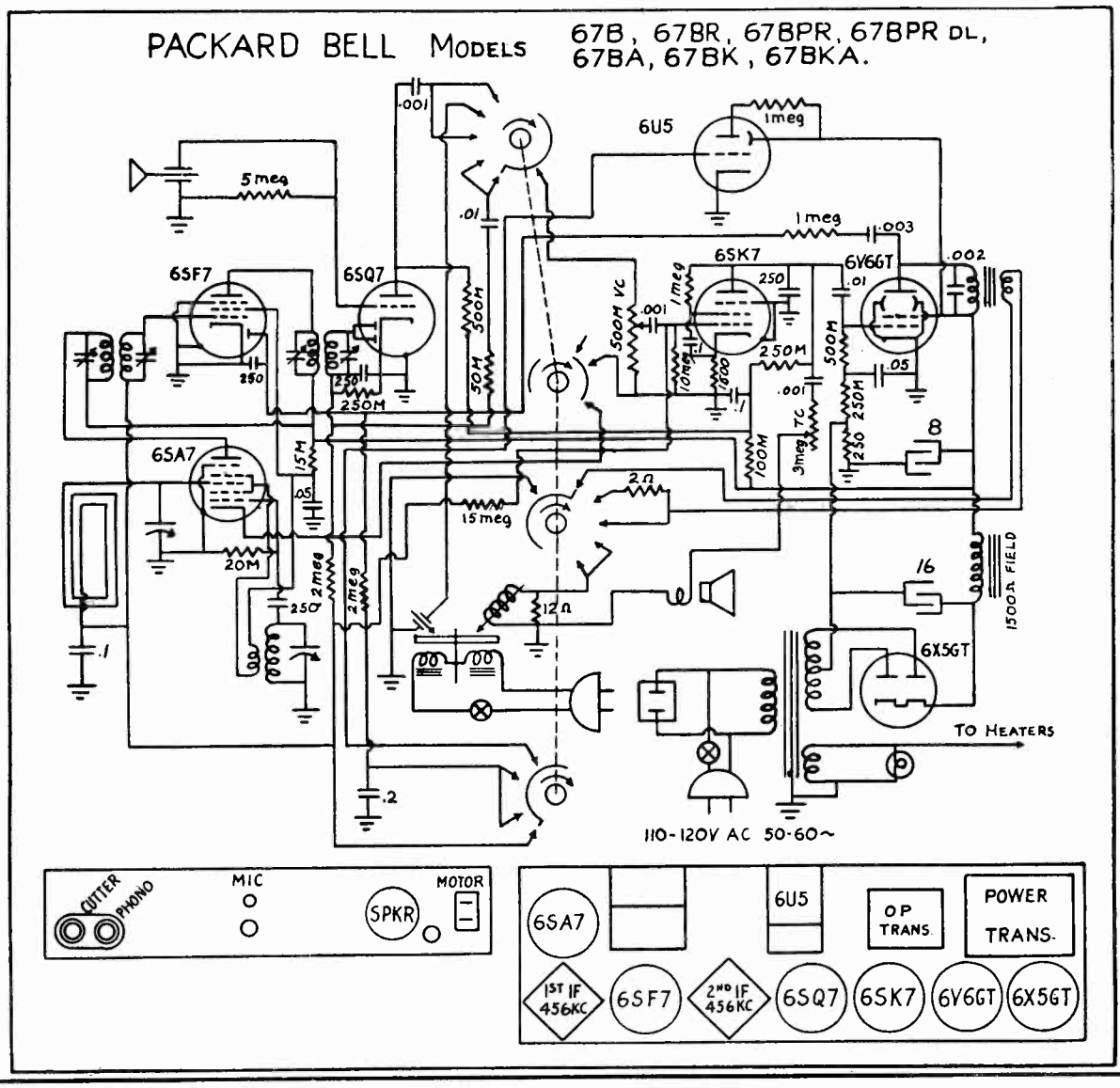
IF PEAK 460 KC



MODELS 67B,67BA,67BK,67BKA,
67BPR,67BPRDL,67BR
MODELS 88,88P,88PA

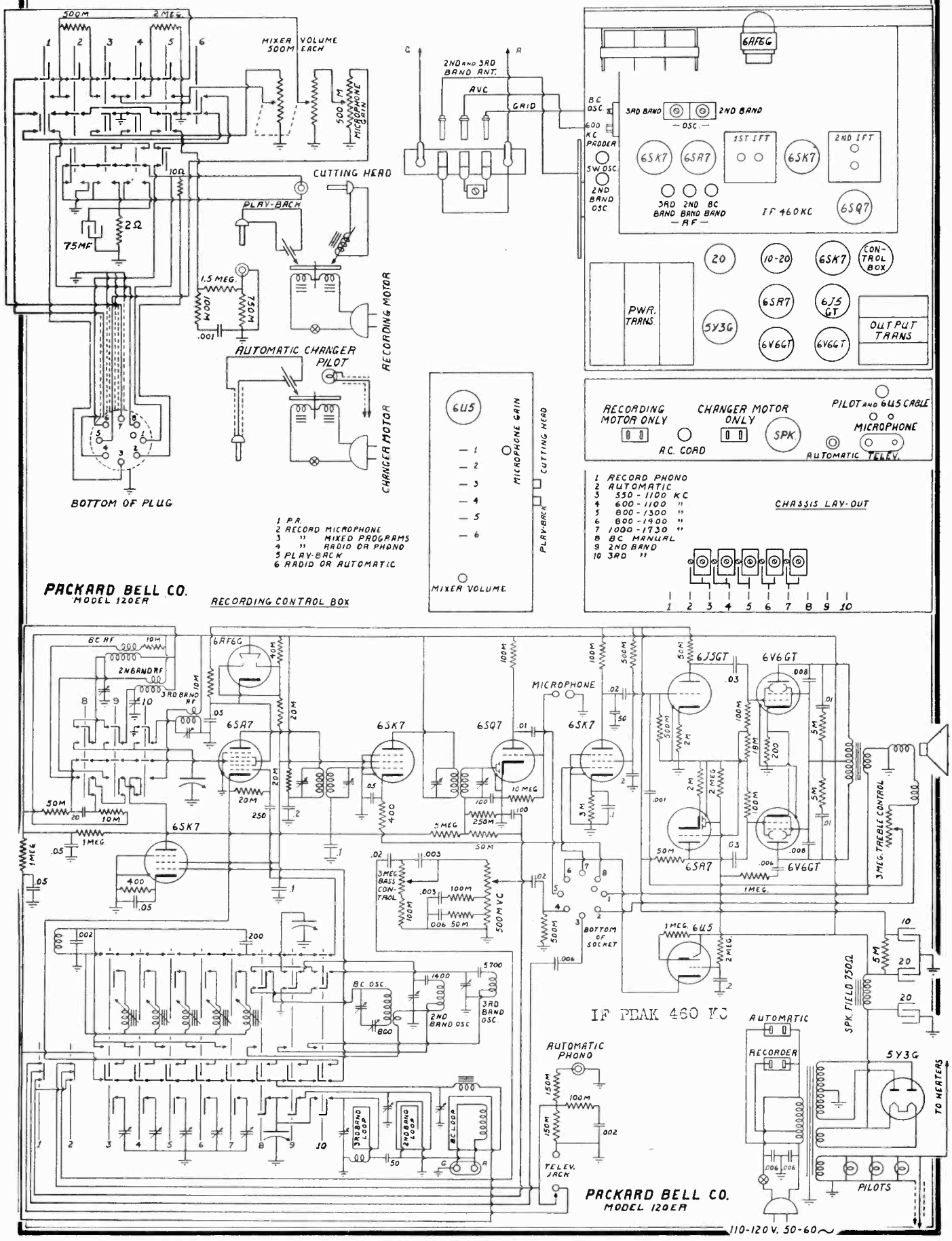
PACKARD BELL CO.





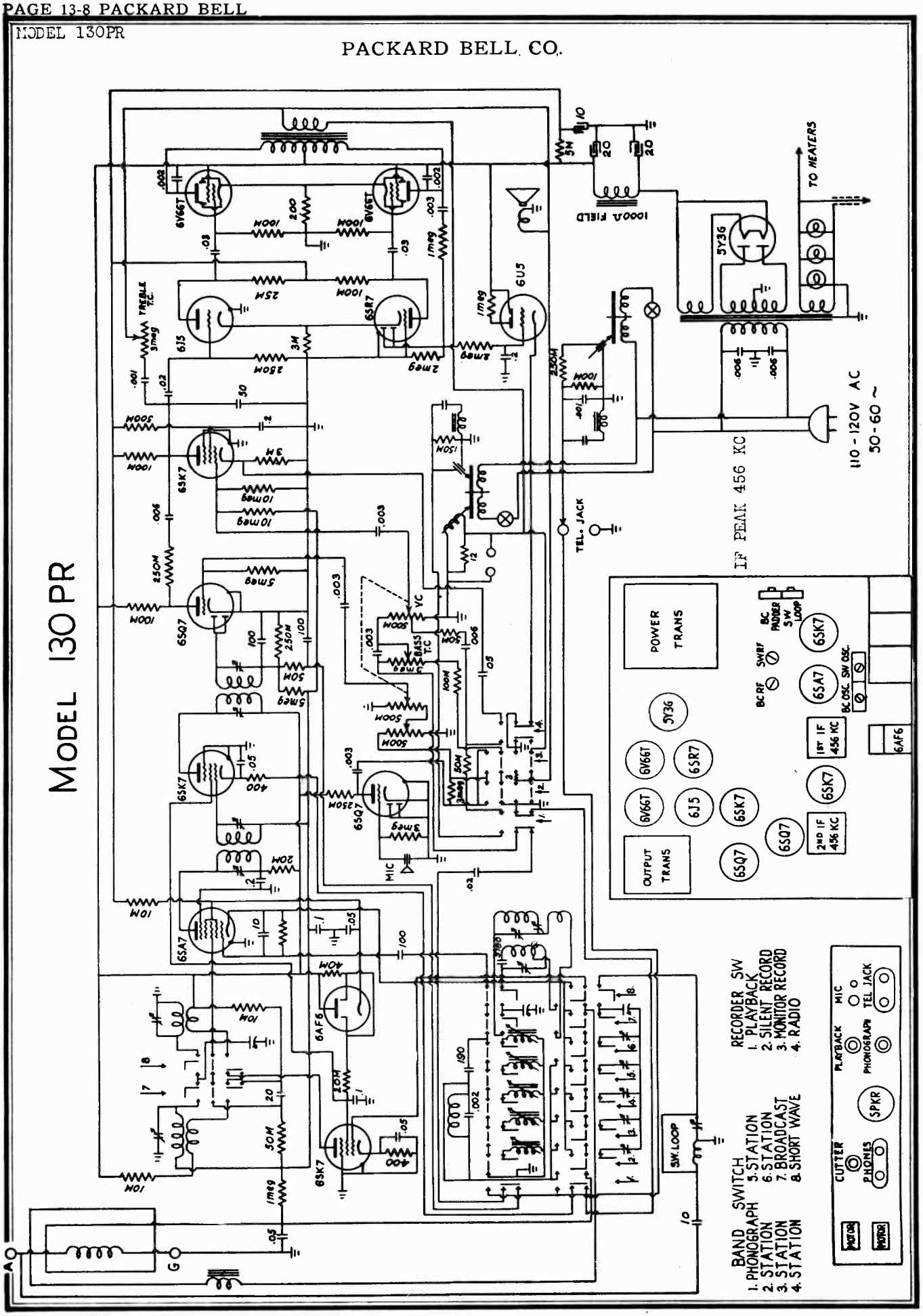
MODEL 120ER

PACKARD BELL CO.



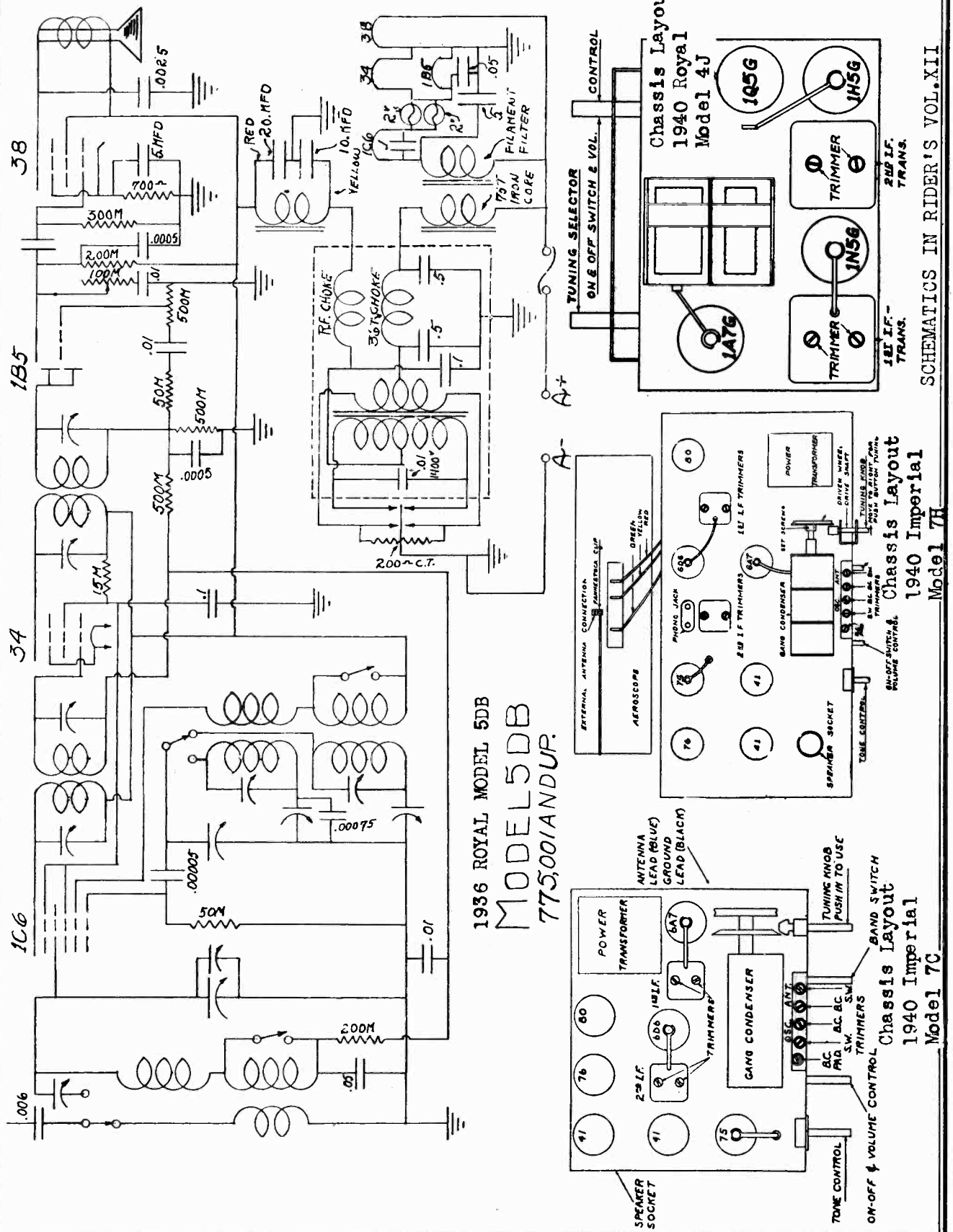
MODEL 130PR

PACKARD BELL CO.



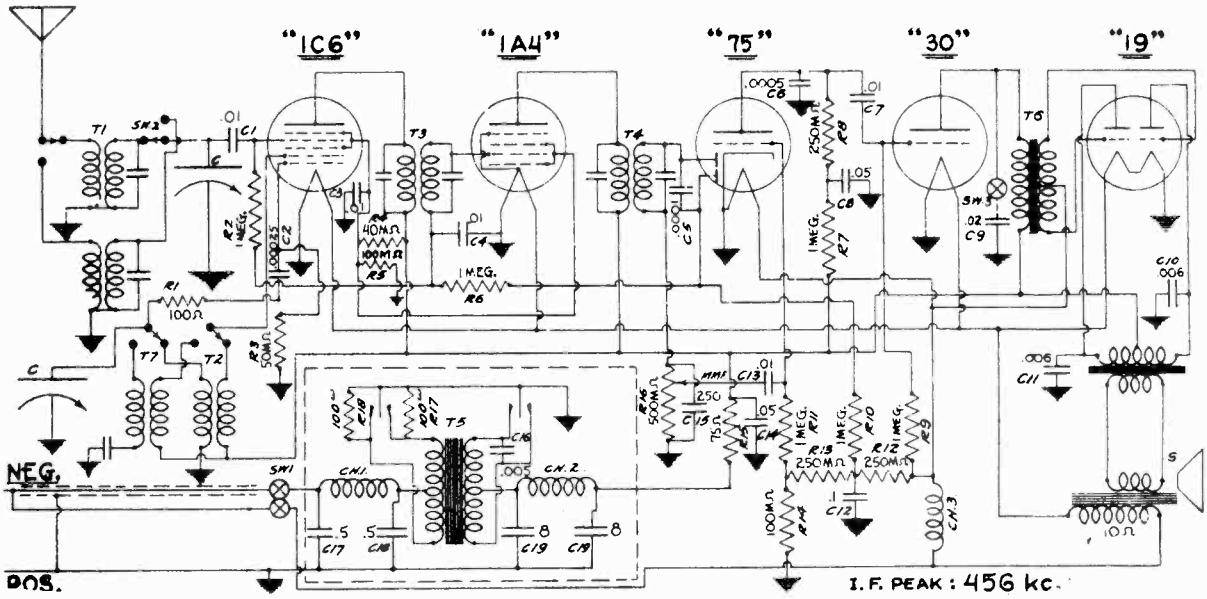
PARKER McCRORY MFG. CO.

MODEL 5DB, 1936 Royal
MODEL 4J 1940 Royal
MODEL 7C 1940 Imperial
MODEL 7H 1940 Imperial

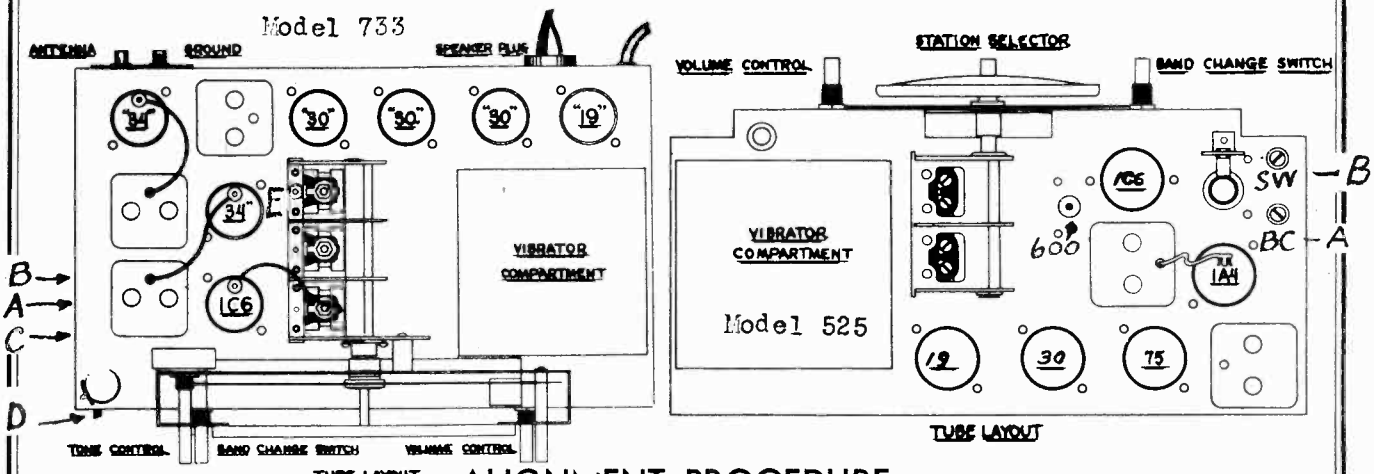


MODEL 525 1937 DeLuxe
MODEL 733 1937 Masterpiece

PARKER McCRORY MFG. CO.



1937 DELUXE MODEL 525



ALIGNMENT PROCEDURE

1937 Masterpiece Model 733

WARNING: The following information is to be used only by an experienced serviceman with the proper equipment. In most cases it is necessary only when set has been tampered with or damaged by accident.

I.F. ALIGNMENT: Connect signal generator, through .00025 cond., to grid cap of 1C6 tube. Set signal generator at 456 K.C. (this must be accurate), dial pointer at 1700 K.C. Short out oscillator section (center section) of variable cond. gang. Connect suitable output meter across voice coil of loud speaker. (If output meter is not available it will be necessary to adjust by ear, using the loudest note from signal generator.) Increase attenuator until output meter shows deflection or a note is heard from signal generator. Carefully adjust I.F. transformer trimmers for greatest deflection of meter or loudest note from generator. Reduce generator output as intensity of signal increases as I.F.s are tuned nearer their original 456 K.C. setting. Signal should be just audible by ear. Go back over the adjustments to be sure they are correct. Remove short from oscillator section of variable cond. and adjustment is complete.

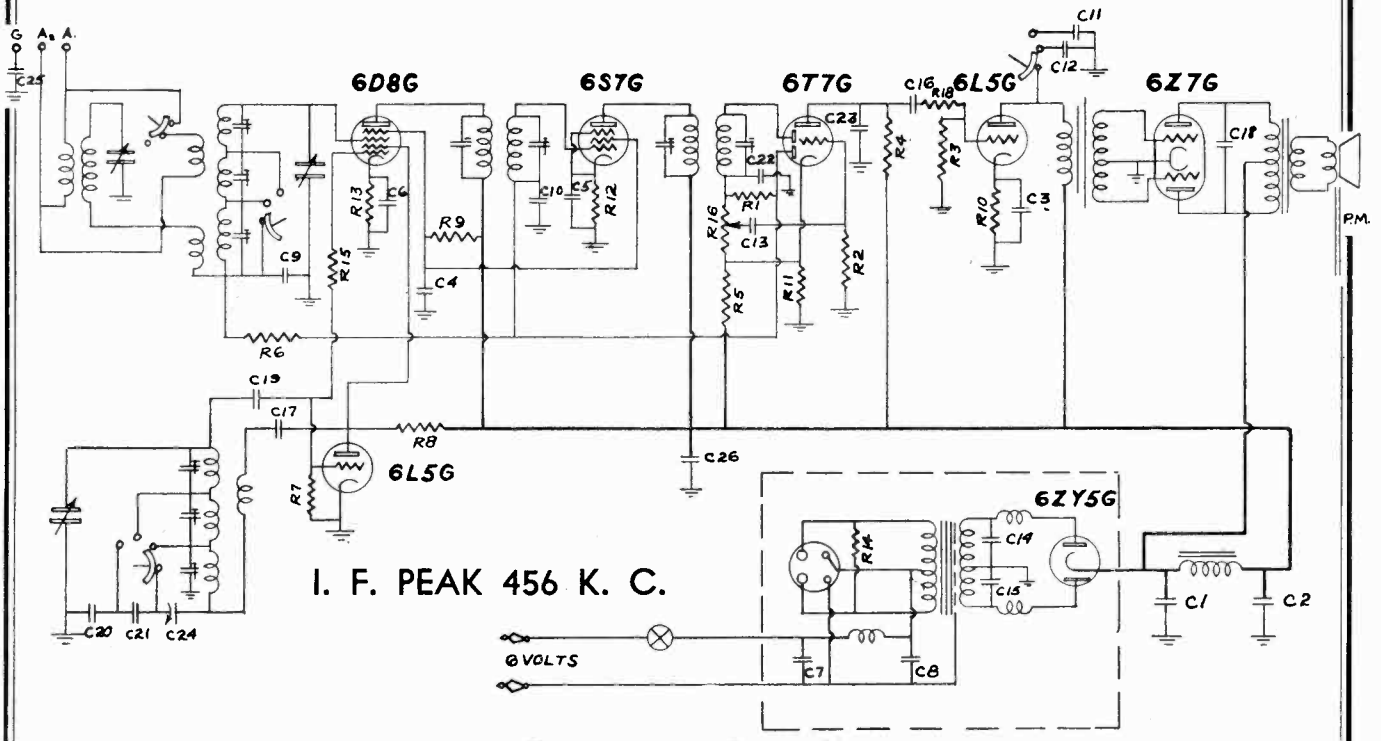
B.C.—R.F. ALIGNMENT: (1) Connect signal generator, through .00025 cond., to antenna post A1. Short wave switch in broadcast position. (2) Set signal generator and dial pointer to 1400 K.C. (3) Adjust osc. B.C. trimmer "A" (see diagram) for greatest deflection of meter or loudest note. (4) Set generator and dial pointer to 1400 K.C. Adjust antenna B.C. trimmer and trimmer "E" for greatest deflection of meter or loudest note. (5) Set generator and dial pointer to 600 K.C. Adjust trimmer "D" for greatest deflection or loudest note. (This adjustment is critical and must be accurate.) Rock cond. gang across 600 K.C. note while adjusting trimmer "D." Repeat adjustment at least twice to be sure it is correct.

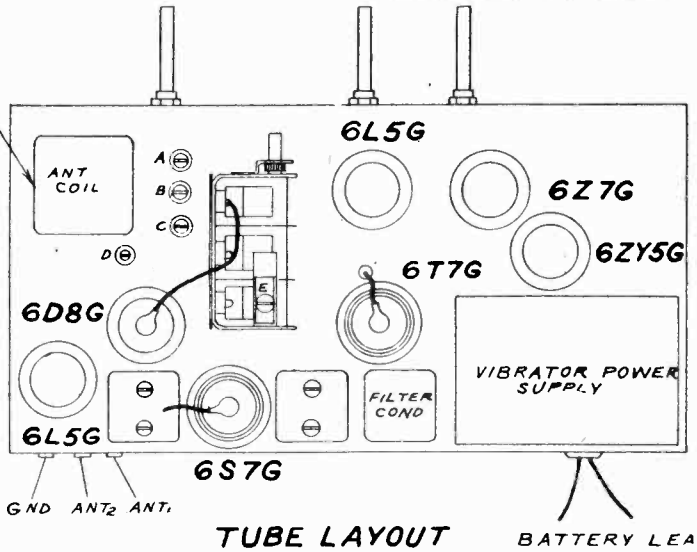
POLICE AND AMATEUR BAND ADJUSTMENT: (1) Set switch in Police-Amateur position. Connect signal gen. to ant. post A1 through 400 ohm resistor. (2) Set gen. and dial pointer to 6 meg. (6000 K.C.). Carefully adjust trimmer "B" for greatest deflection or loudest note. Check adjustment with gen. and dial pointer at 2 meg. (2000 K.C.).

FOREIGN BAND ADJUSTMENT: (1) Set switch in Foreign position. Connect gen. to ant. post A1 through 400 ohm resistor. (2) Set generator and dial pointer to 18 meg. (18000 K.C.). This must be accurate. (3) Carefully adjust trimmer "C" and ant. S.W. trimmer for greatest deflection or loudest note. Check adjustment with gen. and dial pointer at 7 meg. (7000 K.C.). This completes all R.F. adjustments.

PARKER & McCRORY MFG. CO.

MODEL 680 1938 Masterpiece





TUBE LAYOUT

Top—Ant. B.C. Trim.
Center—Ant. Pol. Trim.
Bottom—Ant. SW. Trim.

A—Osc. B.C. Trim.
B—Osc. Pol. Trim.
C—Osc. SW. Trim.
D—Osc. B.C. Pad.
E—Pres. B.C. Trim.

C1, C2-8.
C3 -5.
C4, C5, C6-.1-200V.
C7, C8-.5-150V.
C9, C10-.05-200V.
C11-.03-400V.

C12, C13, C16- .01-400V.
C14, C15- .01-1000V.
C17, C18- .003-400V.
C19- .0005 Ceramicon
C20- .004 Mica.
C21- .0018 Mica.

C22- .0001 Mica.
C23- .00025 Mica.
C24- .0006 Paddler.
C25- .05-200V.
C26- .1-400V

R1- 3 Megohms ¼W.
R2- 1 Megohms ¼W.
R3- ½ Megohms ¼W.
R4, R18- 150,000 ¼W.
R5, R6- 100,000 ¼W.
R15- 75 ¼W.
R7- 50,000 ¼W.
R8- 20,000 ¼W.
R9- 12,000 ½W.
R10 2,000 ¼W.
R16- 500,000 VC.
R11- 1,000 ¼W.
R12- 750 ¼W.
R13- 500 ¼W.
R14- 200 ¼W.
R17- 500,000 1-10W.

ALIGNMENT PROCEDURE

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I.F. ALIGNMENT: Connect signal generator, through .00025 cond., to grid cap of 6D8 tube. Set signal generator at 456 K.C. (this must be accurate), dial pointer at 1700 K.C. Short out oscillator section (center section) of variable cond. gang. Connect suitable output meter across voice coil of loud speaker. (If output meter is not available it will be necessary to adjust by ear, using the loudest note from signal generator.) Increase attenuator until output meter shows deflection or a note is heard from signal generator. Carefully adjust I.F. transformer trimmers for greatest deflection of meter or loudest note from generator. Reduce generator output as intensity of signal increases as I.F.s are tuned nearer their original 456 K.C. setting. Signal should be just audible by ear. Go back over the adjustments to be sure they are correct. Remove short from oscillator section of variable cond. and adjustment is complete.

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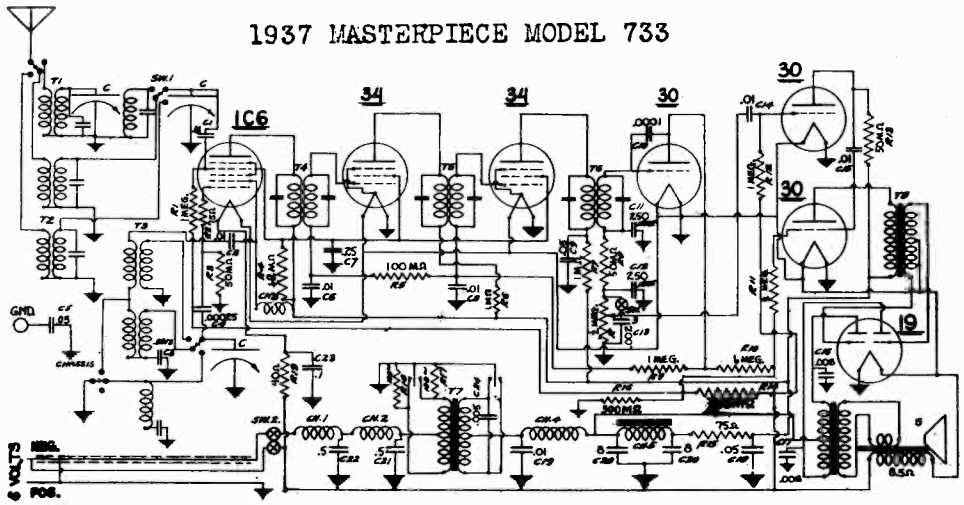
FOREIGN BAND ADJUSTMENT: (1) Set switch in Foreign position. Connect gen. to ant. post A1 through 400 ohm resistor. (2) Set generator and dial pointer to 18 meg. (18000 K.C.). This must be accurate. (3) Carefully adjust trimmer "C" and ant. S.W. trimmer for greatest deflection or loudest note. Check adjustment with gen. and dial pointer at 7 meg. (7000 K.C.). This completes all R.F. adjustments.

MODEL 733 1937 Masterpiece
MODEL BA41 1936 Regal

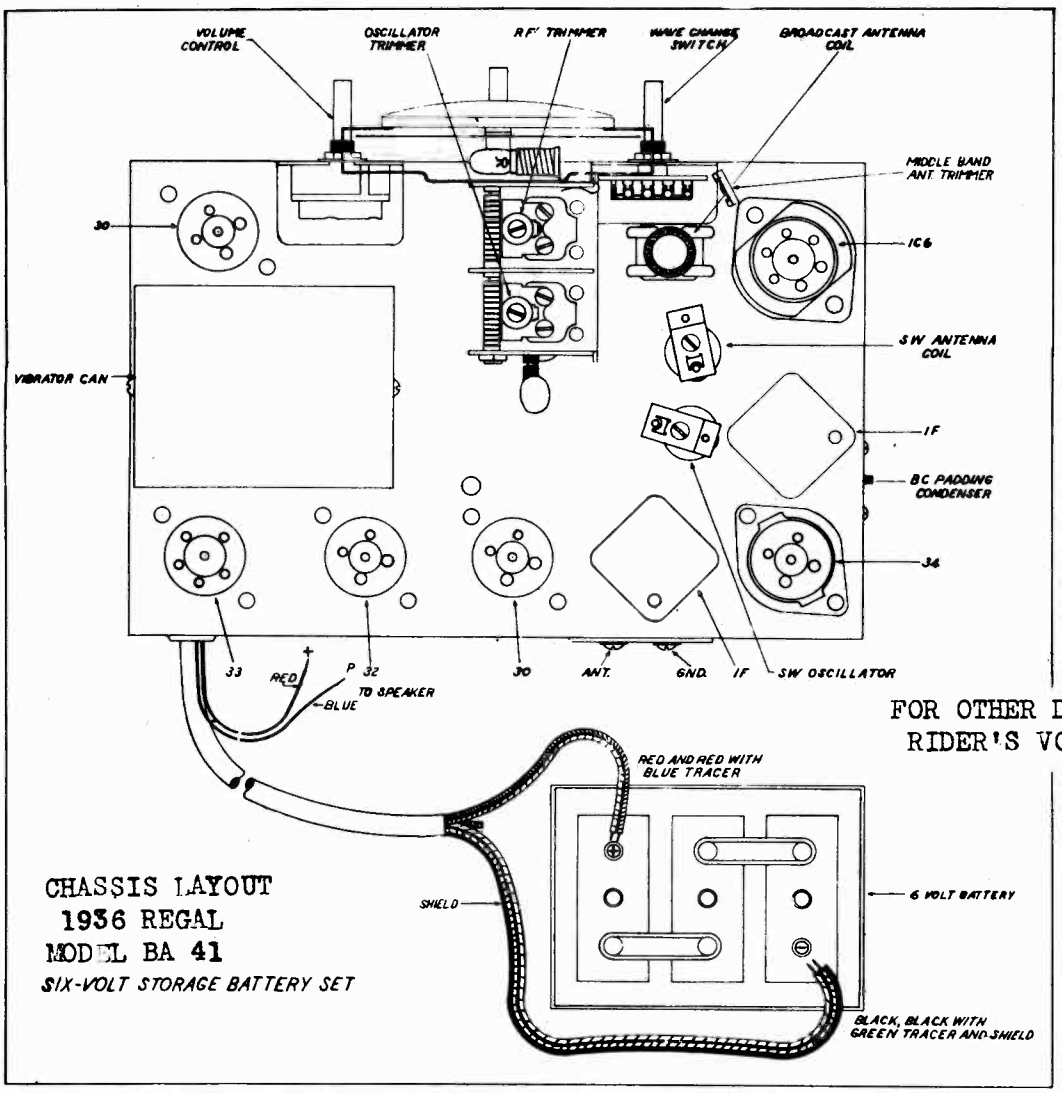
PARKER McCRORY MFG. CO.

1937 MASTERPIECE MODEL 733



I.F. 456 KC

FOR OTHER DATA SEE INDEX

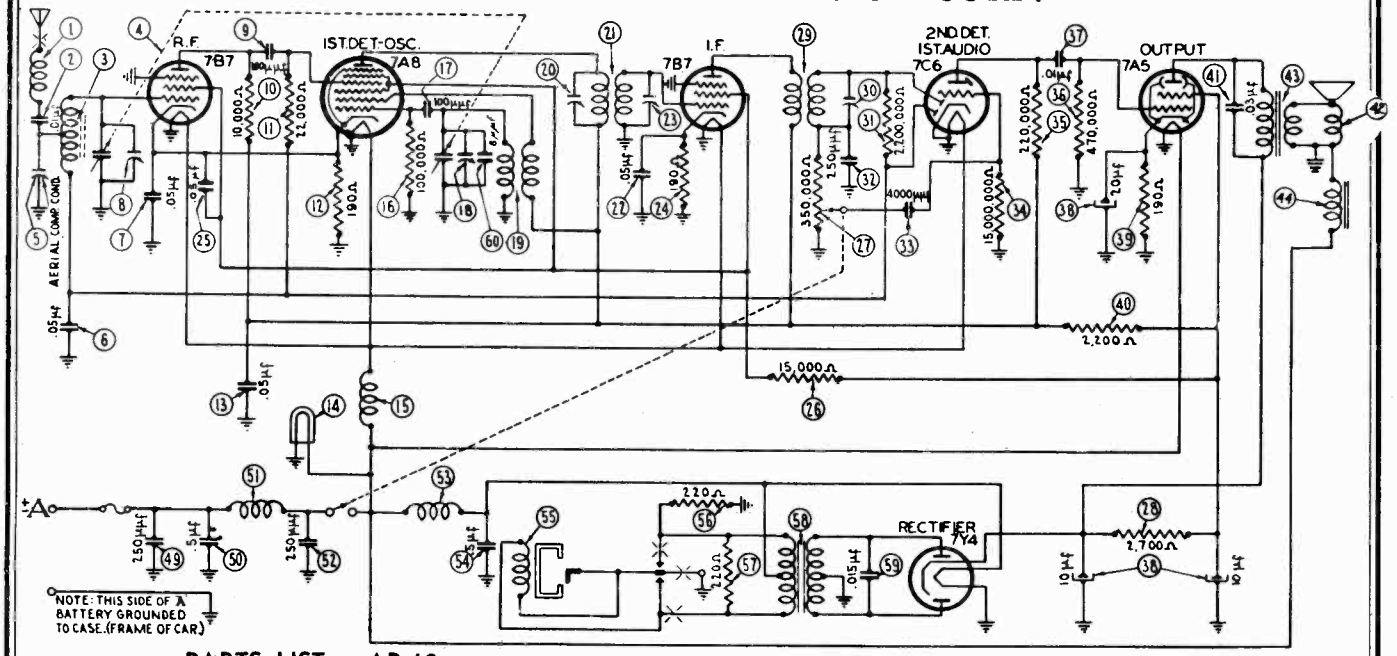


FOR OTHER DATA SEE RIDER'S VOL.XII

CHASSIS LAYOUT
1936 REGAL
MODEL BA 41
SIX-VOLT STORAGE BATTERY SET

MODEL AR-10

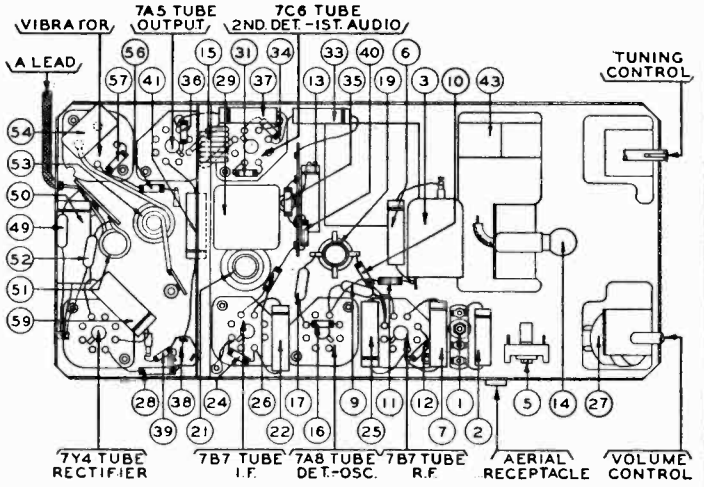
PHILCO RADIO & TELEVISION CORP.

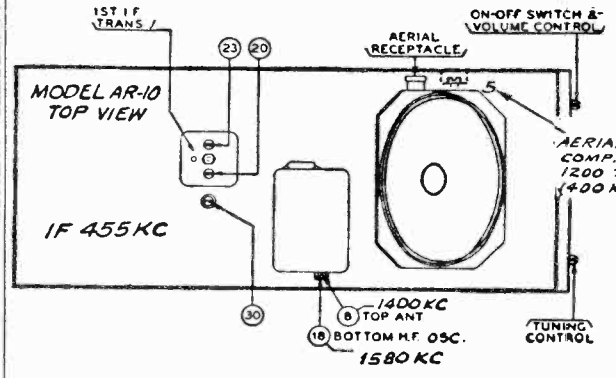


PARTS LIST — AR-10

No.	Description	Part No.	No.	Description	Part No.
①	Antenna Choke	65-0102	㊶	Condenser (.03 Mfd.)	61-0119
②	Condenser (.01 Mfd.)	61-0114	㊷	Replacement Cone	
③	Antenna Transformer	65-0196		(For 73-0027-1)	91-0076
④	Tuning Condenser	63-0028		(For 73-0027-2)	91-0077
⑤	Aerial Compensator	63-0030	㊸	Output Transformer	65-0258
⑥	Condenser (.05 Mfd.)	61-0101	㊹	Field Coil	(Not Replaceable)
⑦	Condenser (.05 Mfd.)	61-0111	㊺	Condenser (250 Mmfd.)	60-125157
⑧	Antenna Padder (on Tun. Cond.)		㊻	Condenser (.5 Mfd.)	61-0106
⑨	Condenser (100 Mmfd.)	60-110157	㊼	"A" Choke	32-2477
⑩	Resistor (10,000 ohms)	33-310154	㊽	Condenser (250 Mmfd.)	60-125157
⑪	Resistor (22,000 ohms)	33-322154	㊾	Vibrator Choke	65-0204
⑫	Resistor (190 ohms)	33-119336	㊿	Condenser (.5 Mfd.)	61-0137
⑬	Condenser (.05 Mfd.)	61-0111	(51)	Vibrator	83-0025
⑭	Pilot Lamp	69-0004	(52)	Resistor (220 ohms)	33-122334
⑮	Filament Choke	65-0158	(53)	Resistor (220 ohms)	33-122334
⑯	Resistor (100,000 ohms)	33-410154	(54)	Power Transformer	65-0185
⑰	Condenser (100 Mmfd.)	60-110157	(55)	Condenser (.015 Mfd.)	61-0138
⑱	Oscillator Padder (on Tun. Cond.)		(56)	Condenser (8 Mmfd.)	60-008337
⑲	Oscillator Transformer	65-0194		Tuning & Volume Knob	77-0765
⑳	Padder (Pri. 1st I. F. Trans.)			Dial	55-1200
㉑	First I. F. Transformer	65-0191		Dial Cord (16½")	55-0588
㉒	Condenser (.05 Mfd.)	61-0111		(5¾")	55-0589
㉓	Padder (Sec. 1st I. F. Trans.)			(13¾")	55-0652
㉔	Resistor (190 ohms)	33-119336		(7⅝")	55-0653
㉕	Condenser (.05 Mfd.)	61-0111		Pointer	57-1940
㉖	Resistor (15,000 ohms)	33-315334		Tuning Shaft	57-1802
㉗	Volume Control (350,000 ohms) & On-Off Switch	67-0020		Window Crystal	55-0501
㉘	Resistor (2,700 ohms)	33-227434		Speaker Unit	73-0027
㉙	Second I. F. Transformer	65-0192		Tube Side Cover	57-0791FC59
㉚	Padder (Sec. 1st I. F. Trans.)			Wiring Side Cover	77-0561FC59
㉛	Resistor (2,200,000 ohms)	33-522154		Back Strap	28-5998FA3
㉜	Condenser (250 Mmfd.)	60-125157		Mounting Bracket	57-0812FC59
㉝	Condenser (4,000 Mmfd.)	61-0128		Cover Screws	W1586FA3
㉞	Resistor (15,000,000 ohms)	33-615154		Front Screws	97-0111FA3
㉟	Resistor (220,000 ohms)	33-422154		Fuse Lead	77-0235
㊱	Resistor (470,000 ohms)	33-447154		Fuse	45-2559
㊲	Condenser (.01 Mfd.)	61-0120		Vibrator Socket	27-6044
㊳	Filter Condenser (10-10-20 Mfd.)	61-0068		Loktal Socket	55-0575
㊴	Resistor (190 ohms)	33-119336		Pilot Lamp Assembly	77-0342
㊵	Resistor (2,200 ohms)	33-222334		"A" Lead	77-0217
				Interference Condenser	30-4007
				Distributor Resistor	33-1196
				Bolt (Radio Mtg.)	W1318FA3

I.F. = 455KC





Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
...	...	...	...	...	Note 1
Ant. recept.	0.1 mf	455 kc	...	Note 2	30
"	"	"	...	"	23
"	"	"	...	"	20
"	"	"	...	"	30
"	"	"	...	"	23
"	"	"	...	"	20
Note 3	30 mmf	1580 kc	...	"	18
"	"	1400 kc	...	1400 kc	8 [4]
...	...	...	...	1200-1400 kc	5 [5]

Note 1.—Adjust antenna compensator (5) two turns from tight position.

Note 2.—Turn condenser rotor plates completely out of mesh as far as they will go.

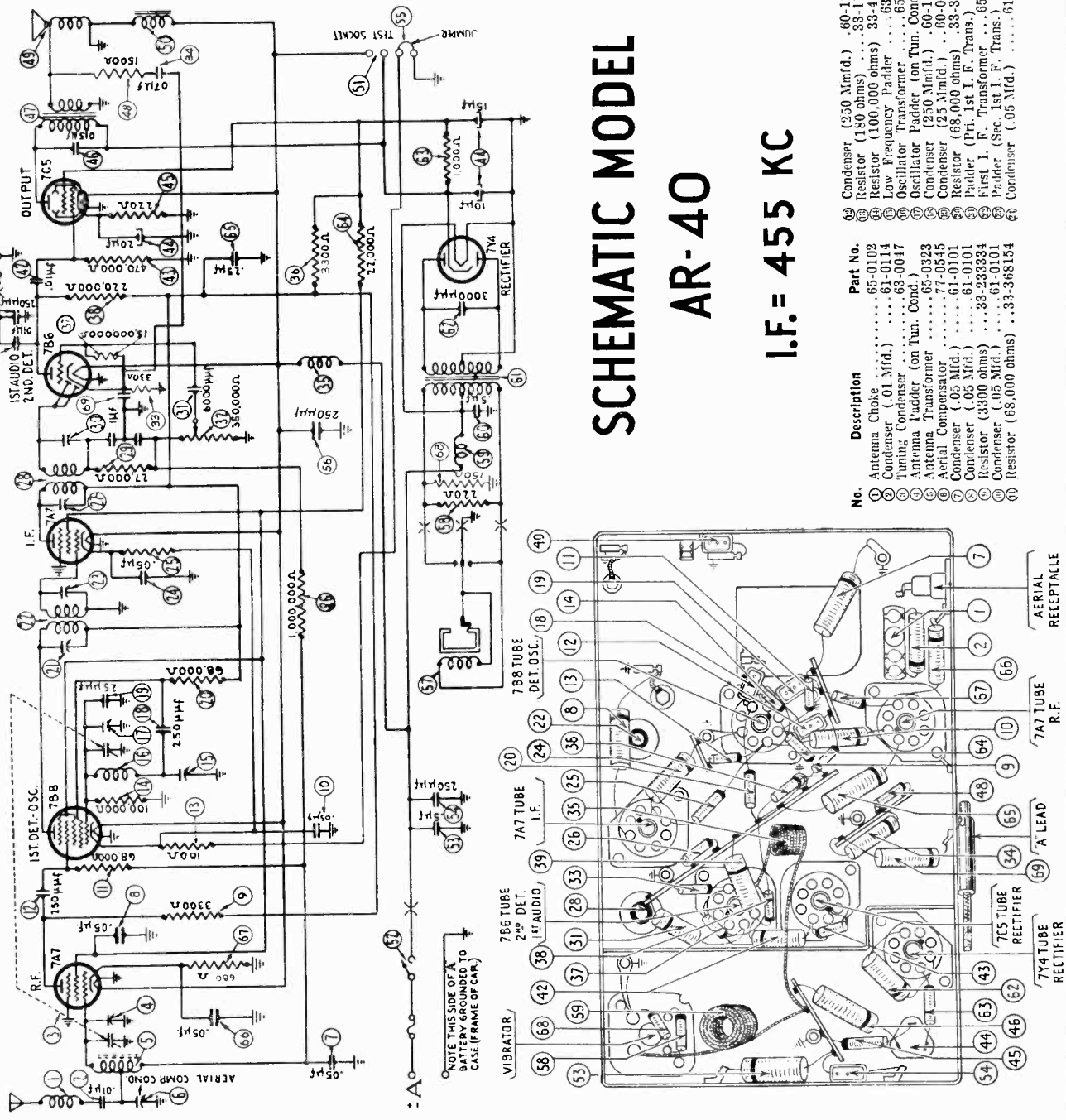
Note 3.—Connect antenna lead, Part No. 95-0185, to antenna receptacle in the radio. Connect a 30 mmf condenser in series between signal generator and antenna lead.

Note 4.—When antenna stage adjustment is made with radio installed in car, the radio antenna lead must be connected to car antenna in usual manner. Connect signal generator output lead to a wire placed near car antenna but not connected to it.

Note 5.—After installing radio in car, tune in a weak broadcast signal between 1200 and 1400 kc. Remove plug button on side of radio and adjust antenna compensator (5) for maximum signal.

MODEL AR-40

PHILCO RADIO & TELEVISION CORP.



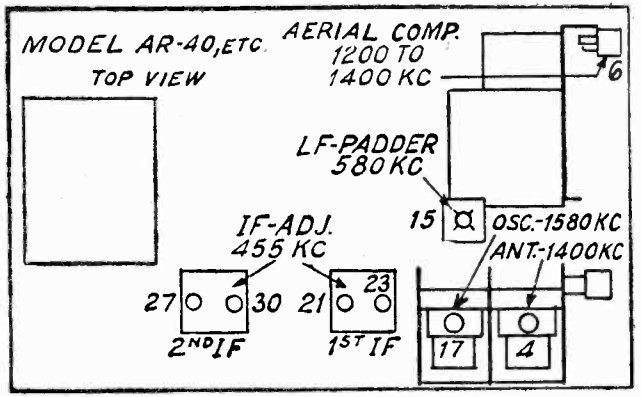
No.	Description	Part No.
①	Antenna Choke	65-0102
②	Condenser (.01 Mfd.)	61-0114
③	Tuning Condenser	63-0047
④	Antenna Padder (on Tun. Cond.)	65-0323
⑤	Antenna Transformer	77-0845
⑥	Aerial Compensator	61-0101
⑦	Condenser (.05 Mfd.)	61-0101
⑧	Condenser (.05 Mfd.)	33-233334
⑨	Resistor (3300 ohms)	61-0101
⑩	Condenser (.05 Mfd.)	33-368154
⑪	Resistor (68,000 ohms)	60-125157
⑫	Condenser (250 Mmfd.)	33-118386
⑬	Resistor (180 ohms)	33-410154
⑭	Resistor (100,000 ohms)	63-0048
⑮	Low Frequency Padder	65-0420
⑯	Oscillator Transformer	Cond.)
⑰	Oscillator Padder (on Tun.	60-125157
⑱	Condenser (250 Mmfd.)	60-025337
⑲	Condenser (25 Mmfd.)	33-368334
⑳	Resistor (68,000 ohms)	Trans.)
㉑	Padder (Pri. 1st I. F.	65-0319
㉒	First I. F. Transformer	61-0101
㉓	Padder (Sec. 1st I. F. Trans.)	
㉔	Condenser (.05 Mfd.)	

㉕	Resistor (470 ohms)	33-147336
㉖	Resistor (1,000,000 ohms)	33-510154
㉗	Padder (Pri. 2nd I. F. Trans.)	
㉘	Second I. F. Transformer	65-0320
㉙	Resistor (27,000 ohms)	33-327154
㉚	Padder (Sec. 2nd I. F. Trans.)	
㉛	Condenser (6000 Mmfd.)	61-0155
㉜	Volume Control (350,000 ohms)	67-0043
㉝	Resistor (330 ohms)	33-133334
㉞	Condenser (.07 Mfd.)	61-0152
㉟	Filament Choke	32-2729
㊱	Resistor (3300 ohms)	33-233334
㊲	Resistor (15,000,000 ohms)	33-615154
㊳	Resistor (220,000 ohms)	33-422334
㊴	Condenser (.01 Mfd.)	61-0114
㊵	Condenser (250 Mmfd.)	60-125157
㊶	Tone Control Switch Wafer	77-0733
㊷	Condenser (.01 Mfd.)	61-0120
㊸	Resistor (470,000 ohms)	38-447154
㊹	Filter Condenser (10-15-20 Mfd.)	61-0089
㊺	Resistor (220 ohms)	33-122436
㊻	Condenser (.015 Mfd.)	61-0104
㊼	Output Transformer	65-0419
㊽	Resistor (1500 ohms)	33-215334
㊾	Replacement Cone (For 73-0059-4 Speaker)	91-0209
	(For 73-0059-9 Speaker)	91-0213
㊿	Field Coil	Not Replaceable
(51)	Test Socket	55-1118
(52)	On-Off Switch	85-0112
(53)	Condenser (.5 Mfd.)	61-0106
(54)	Condenser (250 Mmfd.)	60-125157
(55)	Test Link	57-1121
(56)	Condenser (250 Mmfd.)	60-125157
(57)	Vibrator	83-0025
(58)	Resistor (220 ohms)	33-122334
(59)	Vibrator Choke	65-0075
(60)	Condenser (.5 Mfd.)	61-0137
(61)	Power Transformer	65-0318
(62)	Condenser (3000 Mmfd.)	61-0115
(63)	Resistor (1000 ohms)	33-210434
(64)	Resistor (22,000 ohms)	33-322434
(65)	Condenser (.25 Mfd.)	61-0125
(66)	Condenser (.05 Mfd.)	61-0101
(67)	Resistor (680 ohms)	33-168336
(68)	Resistor (150 ohms)	33-115334
(69)	Condenser (.1 Mfd.)	61-0152
(70)	Resistor (47,000 ohms)	33-347334
	Radio Housing	77-0751FC51
	Control Assembly	85-0134
	Dial	55-1194
	Drive Cord	55-0935
	Drive Cord Spring	57-1425PA3
	Tuning Shaft	57-1385
	Volume Shaft	57-1384
	Pointer	57-1889PCP
	Tone Control Lead	95-0135
	Hook Bolt (Radio Mtg.)	57-1340PA3
	Lockwasher (Radio Mtg.)	W166SFE7
	Nut (Radio Mtg.)	W98FA3
	Speaker Unit	73-0059
	Speaker Cover	57-1943FC51
	Wiring Side Cover	57-1345FC51
	Interference Condenser	30-4007
	Distributor Resistor	33-1196
	Loktal Socket	55-0575
	Vibrator Socket	27-6153
	Control Shaft Clamp	57-1429PA38

MODELS AR-40, AR-45

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
...	...	...	...	...	Note 1
Ant. recept.	0.1 mf	455 kc	...	Note 2	30
"	"	"	...	"	27
"	"	"	...	"	23
"	"	"	...	"	21
"	"	"	...	"	30
"	"	"	...	"	27
"	"	"	...	"	23
"	"	"	...	"	21
Note 3	10 mmf	1580 kc	...	"	17
"	"	1400 kc	...	1400 kc	4 [4]
"	"	580 kc	...	580 kc	15 *
"	"	1580 kc	...	Note 2	17
"	"	1400 kc	...	1400 kc	4 [4]
"	"	580 kc	...	580 kc	15 *
...	...	...	...	1200-1400 kc	6 [5]

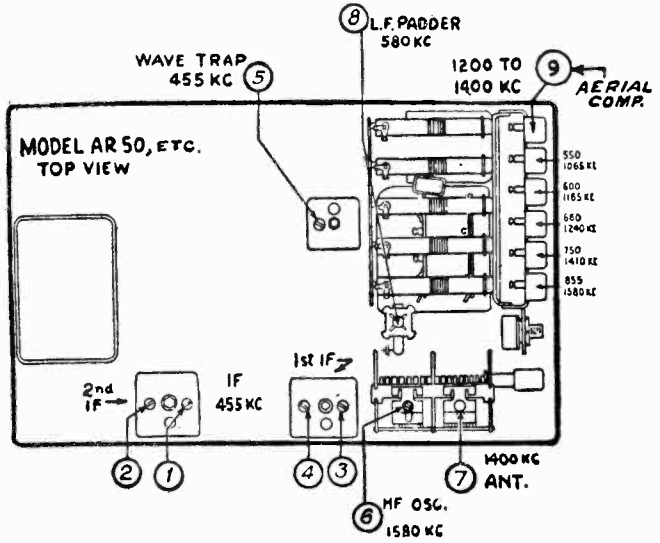
Note 1.—Adjust aerial compensator (6) two turns from tight position.
Note 2.—Turn condenser rotor plates completely out of mesh as far as they will go.
Note 3.—Connect antenna lead, Part No. 95-0185, to antenna receptacle in radio. Connect a 10 mmf condenser in series between signal generator and antenna lead.
Note 4.—When antenna stage adjustment is made with radio installed in car, the radio antenna lead must be connected to car antenna in usual manner. Connect signal generator output lead to a wire placed near car antenna but not connected to it.
Note 5.—After installing radio in the car, tune in a weak broadcast signal between 1200 and 1400 kc and adjust aerial compensator (6) for maximum signal.
* While rocking.



MODELS AR-50, AR-55, AR-75

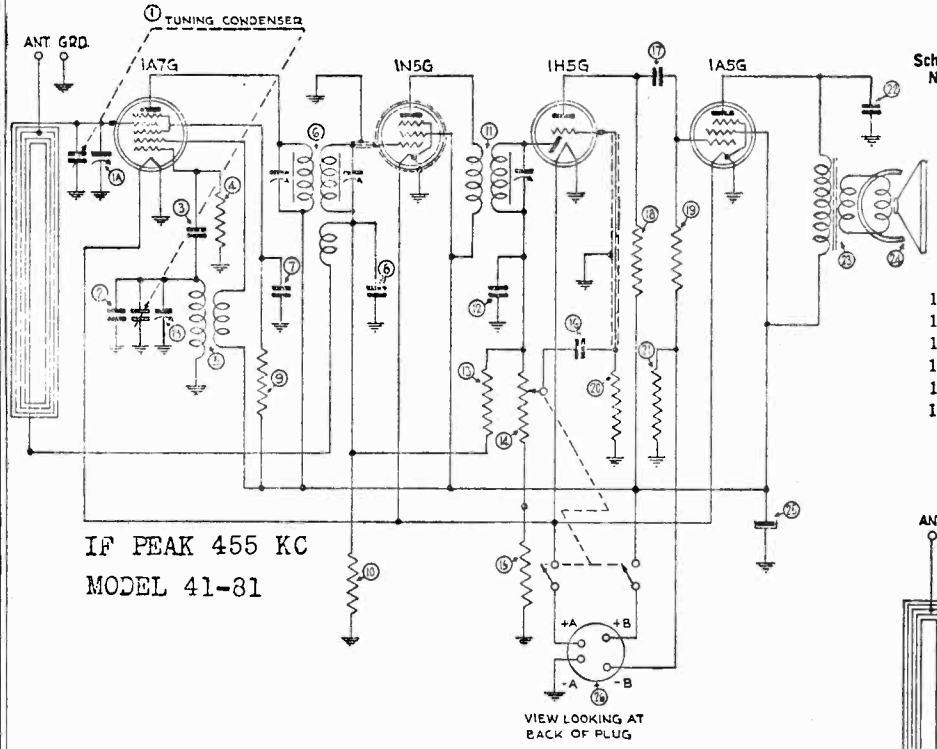
Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
...	...	...	...	Note 1	Note 2
Ant. recept.	0.1 mf	455 kc	...	Note 3	1
"	"	"	...	"	2
"	"	"	...	"	3
"	"	"	...	"	4
"	"	"	...	"	1
"	"	"	...	"	2
"	"	"	...	"	3
"	"	"	...	"	4
"	"	"	...	"	5 [4]
Note 5	10 mmf	1580 kc	...	"	6
"	"	1400 kc	...	1400 kc	7 [6]
"	"	580 kc	...	580 kc	8 *
"	"	1580 kc	...	Note 3	6
"	"	1400 kc	...	1400 kc	7 [6]
"	"	580 kc	...	580 kc	8 *
...	...	...	...	1200-1400 kc	9 [7]

Note 1.—Push in right knob on the control until "D" appears in station indicator window so stations can be tuned in by manual tuning.
Note 2.—Adjust antenna compensator (9) two turns from tight position.
Note 3.—Turn condenser rotor plates completely out of mesh as far as they will go.
Note 4.—Adjust (5) for *minimum* output signal.
Note 5.—Connect antenna lead, Part No. 95-0185, to antenna receptacle in radio. Connect a 10 mmf condenser in series between signal generator and antenna lead.
Note 6.—When antenna stage adjustment is made with radio installed in car, the radio antenna lead must be connected to car antenna in usual manner.



PHILCO RADIO & TELEVISION CORP.

MODEL AR-40
MODEL AR-45
MODEL AR-50
MODEL AR-55
MODEL AR-75



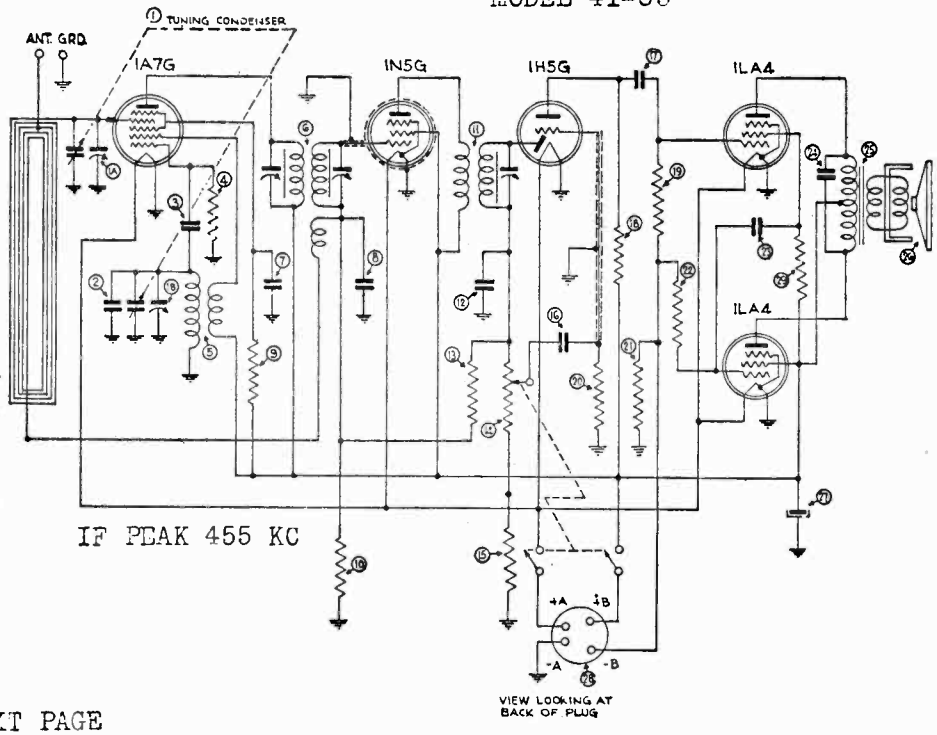
IF PEAK 455 KC

MODEL 41-81

REPLACEMENT PARTS
PHILCO MODEL 41-81

Schem. No.	Description	Philco Part No.
1	Tuning Condenser	31-2455
2	Mica Condenser (10 mmf.)	60-010157
3	Mica Condenser (110 mmf.)	60-111157
4	Resistor (220,000 ohms ¼ watt)	33-422154
5	Oscillator Transformer	32-3425
6	1st I.F. Transformer	32-3265
7	Tubular Condenser (.01 mf. 400v)	30-4572
8	Tubular Condenser (.05 mf. 200v)	30-4519
9	Resistor (33,000 ohms ¼ watt)	33-333154
10	Resistor (4.7 megs. ¼ watt)	33-547154
11	2nd I.F. Transformer	32-3266
12	Mica Condenser (250 mmf.)	60-125157
13	Resistor (10 megs. ¼ watt)	33-610154
14	Volume Control (1 meg.)	33-5389
15	Resistor (6800 ohms ½ watt)	33-268344
16	Tubular Condenser (.004 mf. 400v)	30-4578
17	Tubular Condenser (.004 mf. 400v)	30-4578
18	Resistor (2.2 meg. ¼ watt)	33-522154
19	Resistor (2.2 meg. ¼ watt)	33-522154
20	Resistor (4.7 meg. ¼ watt)	33-547154
21	Resistor (560 ohms ½ watt)	33-156321
22	Resistor (2.2 meg. ¼ watt)	33-522154
23	Tubular Condenser (.01 mf. 400v)	30-4572
24	Mica Condenser (.0005 mf.)	60-150157
25	Output Transformer	32-8107
26	Speaker	36-1481 "C"
27	Electrolytic Condenser (10 mf. 150v)	30-2396
28	Battery Cable	41-3487
29	Resistor (10,000 ohms ¼ watt)	33-310154

MODEL 41-83

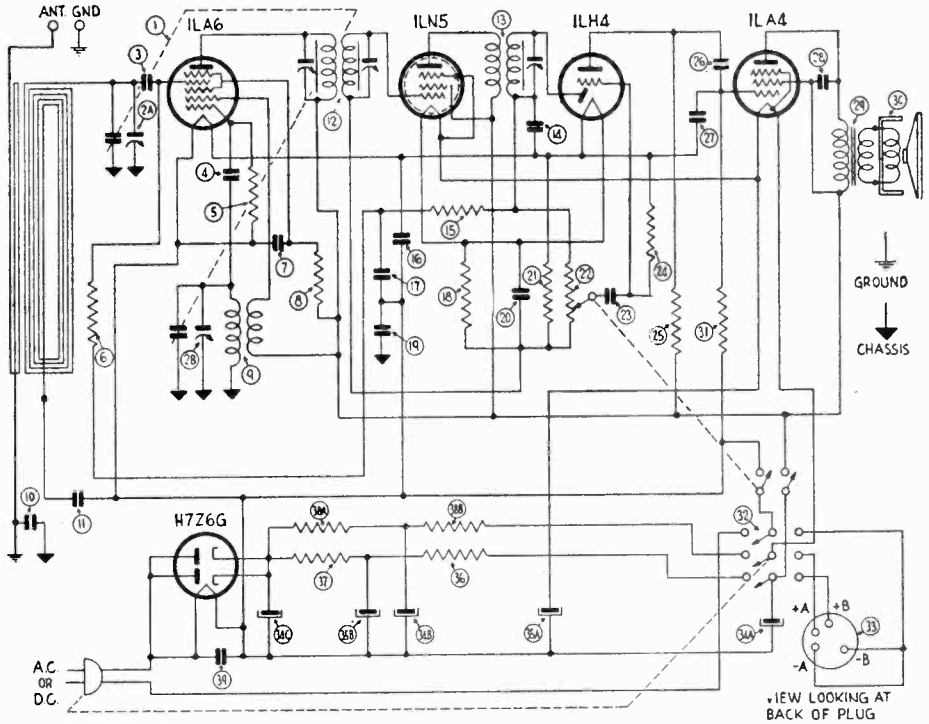


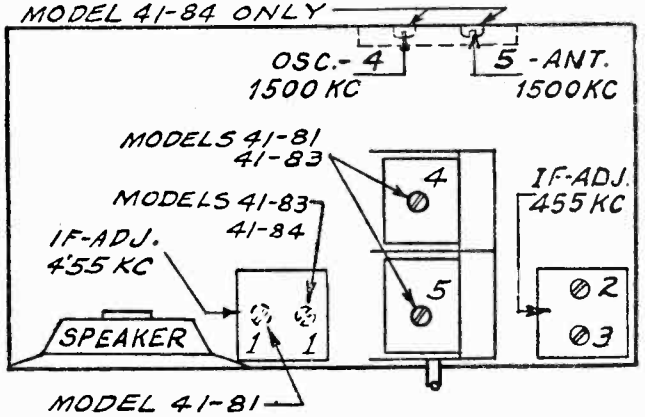
IF PEAK 455 KC

REPLACEMENT PARTS
PHILCO MODEL 41-83

Schem. No.	Description	Philco Part No.
1	Tuning Condenser	31-2455
2	Mica Condenser	60-010157
3	Mica Condenser	60-111157
4	Resistor (220,000 ohms ¼ watt)	33-422154
5	Oscillator Transformer	32-3425
6	1st I.F. Transformer	32-3265
7	Tubular Condenser (.01 mf. 400v)	30-4572
8	Tubular Condenser (.05 mf. 200v)	30-4519
9	Resistor (33,000 ohms ¼ watt)	33-333154
10	Resistor (4.7 megs. ¼ watt)	33-547154
11	2nd I.F. Transformer	32-3266
12	Mica Condenser (250 mmf.)	60-125157
13	Resistor (10 megs. ¼ watt)	33-610154
14	Volume Control (1 meg.)	33-5389
15	Resistor (6800 ohms ½ watt)	33-268344
16	Tubular Condenser (.004 mf. 400v)	30-4578
17	Tubular Condenser (.004 mf. 400v)	30-4578
18	Resistor (2.2 meg. ¼ watt)	33-522154
19	Resistor (2.2 meg. ¼ watt)	33-522154
20	Resistor (4.7 meg. ¼ watt)	33-547154
21	Resistor (680 ohms ½ watt)	33-168321
22	Mica Condenser (660 mmf.)	60-166157
23	Output Transformer	32-8062
24	Speaker	36-1481 "C"
25	Electrolytic Condenser (10 mf. 150v)	30-2396
26	Battery Cable	41-3487

FOR OTHER DATA SEE NEXT PAGE





REPLACEMENT PARTS
PHILCO MODEL 41-84

Schem. No.	Description	Philco Part No.
1	Tuning Condenser	31-2438
2	Padder	31-6346
3	Mica Condenser (110 mmf.)	60-111157
4	Mica Condenser (110 mmf.)	60-111157
5	Resistor (220,000 ohms ¼ watt)	33-422154
6	Resistor (1 meg. ¼ watt)	33-510154
7	Tubular Condenser (.05 mf. 400 V)	30-4518
8	Resistor (3300 ohms ¼ watt)	33-333154
9	Oscillator Transformer	32-3424
10	Tubular Condenser (.0015 mf. 200 V.)	30-4555
11	Tubular Condenser (.1 mf. 400 V)	30-4455
12	1st I. F. Transformer	32-3384
13	2nd I. F. Transformer	32-3266
14	Mica Condenser (110 mmf.)	30-111157
15	Resistor (4.7 meg. ¼ watt)	33-547154
16	Tubular Condenser (.1 mf. 400 V.)	30-4455
17	Tubular Condenser (.05 mf. 400 V)	30-4518
18	Resistor (3300 ohms ½ watt)	33-233334
19	Tubular Condenser (.25 mf. 400 V)	30-4604
20	Tubular Condenser (.01 mf. 400 V)	30-4572
21	Resistor (3300 ohms ½ watt)	33-233334

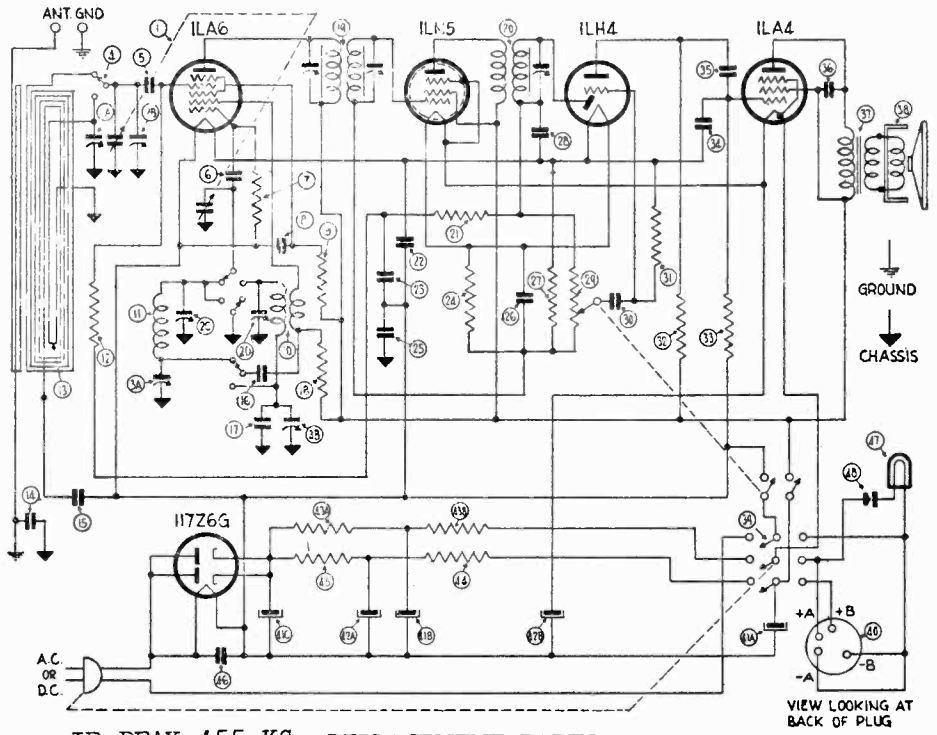
Schem. No.	Description	Philco Part No.
22	Volume Control (1 meg.)	33-5390
23	Tubular Condenser (.01 mf. 400 V)	30-4572
24	Resistor (4.7 meg. ¼ watt)	33-547154
25	Resistor (1 meg. ¼ watt)	33-510154
26	Tubular Condenser (.01 mf. 400 V)	30-4572
27	Mica Condenser (110 mmf.)	60-111154
28	Mica Condenser (660 mmf.)	60-166127
29	Output Transformer	32-8100
30	Speaker	36-1506
31	Resistor (2.2 meg. ¼ watt)	33-522154
32	Automatic Switch	42-1553
33	Battery Cable	41-3526
34	Electrolytic Condenser (20 mf. 10 mf. 10 mf. 150 V)	30-2452
35	Electrolytic Condenser (20 mf. 25 V 10 mf. 150 V)	30-2453
36	Resistor (1500 ohms ½ watt)	33-215334
37	Resistor (1500 ohms ½ watt)	33-215334
38	Filament Resistors (1500 ohms 1000 ohms)	33-3387
39	Tubular Condenser (.05 mf. 400 V)	30-4518

MODELS 41-81, 41-83, 41-84,

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Control grid of 1A7G	0.1 mf	455 kc	...	Tuning-cond.[1] fully closed	1
"	"	"	...	"	2
"	"	"	...	"	3
..... Note 2		1500 kc	...	1500 kc	4
"		"	...	"	5

Note 1.—DIAL CALIBRATION: With tuning-condenser at maximum-capacity position (fully closed), set tuning pointer on small dot at low-frequency end of scale.

Note 2.—Construct loop aerial of several turns of wire, and connect to signal-generator output terminals—place near receiver loop.



IF PEAK 455 KC

REPLACEMENT PARTS
PHILCO MODEL 41-85

Schem. No.	Description	Philco Part No.
1	Tuning Condenser	31-2459
2	Padder	31-6347
3	Padder	31-6100
4	Wave Switch	42-1570
5	Mica Condenser (110 mmf.)	60-111157
6	Mica Condenser (110 mmf.)	60-111157
7	Resistor (220,000 ohms, ¼ watt)	33-422154
8	Tubular Condenser (.05 mf., 400 V.)	30-4518
9	Resistor (33,000 ohms, ¼ watt)	33-333154
10	S. W. Oscillator Transformer	32-3432
11	B. C. Oscillator Transformer	32-3431
12	Resistor (1 meg., ¼ watt)	33-510154
13	S. W. Loop	76-1042
14	Tubular Condenser (.0015 mf., 200 V.)	30-4555
15	Tubular Condenser (.1 mf., 400 V.)	30-4455
16	Mica Condenser (500 mmf.)	60-150137
17	Mica Condenser (3000 mmf.)	60-230334
18	Resistor (4700 ohms, ½ watt)	33-247344
19	1st I. F. Transformer	32-3384
20	2nd I. F. Transformer	32-3266
21	Resistor (4.7 meg., ¼ watt)	33-547154
22	Tubular Condenser (.1 mf., 400 V.)	30-4455
23	Tubular Condenser (.05 mf., 400 V.)	30-4518
24	Resistor (3300 ohms, ½ watt)	33-233334
25	Tubular Condenser (.25 mf., 400 V.)	30-4604
26	Tubular Condenser (.01 mf., 400 V.)	30-4572
27	Resistor (3300 ohms, ½ watt)	33-233334
28	Mica Condenser (250 mmf.)	60-125157
29	Volume Control (1 meg.)	33-5390
30	Tubular Condenser (.01 mf., 400 V.)	30-4572
31	Resistor (4.7 meg., ¼ watt)	33-547154
32	Resistor (1 meg., ¼ watt)	33-510154
33	Resistor (2.2 meg., ¼ watt)	33-522154
34	Mica Condenser (110 mmf.)	60-111157
35	Tubular Condenser (.01 mf., 400 V.)	30-4572
36	Mica Condenser (660 mmf.)	60-166127
37	Output Transformer	32-8100
38	Speaker	36-1506
39	Automatic Switch	42-1553
40	Battery Cable	41-3526
41	Electrolytic Condenser (20 mf., 10 mf., 10 mf., 150 V.)	30-2452
42	Electrolytic Condenser (10 mf., 150 V., 20 mf., 25 V.)	30-2453
43	Filament Resistor (1000 ohms, 1500 ohms)	33-3387
44	Resistor (1500 ohms, ½ watt)	33-215334
45	Resistor (1500 ohms, ½ watt)	33-215334
46	Tubular Condenser (.05 mf., 400 V.)	30-4518
47	Pilot Lamp	76-1074

MODELS 41-85

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Note 1	0.1 mf	455 kc	B.C.	540 [2]	1
"	"	"	"	"	2
"	"	"	"	"	3
..... Note 3		1500 kc	"	1500 kc	Note 4
"		"	"	"	Note 5
"		580 kc	"	580 kc	6 [6, *]
"		1500 kc	"	1500 kc	Note 4
"		"	"	"	Note 5
"		6 mc	S.W.	6 mc	7 [7, *]
"		15 mc	"	15 mc	8 [8]
"		"	"	14.090 mc	Image check
"		"	"	15 mc	9

Note 1.—When adjusting i-f trimmers, the high side of signal-generator is connected through 0.1 mf condenser to loop-section stator lug of tuning-condenser.

Note 2.—DIAL CALIBRATION: With tuning-condenser fully closed (maximum capacity), set dial pointer on small dot below 550 kc.

Note 3.—When aligning r-f trimmers, a loop antenna is made from a few turns of wire and connected to signal-generator output terminals; this loop being placed a few feet from receiver loop.

Note 4.—Trimmer (4) on *Model 41-85* or (5) on *Model 41-851*.

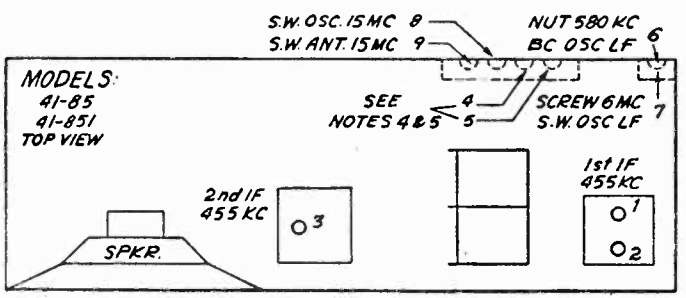
Note 4.—Trimmer (5) on *Model 41-85* or (4) on *Model 41-851*.

Note 6.—Trimmer (6) is nut adjustment.

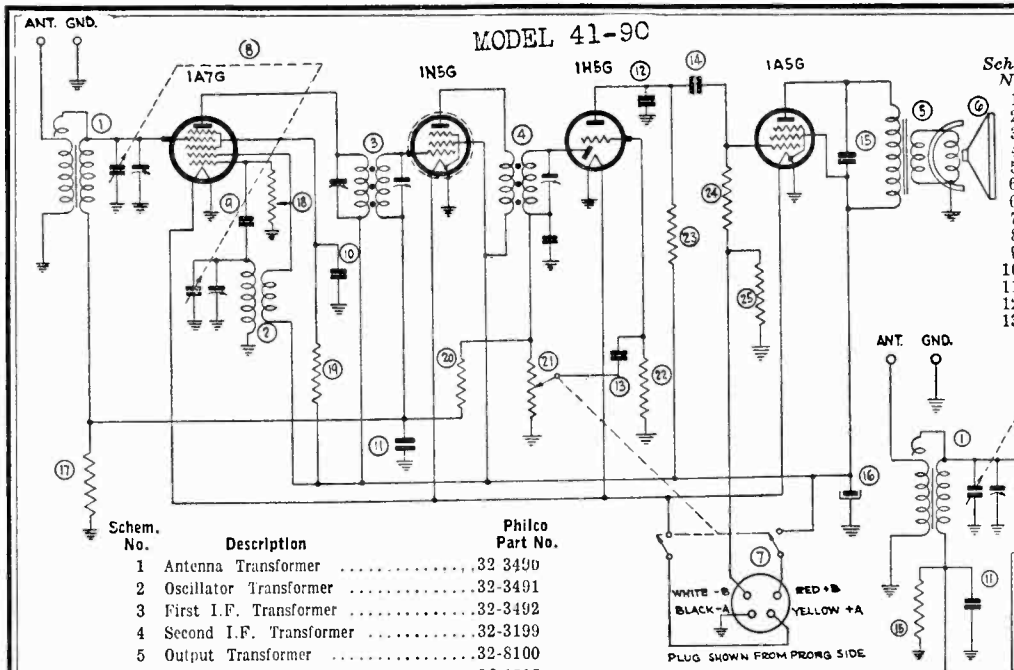
Note 7.—Trimmer (7) is screw adjustment.

Note 8.—Adjust to maximum on fundamental-signal peak.

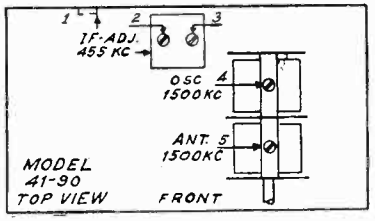
* While rocking.



MODEL 41-90



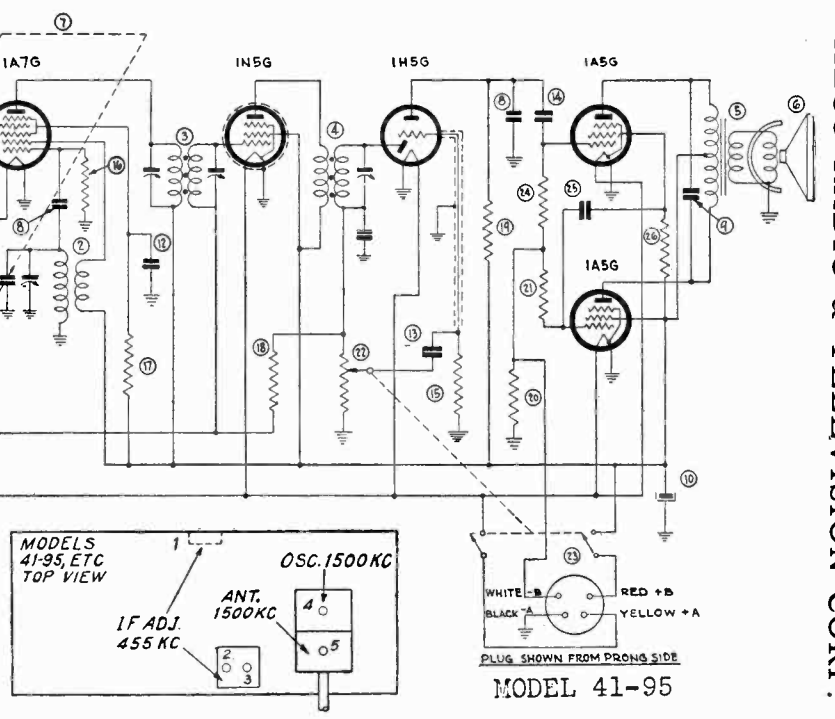
Schem. No.	Description	Philco Part No.
1	Antenna Transformer	32-3490
2	Oscillator Transformer	32-3491
3	First I.F. Transformer	32-3492
4	Second I.F. Transformer	32-3199
5	Output Transformer	32-8100
6	Speaker	36-1507
7	Battery Cable	41-3505
8	Tuning Condenser	31-2485
9	Moulded Mica Condenser (100 mmf.)	60-110157
10	Tubular Condenser (.05 mf. 200 V)	30-4519
11	Tubular Condenser (.05 mf. 200 V)	30-4519
12	Moulded Mica Condenser (100 mmf.)	60-110157
13	Tubular Condenser (.004 mf. 400 V)	30-4578
14	Tubular Condenser (.01 mf. 400 V)	30-4572
15	Moulded Mica Condenser (500 mmf.)	60-150157
16	Electrolytic Condenser (10 mf. 150 V)	30-2396
17	Resistor (4.7 meg. ¼ watt)	33-547154
18	Resistor (220,000 ohms ¼ watt)	33-422154
19	Resistor (68,000 ohms ¼ watt)	33-368154
20	Resistor (10 meg. ¼ watt)	33-610154
21	Volume Control and "On-Off" Switch	33-5407
22	Resistor (4.7 meg. ¼ watt)	33-547154
23	Resistor (1.0 meg. ¼ watt)	33-510154
24	Resistor (2.2 meg. ¼ watt)	33-522154
25	Resistor (1000 ohms ½ watt)	33-210336



Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Control grid of 1A7G	0.1 mf	455 kc	...	540 kc [1]	1
"	"	"	...	"	2
"	"	"	...	"	3
Ant. term.	225 mmf	1500 kc	...	1500 kc	4
"	"	"	...	"	5

Note 1.—DIAL CALIBRATION: With tuning-condenser in closed position (maximum capacity) set dial pointer on small dash below 540 kc.

MODEL 41-95

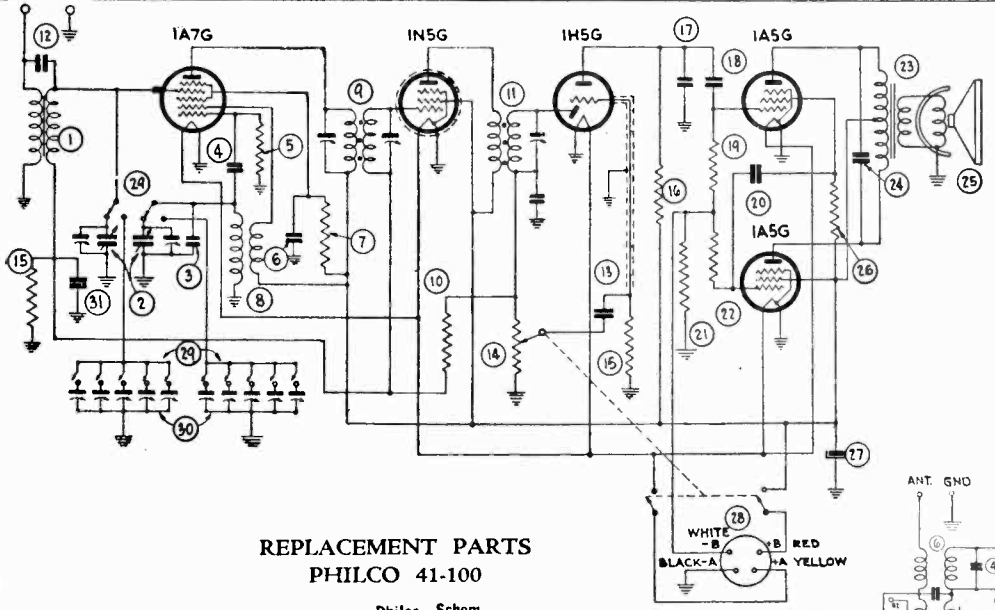


Schem. No.	Description	Philco Part No.
1	Antenna Transformer	32-3183
2	Oscillator Transformer	32-3184
3	1st I. F. Transformer	32-3198
4	2nd I. F. Transformer	32-3199
5	Output Transformer	32-8107
6	5" Speaker for Compact	36-1507
6A	8" Speaker for Console	36-1477
7	Tuning Condenser	31-2457
8	Moulded Mica Condenser (100 mmf.)	60-110157
9	Moulded Mica Condenser (250 mmf.)	60-125157
10	Electrolytic Condenser (10 mf., 150 v)	30-2396
11	Tubular Condenser (.05 mf., 200 v)	30-4519
12	Tubular Condenser (.05 mf., 200 v)	30-4444
13	Tubular Condenser (.004 mf., 400 v)	30-4578
14	Tubular Condenser (.01 mf., 400 v)	30-4572
15	Resistor (4.7 Meg., ¼ watt)	33-547154
16	Resistor (220,000 ohms, ¼ watt)	33-422154
17	Resistor (68,000 ohms, ¼ watt)	33-368154
18	Resistor (10 Meg., ¼ watt)	33-610154
19	Resistor (1 Meg., ¼ watt)	33-510154
20	Resistor (680 ohms, ½ watt)	33-168326
21	Resistor (2.2 Meg., ¼ watt)	33-522154
22	Volume Control (1 Meg. with DPST switch)	33-5398
23	Battery Cable	41-3505
24	Resistor (2.2 Meg., ¼ watt)	33-522154
25	Tubular Condenser (.01 mf., 400 v)	30-4572
26	Resistor (10,000 ohms, ¼ watt)	33-310154

MODELS 41-95, 41-100

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Control grid of 1A7G	0.1 mf	455 kc	...	540 kc [1]	1
"	"	"	...	"	2
"	"	"	...	"	3
Ant. term.	225 mmf	1500 kc	...	1500 kc	4
"	"	"	...	"	5

Note 1.—DIAL CALIBRATION: With tuning-condenser in closed position (maximum capacity) set dial pointer on small dash below 540 kc.



MODEL 41-105

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Control grid of 1A7G	0.1 mf	455 kc	B.C.	540 kc [1]	1
"	"	"	"	"	2
"	"	"	"	"	3
Ant. term.	225 mmf	1500 kc	"	1500 kc	4
"	"	"	"	"	5
"	"	580 kc	"	580 kc	6 *
"	"	1500 kc	"	1500 kc	4
"	"	"	"	"	5
"	400 ohms	12 mc	S.W.	12 mc	7 [2]
"	"	12.910 mc	"	"	Image check

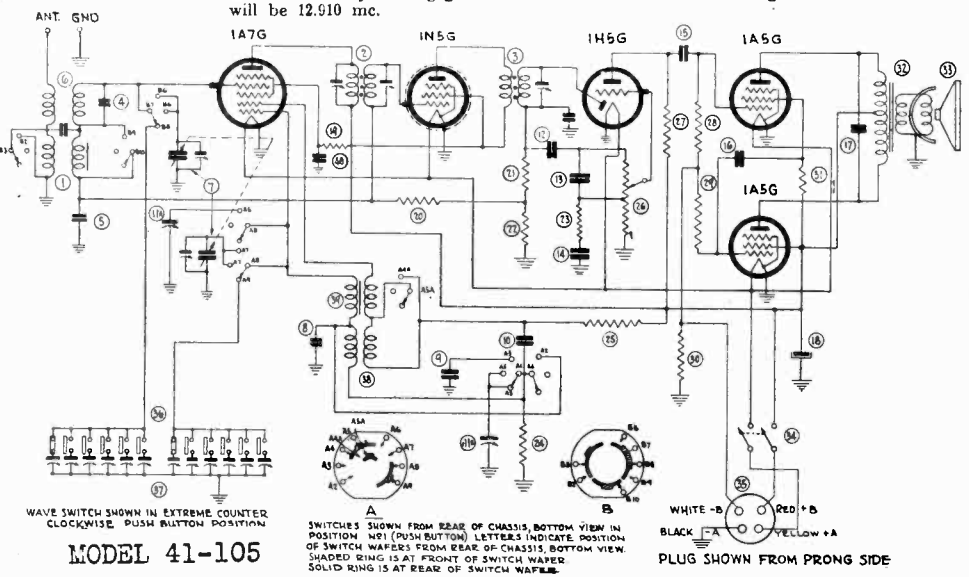
* While rocking.

Note 1.—DIAL CALIBRATION: With tuning-condenser in closed position (maximum capacity) set dial pointer on small dash below 540 kc.

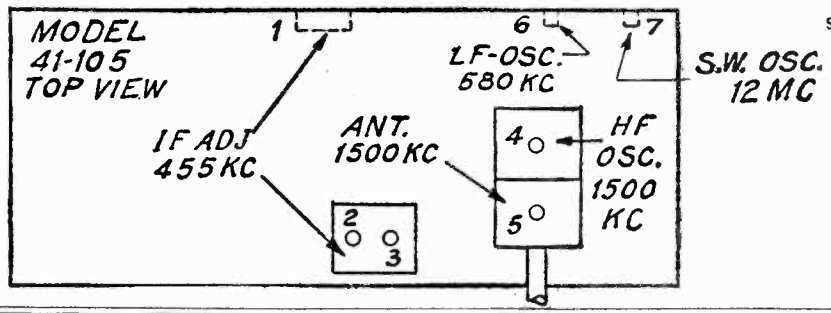
Note 2.—When adjusting trimmer (7) be sure to tune in fundamental signal (12 mc) instead of image signal. If trimmer is correctly adjusted, the image will be found by turning generator 910 kc above fundamental signal which will be 12.910 mc.

REPLACEMENT PARTS
PHILCO 41-100

	Description	Philco Part No.	Schem. No.	Description	Philco Part No.
1	Antenna Transformer	32-3248	16	Resistor (1 Meg. ¼ watt)	33-510154
2	Tuning Condenser	31-2461	17	Molded Mica Condenser (100 mmf.)	60-110157
3	Silver Mica Condenser	30-1113	18	Tubular Condenser (.01 mf., 400 V)	30-4572
4	Molded Mica Condenser (100 mmf.)	60-110157	19	Resistor (2.2 Meg. ¼ watt)	33-522154
5	Resistor (220,000 ohms ¼ watt)	33-422154	20	Tubular Condenser (.01 mf. 400 V)	30-4572
6	Tubular Condenser (.05 mf. 200 V)	30-4444	21	Resistor (680 ohms ½ watt)	33-168326
7	Resistor (68,000 ohms ¼ watt)	33-368154	22	Resistor (2.2 Meg. ¼ watt)	33-522154
8	Oscillator Transformer	32-3214	23	Output Transformer	32-8107
9	1st I. F. Transformer	32-3198	24	Molded Mica Cond. (250 mmf.)	60-125157
10	Resistor (10 Meg. ¼ watt)	33-610154	25	5" Speaker for Compact	36-1507
11	2nd I. F. Transformer	32-3199		8" Speaker for Console	36-1488
12	Molded Mica Condenser (5 mmf. Included in Ant. Trans. Assy.)		26	Resistor (10,000 ohms ¼ watt)	33-310154
			27	Electrolytic Condenser (10 mf. 150 V)	30-2396
13	Tubular Condenser (.004 mf. 400 V)	30-4578	28	Battery Cable	41-3505
14	Volume Control (1 Meg. & DPST Switch)	33-5398	29	Push Button Switch	42-1528
			30	Push Button Padder Strip	31-6349
15	Resistor (4.7 Meg. ¼ watt)	33-547154	31	Tubular Condenser (.05 mf. 200 V)	30-4519

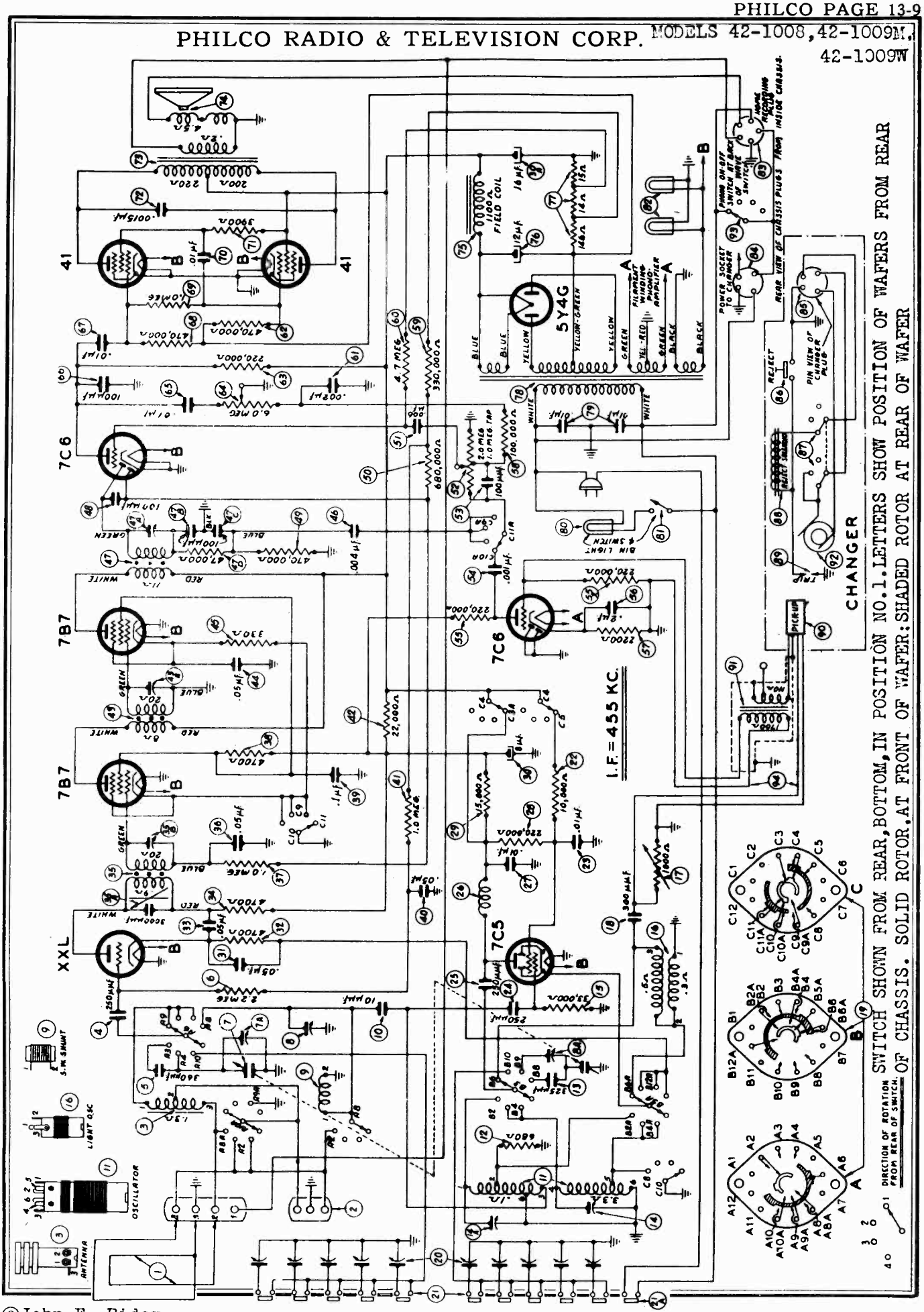


MODEL 41-105



Schem. No.	Description	Philco Part No.		Description	Philco Part No.
1.	Broadcast Antenna Transformer 105	32-3468	16.	Tubular Condenser (.01 mf., 400 v.)	30-4572
2.	1st I.F. Transformer	32-3198	17.	Moulded Mica Condenser (730 mmf.)	60-173127
3.	2nd I.F. Transformer	32-3199	18.	Electrolytic Condenser (10 mf., 150 v.)	30-2396
4.	Moulded Mica Condenser (130 mmf.)	60-113117	19.	Resistor (68,000 ohms, ¼ watt)	33-368154
5.	Tubular Condenser (.05 mf., 200 v.)	30-4519	20.	Resistor (2.2 meg., ¼ watt)	33-522154
6.	Short Wave Ant. Trans.	32-3471	21.	Resistor (330,000 ohms, ¼ watt)	33-433154
7.	Tuning Condenser	31-2474	22.	Resistor (150,000 ohms, ¼ watt)	33-415154
8.	Moulded Mica Condenser (20 mmf.)	60-020127	23.	Resistor (47,000 ohms, ¼ watt)	33-347154
9.	Moulded Mica Condenser (4500 mmf.)	60-245124	24.	Resistor (220,000 ohms, ¼ watt)	33-422154
10.	Moulded Mica Condenser (500 mmf.)	60-150157	25.	Resistor (10,000 ohms, ¼ watt)	33-310154
11.	Dual Padding Condenser	31-6353	26.	Volume Control (2 meg., tap at 1 meg.)	33-5402
12.	Tubular Condenser (.02 mf., 400 v.)	30-4516	27.	Resistor (1 meg., ¼ watt)	33-510154
13.	Moulded Mica Condenser (250 mmf.)	60-125157	28.	Resistor (2.2 meg., ¼ watt)	33-522154
14.	Tubular Condenser (1003 mf., 1000 v.)	30-4469	29.	Resistor (2.2 meg., ¼ watt)	33-522154
15.	Tubular Condenser (.01 mf., 400 v.)	30-4572	30.	Resistor (560 ohms, ½ watt)	33-156326
			31.	Resistor (10,000 ohms, ¼ watt)	33-310154

PHILCO RADIO & TELEVISION CORP. MODELS 42-1008, 42-1009M, 42-1009W



REPLACEMENT PARTS — MODELS 42-1008, 42-1009

Schem. No.	Description	Part No.
	Loop Aerial (42-1008)	76-1345
	Loop Aerial (42-1009)	76-1397
	Sleeve (Loop Mtg.)	28-3806
	Spring Washer (Loop Mtg.)	28-4186
	Washer (Loop Mtg.)	W-151
	Washer (Loop Mtg.)	W-425
	Screw (Loop Mtg.)	W-722
	Terminal Panel	38-9870
2	External Aerial Socket	27-6145
3	Aerial Transformer (Broadcast)	32-3784
	Mtg. Clip	28-5002
4.	Mica Condenser (250 mmfd.)	60-125157
5.	Mica Condenser (360 mmfd.)	30-1211
6.	Resistor (2.2 megohms)	33-522339
7.	Tuning Condenser	31-2482
	Drive Cord (Pointer)	31-2502
	Spring	28-8913
	Drive Drum	38-9856
	Mtg. Sleeve	28-5665
	Mtg. Screw (Tuning Cond.)	W-2002
	Tuning Shaft	31-2589
	Spring Washer	56-1659
	"C" Washer	28-2043
8.	Compensator (Aerial—SW)	31-6401
8A.	Compensator (Oscillator—580 K.C.) Part of 8	
9.	Aerial Transformer (S.W.——)	32-3786
10.	Mica Condenser (10 mmfd.)	60-010137
11.	Oscillator Transformer (Brdcst.-S.W.)	32-3782
	Mtg. Clip	28-5003
12.	Resistor (680 ohms)	33-168336
13.	Mica Condenser (325 mmfd.)	30-1212
14.	Compensator (Broadcast Oscillator)	31-6440
14A.	Compensator (S.W. Oscillator) Part of 14	
15.	Resistor (33,000 ohms)	33-333339
16.	Light-Beam Oscillator Transformer	32-3785
	Mtg. Clip	28-5002
17	Light-Beam Oscillator Control	33-5435
18.	Mica Condenser (300 mmfd.)	60-130127
19.	Band Switch	42-1688
	Mtg. Nut	W-2157
	Drive Cord (Indicator)	31-2590
	Spring	28-8953
20.	Push-Button Compensator Assembly	31-6446
21.	Push-Button and Power Switch Assem.	42-1693
21A.	Push-Button Power Switch (Part of 21)	42-1714
	Mtg. Sleeve	56-1505
	Mtg. Screw	W-523
22.	Resistor (10,000 ohms)	33-310339
23.	Condenser (.01 mfd., 400 volts)	30-4572
24.	Mica Condenser (250 mmfd.)	60-125157
25.	Mica Condenser (250 mmfd.)	60-125157
26.	Oscillator Plate Choke	32-3615
27.	Condenser (.01 mfd., 400 volts)	30-4572
28.	Resistor (220,000 ohms)	33-422339
29.	Resistor (15,000 ohms)	33-315339
30.	Electrolytic Condenser (8-16 mfd.)	30-2480
30A.	Electrolytic Condenser (16 mfd.) (Part of 30)	
	Mtg. Clamp	56-1848
31.	Condenser (.05 mfd., 200 volts)	30-4519
32.	Resistor (4700 ohms)	33-247339
33.	Condenser (.05 mfd., 400 volts)	30-4518
34.	Resistor (4700 ohms)	33-247339
35.	1st I. F. Transformer	32-3623
	Mtg. Nut	W-1949
35A.	Primary Compensator (Iron Core) (Part of 35)	
35B.	Secondary Compensator (Part of 35)	
35C.	Condenser (3000 mmfd.) (Part of 35)	
36.	Condenser (.05 mfd., 200 volts)	30-4519
37.	Resistor (1 megohm)	33-510339
38.	Resistor (4700 ohms)	33-247339
39.	Condenser (.1 mfd., 400 volts)	30-4527
40.	Condenser (.05 mfd., 200 volts)	30-4519

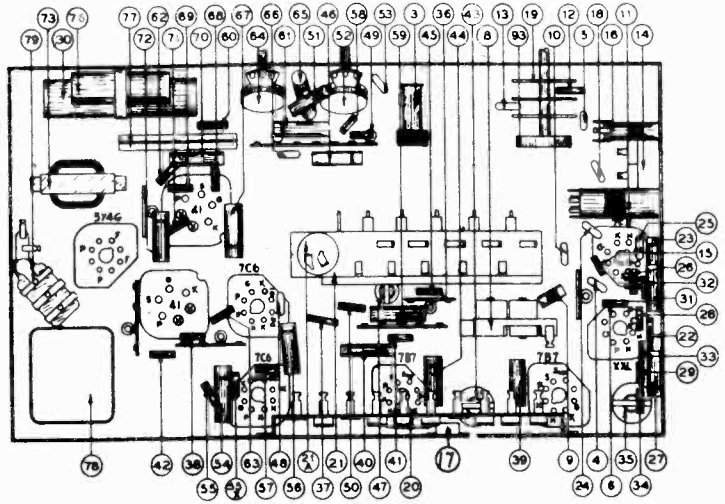


Fig. 2. Locations of Parts—Under Chassis Model 42-1008, 42-1009

41.	Resistor (1 megohm)	33-510339
42.	Resistor (22,000 ohms, 1 watt)	63-322439
43.	2nd I. F. Transformer	32-3466
	Mtg. Nut	W-1949
43A.	Secondary Compensator (Part of 43)	
44.	Condenser (.05 mfd., 200 volts)	30-4519
45.	Resistor (330 ohms)	33-133336
46.	Condenser (.004 mfd., 600 volts)	30-4623
47.	3rd I. F. Transformer	32-3625
	Mtg. Nut	W-1949
47A.	Secondary Compensator (Part of 47)	
47B.	Condenser (100 mmfd.) (Part of 47)	
47C.	Condenser (100 mmfd.) (Part of 47)	
47D.	Resistor (47,000 ohms)	33-347339
48.	Condenser (100 mmfd.)	60-110157
48.	Resistor (470,000 ohms)	33-447339
50.	Resistor (680,000 ohms)	33-468339
51.	Condenser (.006 mfd., 400 volts)	30-4591
52.	Volume Control	33-5468
	Mtg. Nut	W-2157
53.	Mica Condenser (100 mmfd.)	60-110157
54.	Condenser (.001 mfd. 600 volts)	30-4620
55.	Resistor (220,000 ohms)	33-422339
55X.	Resistor (220,000 ohms)	33-422339
56.	Condenser (.2 mfd., 200 volts)	30-4587
57.	Resistor (2200 ohms)	33-222339
58.	Resistor (100,000 ohms)	33-410339
59.	Resistor (330,000 ohms)	33-433339
60.	Resistor (4.7 megohms)	33-547339
61.	Condenser (.002 mfd., 600 volts)	30-4622
62.	Resistor (470,000 ohms)	33-447339
63.	Resistor (220,000 ohms)	33-422339
64.	Tone Control	33-5467
	Mtg. Nut	W-2157
*65.	Condenser (.004 mfd., 600 volts)	30-4623
66.	Mica Condenser (100 mmfd.)	60-110157
67.	Condenser (.01 mfd., 400 volts)	30-4572
68.	Resistor (470,000 ohms)	33-447339
69.	Resistor (1 megohm)	33-510339
70.	Condenser (.01 mfd., 400 volts)	30-4572
71.	Resistor (3900 ohms)	33-239339
72.	Condenser (.0015 mfd., 1000 volts)	30-4616
73.	Output Transformer	32-8133
†74.	Speaker	36-1528-4
	Speaker	36-1528-9
	Cone Assembly (Speaker 36-1528-4)	36-4176
	Cone Assembly (Speaker 36-1528-9)	36-4203
	Speaker Cable	41-3593
	Rubber Grommet (Mtg. Speaker)	27-4596
	Mtg. Nut	W-124
	Washer	28-3320
	Sleeve	56-2044
75.	Field Coil (Replace Speaker 46-1528)	
76.	Electrolyte Condenser (12 mfd., 475 v.)	30-2481
77.	Bias Resistor (14, 15, 146 ohms)	33-3395
78.	Power Transformer (115 v., 60 cycles)	32-8129
79.	Line Filter Condenser (.01-01 mfd.)	3903-ODG
80.	Record Changer Compartment Light Cable and Socket Assembly	34-2484
		41-3627
81.	Compartment Light Switch & Cable	76-1363
82.	Pilot Lamp (Dial)	34-2210
	Socket Assembly (Dial Light)	38-9607
	Pilot Lamp (Band Indicator)	34-2064
	Socket Assembly (Band Indicator)	76-1212
83.	Socket (Home Recording, on Chassis)	27-6179
84.	Changer Power Socket (on Chassis)	27-6182
85.	Power Cable & Plug (Record Changer)	35-2548
86.	Reject Button (Record Changer)	35-2545
87.	Selector Switch (OFF-Automatic-Manual-Record Changer)	35-2547
88.	Reject Solenoid	35-2549
89.	Electric Reject Trip (on Changer)	
90.	Light Beam Reproducer	35-2518
91.	Phonograph Input Transformer	32-8196
	Pulsating Lever Assembly	35-2550
	Trip Switch and Tone Arm Position Lever Assembly	35-2551
92.	Motor (Record Changer, 115 v., 60 cy.)	35-2552

MISCELLANEOUS PARTS
Models 42-1008, 42-1009

Automatic Record Changer, Complete	35-1285
Cabinet (42-1008)	10577-A
Cabinet (Walnut—42-1009)	10555-A
Cabinet (Mahogany—42-1009)	10555-B
Cable (Power)	L-3245
Dial	27-5752
Dial Background Card	27-9800
Dial Pointer	56-1516
Mtg. Clamp	56-1517
Mtg. Spring (Background Card)	28-8908
Mtg. Screw (Dial Clamp)	W-1974
Escutcheon (Push-Buttons)	56-2316
Screw (Mtg. Escutcheon)	W-2073
Knob (Tuning-Volume-Tone) (42-1008, 42-1009-W)	54-4105
Knob (Push-Buttons) (42-1008, 42-1009-W)	54-4106
Knob (Tuning-Volume-Tone) (42-1009-M)	54-4154
Knob (Push-Button—42-1009-M)	54-4175
Rubber Grommet (Mtg. Chassis)	27-4571
Socket (Rubber—7C5 Tube)	27-6129
Socket (Loktal Tubes)	27-6158
Socket (41 Tubes)	27-6168
Socket (6X5G Tube)	27-6173
Mtg. Eyelet	W-1650
Socket Assembly (P. B. Indication)	38-9607
Socket Assembly (Pilot Light)	76-1212
Screw (Mtg. Chassis)	W-1345
Tab Kit	40-6660
Tab (OFF-ON)	27-5738
Tab (Television)	27-5778
Tab Cover	27-5737
Washer (Chassis Mtg.)	28-5114
Wiring Panel (3 lug)	38-8369
Wiring Panel (4 lug)	38-9117
Wiring Panel (9 lug)	38-9433
Wiring Panel (5 lug)	38-9579
Wiring Panel (4 lug)	38-9699
Wiring Panel (7 lug)	76-1322

D.C. indicated at the tube elements in the diagram were measured with a 1000 ohms per voltmeter, Philco Model 027, using the 300-volt scale line voltage 117 volts A.C. no signal being received-range switch broadcast.

* Condenser changed to .01 mfd., part No. 30-4572 in run 2nd chassis.

† Two types of speakers are used on these models. These speakers are interchangeable and will have the same part number, with the exception of a suffix number -4, -9 added to the part number. The cone assemblies, however, of these speakers are not interchangeable.

Tube	Location	Radio Position D.C. Voltage	Phono. Position D.C. Voltage
7C5 Osc.	Plate	50	200
7C5 Osc.	Screen	8	110
7C5 Osc.	Bias (Grid Leak)	3	2½
XXL 1st Det.	Plate	80	180
XXL 1st Det.	Bias (Cathode)	2	19

Tube	Location	Radio Position D.C. Voltage	Phono Position D.C. Voltage
7B7 1st & 2nd I.F.	Plate	215	190
	Screen	75	175
7B7 2nd I.F.	Bias (Cathode)	2½	45
7C6 2nd Det. 1st Audio	Plate	95	90

Tube	Location	Radio Position D.C. Voltage	Phono. Position D.C. Voltage
7C6 Preamp.	Plate	35	65
41 Output (Phase inverter)	Plate	210	190
	Screen	200	180
41 Output	Plate	210	190
	Screen	215	195

Tube	Location	Radio Position D.C. Voltage	Phono. Position D.C. Voltage
	12 mf. elect. to ground	300	290
	16 mf. elect. to ground	215	195
	8 mf. elect. to ground	85	180

PHILCO RADIO & TELEVISION CORP.

MODELS 42-1008, 42-1009M, 42-1009W

ALIGNING R. F. AND I. F. COMPENSATORS

MODEL 42-1008, CODE 121; 42-1009W, AND 42-1009M, CODE 121

The following procedure is the same for both models.

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 070.
2. **ALIGNING INDICATOR:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Models 027 and 028. Circuit testers contain both these meters.
3. **TOOLS:** Philco Fiber Screw Driver, Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

VACUUM TUBE VOLTMETER: To use the vacuum tube voltmeter as an aligning indicator, make the following connections: Attach the negative (−) terminal of the voltmeter to any point in the circuit where the A.V.C. voltage can be obtained. Connect the positive (+) terminal of the vacuum tube voltmeter to the chassis.

AUDIO OUTPUT METER: Terminal No. 1 is provided on the loop aerial panel for connecting one lead of the audio output meter to the voice coil of the speaker. The other lead of the meter is connected to the chassis. When using these connections, the lowest A.C. scale of the meter must be used. (0 to 10 volts).

The audio output meter can also be connected between the plate of the output tube and the ground of the chassis.

SIGNAL GENERATOR: When adjusting the "I. F." padders, the high side of the signal generator is connected through a .1 mfd. condenser to the antenna section of the tuning condenser. Connect the ground or low side of the generator to the chassis.

When aligning the R. F. padders a loop is made from a few turns of wire and connected to the signal generator output terminals; the signal generator is then placed close to the loop of the radio.

When adjusting the radio outside the cabinet the loop aerial should be placed in approximately the same position around or near the chassis as when assembled.

After connecting the aligning instruments, adjust the compensators as shown in the tabulation below. Locations of the compensators are shown in the figure 3. If the indicating meter pointer goes off scale when adjusting the compensator, reduce the strength of the signal from the generator. Keep volume control of radio at maximum position.

Operations in Order	SIGNAL GENERATOR		RECEIVER			Special Instructions
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Settings	Adjust Compensators in Order	
1	Amt. Section of Tuning Cond. with .1 mfd. Cond.	455 K.C.	Tuning Cond. Closed	Vol. Max. Bands Switch S. W.	3S, 35B 43A, 47A	
2	Loop Signal Generator	1720 K.C.	1720 K.C.	Bands Switch "Brdcst"	14	Note A
3	Loop Signal Generator	1500 K.C.	1500 K.C.	Bands Switch "Brdcst"	7A	
4	Loop Signal Generator	580 K.C.	580 K.C.	Bands Switch "Brdcst"	8A	Roll comp. (8A) to "max." Recheck Operation No. 2
5	Loop Signal Generator	1720 K.C.	1720 K.C.	Bands Switch "Brdcst"	14	
6	Loop Signal Generator	15 M.C.	15 M.C.	Bands Switch S. W.	14A, 8	Note B

AERIAL CONNECTIONS: The built-in loop aerial system is designed to operate without an outside aerial or ground and to give exceptionally sensitive receiving performance of stations on the standard and short wave frequencies. When operating the radio, however, in steel reinforced buildings and other shielded locations, the PHILCO Outdoor Aerial Part No. 45-2817 is recommended for maximum receiving performance. The outdoor aerial can be easily connected to the radio by inserting the plug attached to the transformer unit into the socket provided at the rear of the chassis. This aerial can be obtained from your local PHILCO distributors. A ground connection is not required with either type of installation.

NOTE A.—Dial calibration: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To do this, proceed as follows: Turn the tuning condenser to the maximum capacity position (plates fully meshed). With the condenser in this position, set the tuning pointer on the extreme left index line at the low frequency end of the broadcast scale.

NOTE B.—Adjust padder (14A) to the second signal peak from the tight position. Roll padder (8) slowly to maximum on the first peak from tight position.

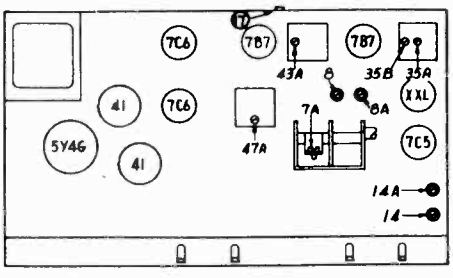


FIG. 3. LOCATIONS OF COMPENSATORS—TOP OF CHASSIS MODELS 42-1008, 42-1009

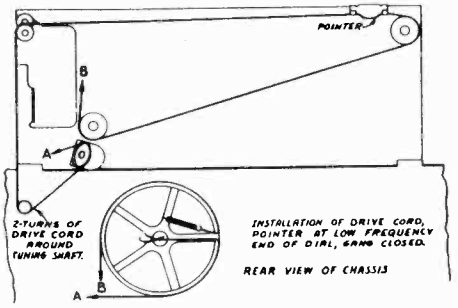


FIG. 4. INSTALLATION OF DRIVE CORDS POINTER AT LOW FREQUENCY END OF DIAL TUNING CONDENSER CLOSED.

INTERMEDIATE FREQUENCY: 455 K.C.

TUNING BAND FREQUENCIES: 540 to 1720 K.C.; 9 to 15.5 M.C.

POWER SUPPLY: 115 volts, 50 or 60 cycle A.C., Consumption Watts. These models are shipped for operation on a 115-volt, 60-cycle, A.C. power supply. To operate on a 115-volt, 50-cycle current, the phonograph motor must be changed to

PHILCO TUBES USED: Nine; one 7C5, oscillator; one XXL, converter; two 7B7, I. F. amplifiers; 7C6, 2nd detector, 1st audio; 7C6, Phonograph pre-amplifier; two, 41 audio output, and a 6X5G, Rectifier.

MODELS 42-1008,42-1009M, 42-1009W
MODELS 42-1010,42-1011M

PHILCO RADIO & TELEVISION CORP.

MODELS 42-1008,42-1009M,42-1009W

ADJUSTING ELECTRIC PUSH-BUTTON TUNING

Select five of the most popular stations received in the locality. Insert the station call letters into the spaces on the buttons. The station with the lowest frequency is placed in the second button from the left and the highest frequency is placed in the sixth push button on the right. Each push button is adjusted by two adjusting screws located on the rear of the chassis. Each set of screws is numbered and labeled "Ant.", "Osc." and covers a frequency range as follows:

KC.	KC.	KC.	KC.	KC.
1185	850	710	540	540
TO	TO	TO	TO	TO
1720	1600	1185	980	980
10 9	8 7	6 5	4 3	2 1

OSC. ANT. OSC. ANT. OSC. ANT. OSC. ANT. OSC. ANT.

Looking at the front of the cabinet, the second button on the left is adjusted by adjusting screws No. 1 and 2. The next push button by adjusting screws No. 3 and 4, and the remaining push buttons in order.

1. Press in "Off-On" push button, turn "Bands" knob to "Broadcast."

2. Set up a Model 070 Signal Generator near the receiver and connect a loop aerial (made from a few turns of wire 12 inches in diameter) to the high and ground output jacks of the signal generator. Turn the output controls to maximum and set the modulation control to "MOD. ON."

3. Manually tune in the station to be set up on the first push button. After doing this set the indicator of the 070 Signal Generator to the frequency of the station being received. As the indicator approaches the frequency of the station a whistle will be heard; leave the indicator at this point.

4. Turn "Bands" knob to "Push button" position. Using the insulated screw driver, turn the No. 2 "Osc." screw until the broadcast station identified by the signal generator is heard; at this point, turn the indicator of the signal generator away from the frequency of the station. Readjust No. 2 "Osc." and No. 1 "Ant." screws until the station is clearly and distinctly heard. The push button should then be adjusted properly to the station.

After setting up the first station the same procedure as outlined above is used for the remaining stations. When these models are set up to receive the sound of a television program tuned in by the special type Philco Television Sets or if it is to be used in conjunction with a Philco Record Player, the lowest frequency push button should be used. To tune in these programs, the same procedure as given for broadcast stations above is used.

Further details for setting up these Radios for operation with Philco Television Sets or Record Players are supplied with the instruments.

ADJUSTING ELECTRIC PUSH BUTTON TUNING

The Electric push button tuning mechanism consists of ten push buttons. Five push buttons control and select power supply, Broadcast, Police and Shortwave Bands and Phanograph Operation. The remaining five push buttons are used for automatically selecting five standard broadcast stations.

Select five of the most popular stations received in the locality. Insert the station call letters into the spaces above the buttons. The station with the lowest frequency is placed in the second button from the left and the highest frequency is placed in the sixth push button from the left. Each push button is adjusted by two adjusting screws located on the rear of the chassis. Each set of screws is numbered and labeled "Ant.", "Osc." and covers a frequency range as shown in Fig. 1.

Looking at the front of the cabinet, the second button from the left is adjusted by adjusting screws No. 1. The next push button by adjusting screws No. 2, and the remaining push buttons in order.

1. Press in "Broadcast" push button.

2. Set up a Model 070 Signal Generator near the receiver and connect a loop aerial (made from a few turns of wire 12 inches in diameter) to the high and ground output jacks of the signal generator. Turn the output controls to maximum and set the modulation control to "MOD. ON."

3. Manually tune in the station to be set up on the first station push button. After doing this set the indicator of the 070 Signal Generator to the frequency of the station being received. As the indicator approaches the frequency of the station a whistle will be heard; leave the indicator at this point.

4. Press "in" the second push button from the left of cabinet. Using the insulated screw driver, turn the No. 1 "Osc." screw until the broadcast station identified by the signal generator is heard; at this point, turn the indicator of the signal generator away from the frequency of the station. Readjust No. 1 "Osc." and "Ant." screws until the station is clearly and distinctly heard. The push button should then be adjusted properly to the station.

After setting up the first station the same procedure as outlined above is used for the remaining stations. When these models are set up to receive the sound of a television program tuned in by the special type Philco Television Sets or if it is to be used in conjunction with a Philco Record Player, the lowest frequency push button should be used. To tune in these programs, the same procedure as given for broadcast stations above is used.

Further details for setting up these Radios for operation with Philco Television Sets or Record Players are supplied with the instruments.

MODELS 42-1010,42-1011M

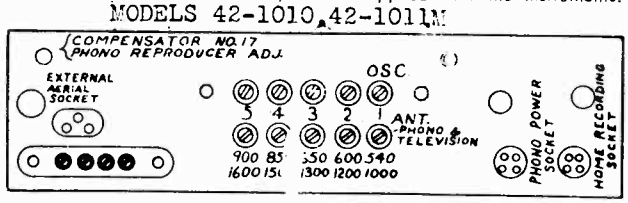


FIG. 1.—PUSH BUTTON COMPENSATOR LOCATIONS

LIGHT-BEAM REPRODUCER ADJUSTMENTS

To reproduce the sound from a record, the light beam of the reproducer must be carefully positioned on the light sensitive cell. If the light beam is not carefully set, the sound reproduction will be distorted, weak or, if the light beam is completely on or off the cell, the phonograph will be silent.

If any of these conditions exist, the following adjustment procedure should be made:

NOTE—These adjustments should be made with the power line voltage at 117 volts A.C.

A. ADJUSTING WIDTH OF LIGHT BEAM

To make this adjustment push the lamp socket assembly into its holder until a clear image of the lamp filament appears on the light cell. The socket should then be slightly pushed in beyond this point until the rectangular spot of light is 5/32" in width. The socket assembly is now rotated so that the spotlight is vertical.

B. POSITIONING THE LIGHT BEAM

To position the light beam on the light cell, turn the adjusting screw at the lower left side of the reproducer until the spot is half on the cell and half on the metal frame surrounding the cell.

C. ADJUSTING INTENSITY OF LAMP

When shipped from the factory, the lamp of the reproducer is adjusted for best operating efficiency. The intensity of the light from the lamp is adjusted by Compensator No. 17 located on the radio chassis. Under ordinary circumstances, an adjustment will not be necessary. When replacing the reproducer or lamp, however, it may be necessary to readjust the light intensity. In this case the compensator is adjusted as follows:

1. Turn volume control on full and play a record.
2. While the record is playing, turn compensator 17 in the direction necessary to obtain the best operating point without distortion. By turning the compensator the strength of the pick-up output is increased or decreased.

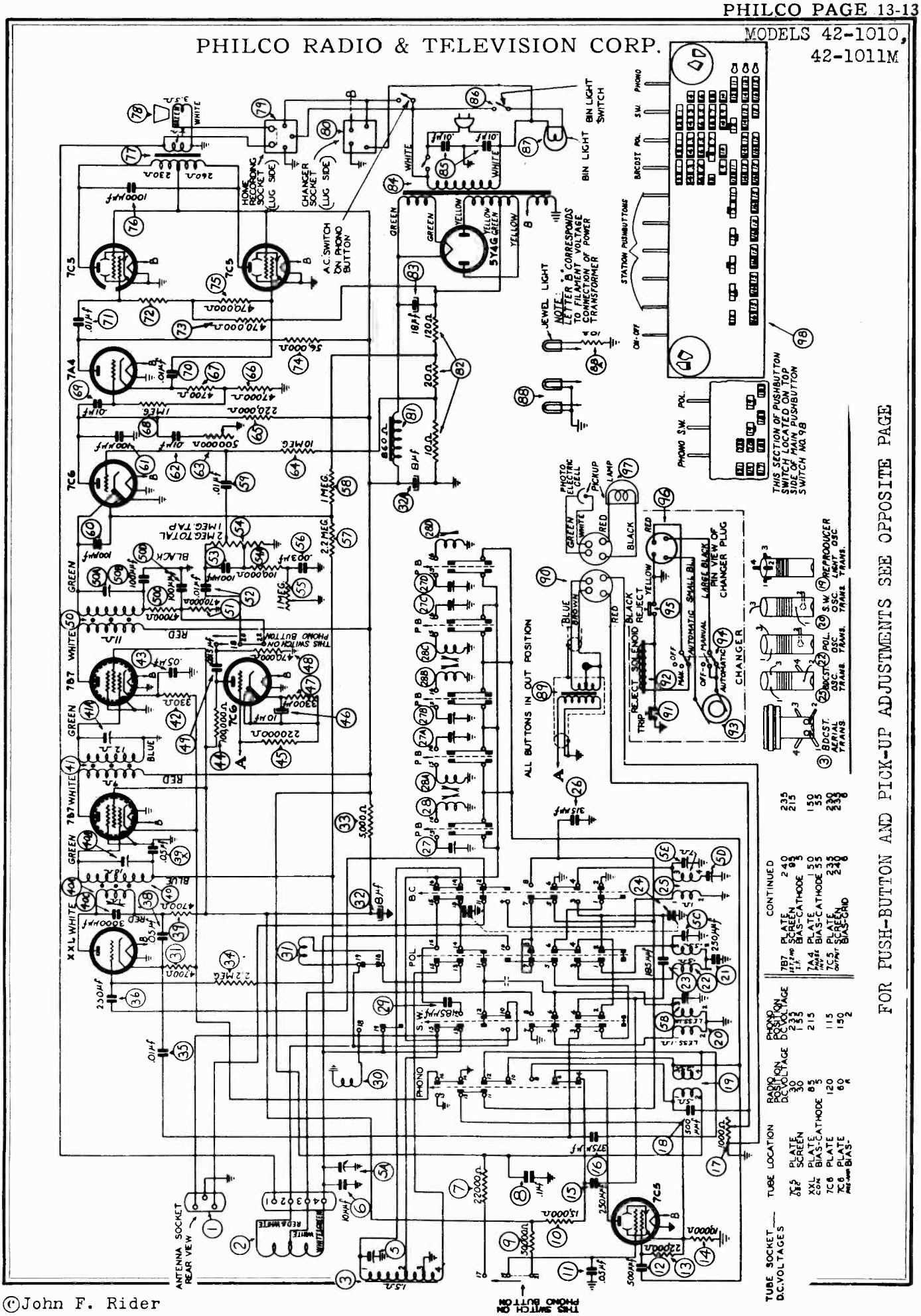
D. INSTALLING NEW LAMP

When installing a new lamp in the socket, there are two positions in which the lamp can be inserted. Ordinarily, either of these positions can be used. In some cases, however, due to the lamp filament being off center, the lamp must be inserted in the position that gives the best centering of the spot of light on the vibrating mirror.

FOR BOTH CHASSIS

PHILCO RADIO & TELEVISION CORP.

MODELS 42-1010, 42-1011M



Schem. No.	Description	Part No.
1.	External Aerial Socket	27-6115
2.	Loop Aerial	76-1386
	Terminal Panel	38-9870
	Mtg. Sleeve	28-3806FA3
	Mtg. Screw	W-1827FE11
	Spring Washer	28-4166FE7
3.	Aerial Transformer (Police)	32-3852
4.	Condenser (S.W.) (consisting of a lug and wire)	
5.	Compensator (Broadcast Band—Aerial)	31-6433
5a.	Compensator (S.W. Band—Aerial)	Part of 5
5b.	Compensator (S.W. Band—Oscillator)	Part of 5
5c.	Compensator (Police Band—Oscillator	Part of 5
5d.	Compensator (Broadcast Band—Osc. Series)	Part of 5
5e.	Compensator (Broadcast Band—Osc. Shunt)	Part of 5
6.	Condenser (10 mmfd.)	60-110157
7.	Resistor (33,000 ohms)	33-333339
8.	Condenser (.1 mfd., 400 volts)	30-4527
9.	Resistor (150,000 ohms)	33-415339
10.	Resistor (15,000 ohms)	33-315439
11.	Condenser (.05 mfd., 400 volts)	30-4518
12.	Mica Condenser (500 mmfd.)	60-150157
13.	Resistor (22,000 ohms)	33-322339
14.	Resistor (10,000 ohms)	33-310339
15.	Mica Condenser (250 mmfd.)	60-125257
16.	Mica Condenser (375 mmfd.)	20-037517
17.	Phono Reproducer Light Control	33-5435
18.	Mica Condenser (500 mmfd.)	60-150127
19.	Oscillator Transformer (Reproducer Light)	32-3818
	Mtg. Clip	28-5002
20.	Oscillator Transformer (S.W.)	32-3749
	Mtg. Clip	28-5002
21.	Mica Condenser (2500 mmfd.)	60-225124
22.	Oscillator Transformer (Police)	32-3748
	Mtg. Clip	28-5002
23.	Mica Condenser (185 mmfd.)	20-018517
24.	Tuning Condenser	31-2578
	Drive Cord (Tuning Condenser)	31-2603
	Spring	28-8751
	Drive Cord (Pointer)	31-2576
	Spring	28-8953
	Drive Drum	76-1293
	Mtg. Grommet	27-4596
	Mtg. Screw	W-2002FA3
	Mtg. Sleeve	56-1505
	Tuning Shaft	56-6168
	"C" Washer	28-2043
25.	Oscillator Transformer (Broadcast)	32-3747
	Mtg. Clip	28-5002
26.	Mica Condenser (375 mmfd.)	20-037517
27.	Push-button Padder (900 to 1600 KC) Complete Strip	31-6439
27a.	Push-button Padder (850 to 1500 KC)	Part of 27
27b.	Push-button Padder (650 to 1300 KC)	Part of 27
27c.	Push-button Padder (600 to 1200 KC)	Part of 27
27d.	Push-button Padder (540 to 1000 KC)	Part of 27
	Mtg. Screw	W-2150FA3
28.	Push-button Oscillator Transformer (900 to 1600 KC)	32-3779
28a.	Push-button Oscillator Transformer (850 to 1500 KC)	32-3779
28b.	Push-button Oscillator Transformer (650 to 1300 KC)	32-3780
28c.	Push-button Oscillator Transformer (600 to 1200 KC)	32-3780
28d.	Push-button Oscillator Transformer (540 to 1000 KC)	32-3780
	Clip	56-2250
	Irone Core	56-6100
	Cup	28-6936
29.	Mica Condenser (185 mmfd.)	20-018517
30.	Short Wave Band Aerial Shunt Transformer	32-3725
31.	Police Band Aerial Series Transformer	32-3854
32.	Electrolytic Condenser (8 mfd., 475 volts)	30-2535
32a.	Electrolytic Condenser (8 mfd., 475 volts)	Part of 32
	Mtg. Clamp	56-1466
33.	Resistor (15,000 ohms, 1 watt)	33-315439
34.	Resistor (2.2 megohms)	33-522339
35.	Condenser (.01 mfd., 400 volts)	30-4572
36.	Mica Condenser (250 mmfd.)	60-125258
37.	Resistor (4700 ohms)	33-247339
38.	Condenser (.05 mfd., 400 volts)	30-4518
39.	Resistor (4700 ohms)	33-247339
39x.	Condenser (.05 mfd., 200 volts)	30-4519
40.	First I. F. Transformer	32-3742
40a.	Primary Compensator, Part of 40	
40b.	Secondary Compensator, Part of 40	
40c.	Condenser (3000 mmfd.), Part of 40	30-1028
	Mtg. Nut	W-1949FA3
41.	Second I. F. Transformer	32-3850
41a.	Secondary Compensator, Part of 41	
	Mtg. Nut	W-1949FA3
42.	Resistor (330 ohms)	33-133336
43.	Condenser (.05 mfd., 200 volts)	30-4519
44.	Resistor (100,000 ohms)	33-410339
45.	Resistor (220,000 ohms)	33-422339
46.	Electrolytic Condenser (10 mfd., 25 volts)	30-2500
47.	Resistor (3300 ohms)	33-233339
48.	Resistor (470,000 ohms)	33-447339
49.	Condenser (.0015 mfd., 1000 volts)	30-4516
50.	Third I. F. Transformer	32-3851
50a.	Secondary Compensator (Part of 50)	
50b.	Mica Condenser (100 mmfd.) Part of 50a	
50c.	Resistor (47,000 ohms) Part of 50	33-347339
50d.	Mica Condenser (100 mmfd.) Part of 50a	
	Mtg. Nut	W-1949FA3
51.	Resistor (470,000 ohms)	33-447339
52.	Condenser (.01 mfd., 600 volts)	30-4623
53.	Mica Condenser (100 mmfd.)	60-110157
54.	Volume Control	33-5481
	Mtg. Nut	W-2157FA3
54x.	Resistor (100,000 ohms)	33-410339
55.	Tone Control (Audio Bass)	33-5479
	Mtg. Nut	W-2157FA3
56.	Condenser (.003 mfd., 1000 volts)	30-4469
57.	Resistor (2.2 megohms)	33-522339
58.	Resistor (1 megohm)	33-510339
59.	Condenser (.01 mfd., 400 volts)	30-4572
60.	Mica Condenser (100 mmfd.)	60-110157
61.	Mica Condenser (100 mmfd.)	60-110157
62.	Condenser (.01 mfd., 400 volts)	30-4572
63.	Tone Control (Audio Treble)	33-5480
	Mtg. Nut	W-2157FA3
64.	Resistor (10 megohms)	33-610339
65.	Resistor (220,000 ohms)	33-422339
66.	Resistor (47,000 ohms)	33-347339
67.	Resistor (4700 ohms)	33-247339
68.	Resistor (1 megohm)	33-510339
69.	Condenser (.01 mfd., 400 volts)	30-4572
70.	Condenser (.01 mfd., 400 volts)	30-4572
71.	Condenser (.01 mfd., 400 volts)	30-4572
72.	Resistor (470,000 ohms)	33-447339
73.	Resistor (470,000 ohms)	33-447339
74.	Resistor (56,000 ohms)	33-356339
75.	Resistor (470,000 ohms)	33-447339
76.	Condenser (.001 mmfd., 1000 volts)	30-4601
77.	Audio Output Transformer	32-8191
78.	Speaker—Early Production	36-1524
	Speaker—Later Production	36-1565
	Cone Assembly (For Speaker 36-1524)	36-4178
	Cone Assembly (For Speaker 36-1565)	36-4178
	Cable	41-3656
	Mtg. Grommet (Speaker)	27-4596
	Mtg. Washer	28-3320
	Mtg. Sleeve	56-2044
79.	Home Recording Socket	27-6179
80.	Changer Power Socket (on chassis)	27-6182
81.	Field Coil (Replace Speaker 36-1524 or 36-1565)	
82.	Bias Resistor (10-20-120 ohms)	33-3417
83.	Electrolytic Condenser (18 mfd., 475 volts)	30-2517
84.	Power Transformer (115 volts, 60 cycles)	32-8204
85.	Condenser (.01-.01 mfd.)	3903-ODG
86.	Bin Light Switch and Cable	76-1390
	Mtg. Screw	W-560FE11
87.	Bin Lamp	34-2484
	Cable and Socket	41-3638
88.	Dial Lamps	34-2141
	Socket Assembly	76-1295
88a.	Resistor (10 ohms, Jewel light model 42-1011 only)	33-010430
	Socket Assembly (Jewel Light)	76-1392
89.	Phono Input Transformer	32-8196
	Mtg. Screw	W-560FE11
	Mtg. Screw	W-333FE11
90.	Phono Reproducer and Input Transformer Cable Assembly	41-3637
91.	Phono Electric Reject Trip (see items 39 and 48 on page 4, in Service Bulletin 402)	
92.	Reject Solenoid (see item 36 in Service Bulletin 402)	
93.	Phono Motor (see item 18, page 4 in Service Bulletin 402)	
94.	Automatic Changer-over Switch (see item 50, page 4, in Radio Service Bulletin 402)	
95.	Reject Switch (see item 10, page 4, in Radio Service Bulletin 402)	
96.	Record Changer Power Cable and Plug	
97.	Phono Tone Arm (Light Beam Reproducer complete)	35-2518
98.	Push-button Switch and AC Switch Assembly	42-1710
	Mtg. Screw	W-523FA3
	MISCELLANEOUS PARTS	
	Bezel (Dial—Models 42-1010, 42-1011W)	54-5128
	Mtg. Screw	W-2073FB26
	Bezel (Dial—Model 42-1011M)	54-4156
	Cabinet (Model 42-1010)	10580A
	Cabinet (Model 42-1011W)	10551-A
	Cabinet (Model 42-1011M)	10551-B
	Cable and Plug (Power)	L-3292
	Dial Scale	27-5801
	Background Reflector	27-9984
	Mtg. Spring	28-8990
	Rubber Channel	54-5114
	Mtg. Clamp	56-2314
	Pointer	56-2331
	Jewel (42-1011M Cabinet)	27-4777
	Knob (Tuning, Volume, Tone—Model 42-1011M)	54-4154
	Knob (Push-button—Model 42-1011M)	54-4155
	Knob (Tuning, Volume, Tone—Models 42-1010, 42-1011W)	54-4105
	Knob (Push-buttons, Models 42-1010, 42-1011W)	54-4144
	Spring Assembly	76-1294
	Neon Lamp	34-2482
	Rubber Corner (Mtg. Chassis)	54-4015
	Rubber Grommet (Mtg. Chassis)	27-4571
	Screw (Chassis Mtg.)	W-1345FA3
	Socket (Rectifier tube)	27-6174
	Socket (Loktal tubes)	27-6177
	Tab (On-Off)	27-5742
	Tab (Television)	27-5779
	Tab (Broadcast)	27-5739
	Tab (Police)	27-5748
	Tab (S. W.)	27-5740
	Tab (Phono)	27-5750
	Tab Cover	27-5815
	Tab Kit	40-6663
	Wiring Panel (2 lug)	38-8323
	Wiring Panel (3 lug)	38-8369
	Wiring Panel (8 lug)	38-9007
	Wiring Panel (4 lug)	38-9117
	Washer (Chassis Mtg.)	28-5114

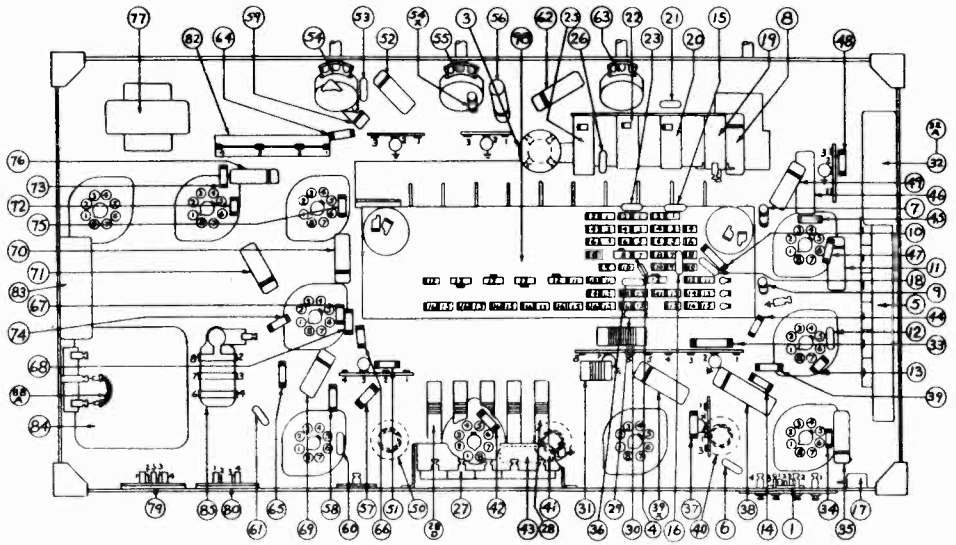


FIG. 3.—LOCATIONS OF PARTS—UNDER CHASSIS.

MODELS 42-1010, 42-1011M

PHILCO RADIO & TELEVISION CORP.

ALIGNING R. F. AND I. F. COMPENSATORS

The following procedure is the same for both models:

EQUIPMENT REQUIRED

1. **SIGNAL GENERATOR:** Covering the frequency range of the receiver, such as Philco Model 070.

2. **ALIGNING INDICATOR:** Either a vacuum tube voltmeter or an audio output meter may be used as an aligning indicator. Philco Models 027 and 028 circuit testers contain both these meters.

3. **TOOLS:** Philco Fiber Screw Driver, Part No. 45-2610.

CONNECTING ALIGNING INSTRUMENTS

Either a vacuum tube voltmeter or an audio output meter may be used as a signal indicator when adjusting the receiver.

Vacuum Tube Voltmeter: To use the vacuum tube voltmeter as an aligning indicator, make the following connections: Attach the negative (−) terminal of the voltmeter to any point in the circuit where the A. V. C. voltage can be obtained. Connect the positive (+) terminal of the vacuum tube voltmeter to the chassis.

Audio Output Meter: Terminal No. 1 is provided on the loop aerial panel for connecting one lead of the audio output meter to the voice coil of the speaker. The other lead of the meter is connected to the chassis. When using these connections, the lowest A. C. scale of the meter must be used. (0 to 10 volts).

The audio output meter can also be connected between the plate of the output tube and the ground of the chassis.

Signal Generator: The radio can be aligned in the cabinet or removed from the cabinet. When adjusting the "I. F." padders, the high side of the signal generator is connected through a .1 mfd. condenser to the lug on the aerial section of the tuning condenser. The ground or low side of the signal generator is connected to the ground of the receiver.

When aligning the R. F. padders with the radio in the cabinet, a loop is made from a few turns of wire and connected to the signal generator output terminals; the loop is then placed two or three feet from the loop in the cabinet. If the radio is aligned outside of the cabinet without the loop connected an aerial input transformer, Part No. 76-1134, will be required. Insert the transformer into the external aerial socket on the rear of the chassis. Connect the high output terminal of the signal generator to the terminal on the transformer. Connect the ground terminal to the chassis.

After connecting the aligning indicator, adjust the compensators in the order shown in the tabulation below. Locations of the compensators are shown below. If the output meter pointer goes off scale when adjusting the compensators, reduce the strength of the signal from the generator.

Operations in Order	SIGNAL GENERATOR		RECEIVER			SPECIAL INSTRUCTIONS
	Output Connections to Receiver	Dial Setting	Dial Setting	Control Setting	Adjust Compensators in Order	
1	Lug Aerial Section of Tuning Condenser	455 KC	580 KC	Vol. Max. "Brdcst" Push-button IN	50A, 41A 40B, 40A	
2	Use Loop on Generator or Aerial Trans.	1500 KC	1500 KC	Vol. Max. "Brdcst" Push-button IN	5E, 5	Note A
3	Use Loop on Generator or Aerial Trans.	580 KC	580 KC	Vol. Max. "Brdcst" Push-button IN	5D	Roll Tuning Condenser Note B
4	Use Loop on Generator	Repeat Operation No. 2				
5	Use Loop on Generator	6 MC	6 MC	Vol. Max. "Police" Push-button IN	5C	
6	Use Loop on Generator	15 MC	15 MC	Vol. Max. "S.W." Push-button IN	5B, 5A	Note C

NOTE A—DIAL CALIBRATION: In order to adjust the receiver correctly, the dial must be aligned to track properly with the tuning condenser. To adjust the dial, proceed as follows: With the tuning condenser closed (maximum capacity), set the dial pointer on the extreme left index line at the low frequency end of the broadcast scale. The arrangement of the drive cable in this position is shown in the schematic.

NOTE B—When adjusting the low frequency compensator of Range One (Broadcast) or the aerial padders 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. Now turn the compensator slightly to the right or left and again vary the receiver tuning condenser for maximum output. This procedure of first setting the compensator and then varying the tuning condenser is continued until maximum output reading is obtained.

NOTE C—To accurately adjust the high frequency oscillator compensator to the fundamental instead of the image signal, turn the oscillator compensator (5B) to the maximum capacity position (clockwise). From this position slowly turn the compensator counter-clockwise until a second peak is obtained on the output meter. Adjust the compensator for maximum output at this second peak.

If the above procedure is correctly performed, the image signal will be found (much weaker) by turning the signal generator dial 910 KC above the frequency being used on any high frequency range.

The aerial padder (5A) must be adjusted to maximum by rolling the tuning condenser. If two signal peaks occur when turning the padder, adjust the maximum output on the first signal peak from the tight position (screw all the way down) of the padder.

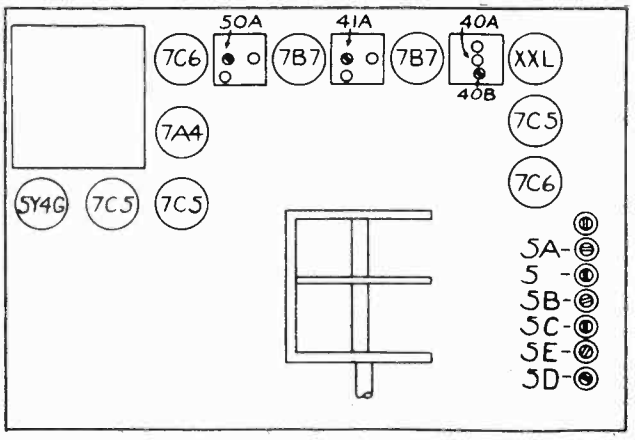


FIG. 4.—LOCATIONS OF COMPENSATORS TOP OF CHASSIS 42-1010, 42-1011

MODEL AR-45

PHILCO RADIO & TELEVISION CORP.

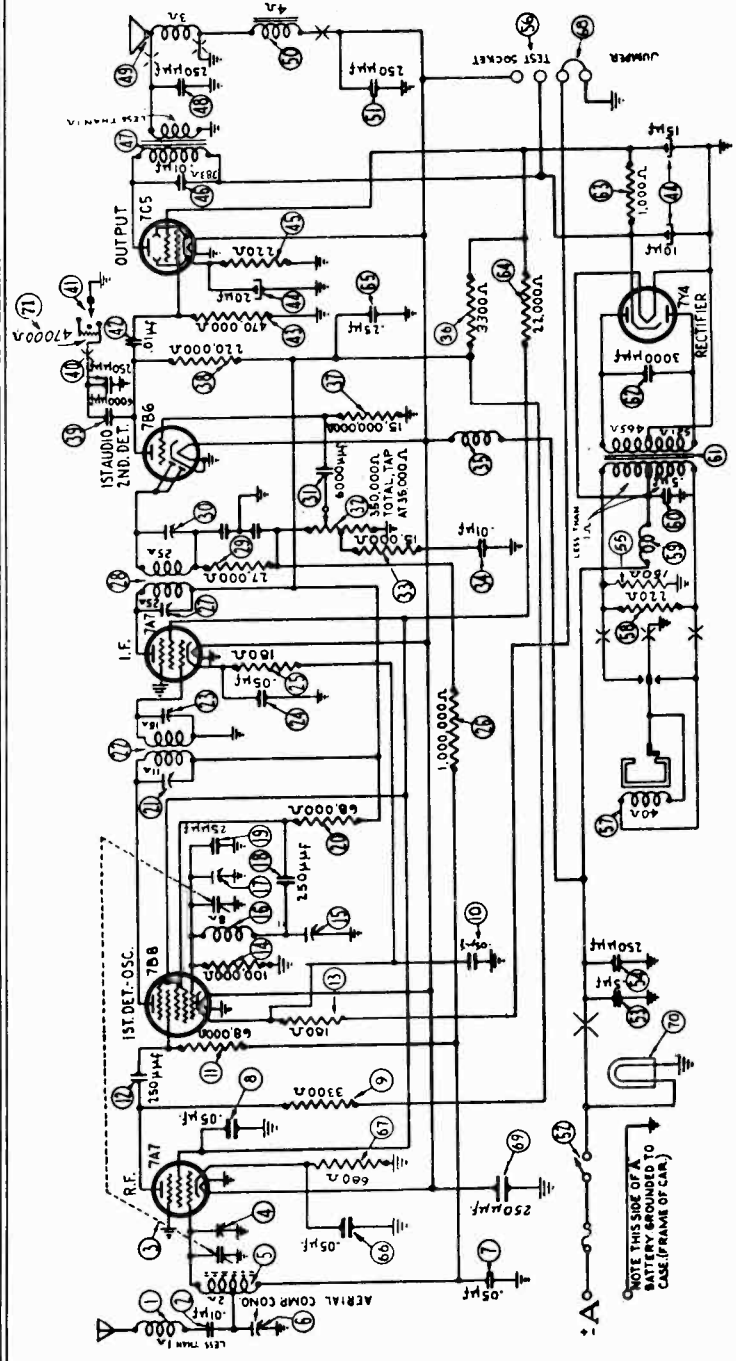
3	Condenser (250 Mmfd.)	60-125157
30	Replacement Cone	
	(For 73-0047-2 Speaker)	91-0086
	(For 73-0047-3 Speaker)	91-0126
	(For 73-0058-2 Speaker)	91-0086
	(For 73-0058-3 Speaker)	91-0126
31	Field Coil .....(Not Replaceable)	
32	Condenser (250 Mmfd.)	60-125157
33	"On-Off" Switch	83-0119
34	Condenser (.5 Mfd.)	61-0137
35	Condenser (250 Mmfd.)	60-125157
36	Resistor (150 ohms)	33-115334
37	Test Socket	55-1118
38	Vibrator	83-0025
39	Resistor (290 ohms)	33-122334
40	Vibrator Choke	65-0075
41	Condenser (.5 Mfd.)	61-0137
42	Power Transformer	65-0318
43	Condenser (3,000 Mmfd.)	61-0115
44	Resistor (1,000 ohms)	33-210334
45	Resistor (22,000 ohms)	33-322334
46	Condenser (.25 Mfd.)	61-0125
47	Condenser (.05 Mfd.)	61-0111
48	Resistor (680 ohms)	33-168336
49	Test Link	57-1121
50	Condenser (250 Mmfd.)	60-125157
51	Pilot Lamp	60-0004
52	Resistor (47,000 ohms)	33-347334
53	Receiver Housing 77-0605FC51	
54	Control Assembly	85-0134
55	Dial	55-1104
56	Drive Cord	53-0035
57	Drive Cord Spring 57-1225FA3	
58	Tuning Shaft	57-1385
59	Volume Shaft	57-1384
60	Pointer 57-1889FCP	
61	Tone Control Lead	95-0135
62	Hook Bolt (Radio Mtg.) 57-1340FA3	
63	Lockwasher (Radio Mtg.) W166SFK7	
64	Nut (Radio Mtg.) W98FA3	
65	Cable Clamps 57-1463FA38	
66	Interference Condenser 30-4007	
67	Distributor Resistor 33-1198	
68	Tube Side Cover 318-2388	
69	Wiring Side Cover 57-1345FC51	
70	Speaker Socket 55-0443	
71	Loktal Socket	55-0575
	Vibrator Socket	27-6153
	Volume Control Nut W684FA3	
	Tone Control Switch Shaft 57-1839FA3	

The following parts are for the Dash Speaker:

Speaker & Housing Complete	318-2393
Speaker Unit	73-0058
Stud (Speaker Mtg.)	57-0802
Washer (Speaker Mtg.) 2702FA3	
Lockwasher (Speaker Mtg.) W338	
Nut (Speaker Mtg.) W55FA3	
Wood Spacer (Speaker Mtg.) 55-0942	

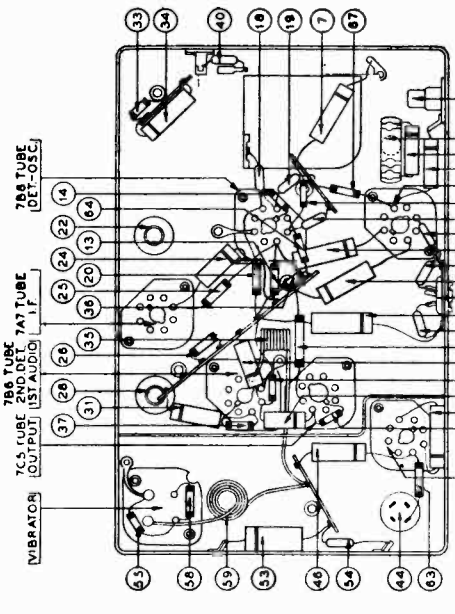
The following parts are for the Instrument Board Speaker:

Speaker Unit	73-0047
"U" Bracket	57-0720FA3
Rubber Gasket & Screen	55-0958
Side Brackets	57-1461
Cardboard Baffle	55-0957
Cardboard Spacers	55-0449
Nuts (Speaker Mtg.) W124FA3	
Screw (Speaker Mtg.) W1582FA4	
Lockwasher (Speaker Mtg.) W291	
Lockwasher (Speaker Mtg.) W288	
Carriage Bolt	97-0061FA3
Carriage Bolt Nut	W98FA3
Bolt (Bracket Mtg.) ..97-0120FA34	



SCHEMATIC MODEL AR-45
I.F.= 455 KC

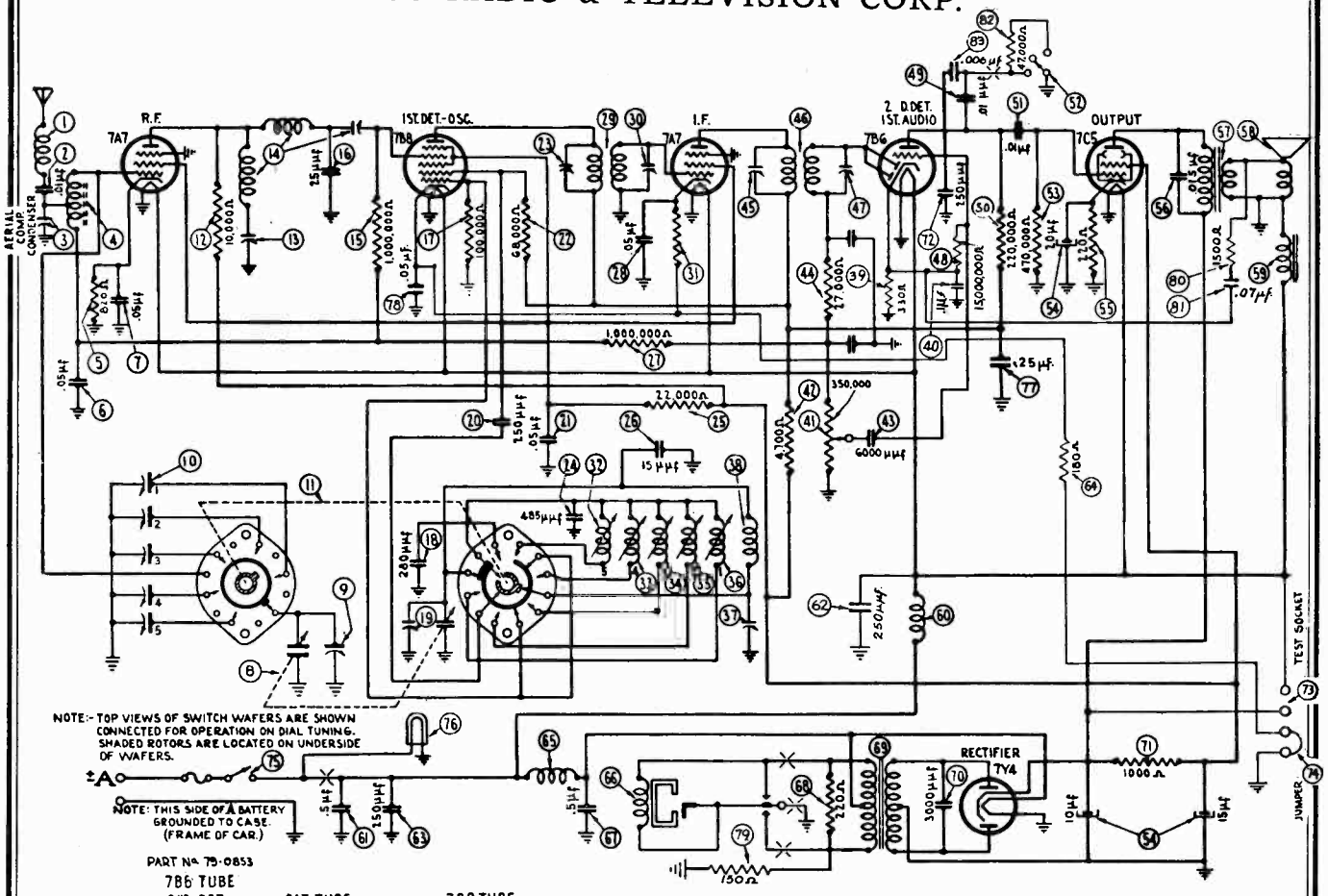
No.	Description	Part No.
1	Antenna Choke	65-0102
2	Condenser (.01 Mfd.)	61-0114
3	Tuning Condenser	63-0047
4	Antenna Padder (on Tun. Cond.)	
5	Antenna Transformer	63-0323
6	Aerial Compensator	77-0345
7	Condenser (.05 Mfd.)	61-0101
8	Condenser (.05 Mfd.)	61-0101
9	Resistor (3,300 ohms)	33-233334
10	Condenser (.05 Mfd.)	61-0101
11	Resistor (68,000 ohms)	33-368334
12	Condenser (250 Mmfd.)	60-125157
13	Resistor (180 ohms)	33-118336
14	Resistor (1,000,000 ohms)	33-410154
15	Low Frequency Padder	63-0048
16	Oscillator Transformer	63-0320
17	High Frequency Padder (on Tun. Cond.)	
18	Condenser (250 Mmfd.)	60-125157
19	Condenser (25 Mmfd.)	60-025337
20	Resistor (68,000 ohms)	33-368334
21	Padder (1st I. F. Trans.)	
22	First I. F. Transformer	63-0319
23	Padder (Sec. 1st I. F. Trans.)	
24	Condenser (.05 Mfd.)	61-0101
25	Resistor (180 ohms)	33-118336
26	Resistor (1,000,000 ohms)	33-510154
27	Padder (1st 2nd I. F. Trans.)	
28	Second I. F. Transformer ..	63-0320
29	Resistor (27,000 ohms)	33-327154
30	Padder (Sec. 2nd I. F. Trans.)	
31	Condenser (6,000 Mmfd.) ..	61-0135
32	Volume Control (350,000 ohms)	67-0032
33	Resistor (15,000 ohms)	33-315154
34	Condenser (.01 Mfd.)	61-0114
35	Filament Choke	32-2729
36	Resistor (3,300 ohms)	33-233334
37	Resistor (15,000,000 ohms)	33-615154
38	Resistor (2200,000 ohms)	33-422334
39	Condenser (6,000 Mmfd.) ..	61-0135
40	Condenser (250 Mmfd.) ..	60-125157
41	Tone Control Switch Wafer	77-0733
42	Condenser (.01 Mfd.)	61-0120
43	Resistor (470,000 ohms)	33-447154
44	Filter Condenser (10-15-20 Mfd.)	61-0089
45	Resistor (290 ohms)	33-122136
46	Condenser (.01 Mfd.)	61-0124
47	Output Transformer	65-0408

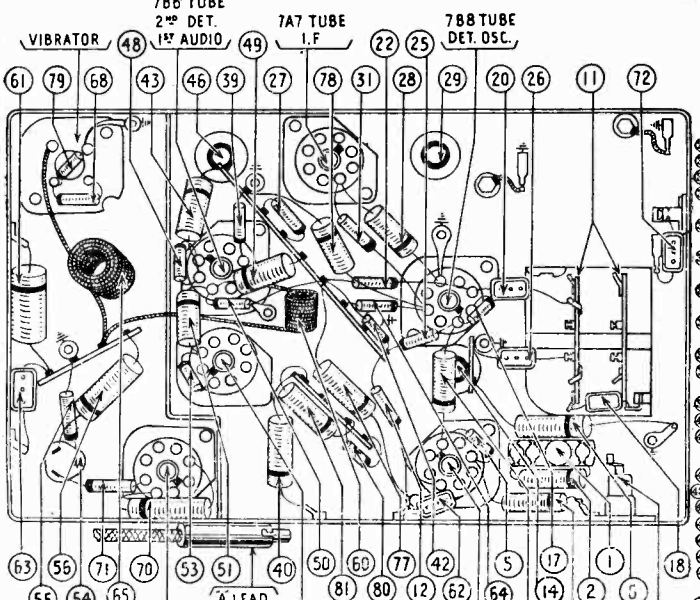


FOR ALIGNMENT SEE INDEX

MODEL AR-50

PHILCO RADIO & TELEVISION CORP.





FOR OTHER DATA SEE INDEX

No.	Description	Part No.
1	Antenna Choke	65-0102
2	Condenser (.01 Mfd.)	61-0114
3	Aerial Compensator	Part of 10
4	Antenna Transformer	65-0323
5	Resistor (820 ohms)	33-182336
6	Condenser (.05 Mfd.)	61-0101
7	Condenser (.05 Mfd.)	61-0101
8	Tuning Condenser	63-0047
9	Antenna Padder (on Tun. Cond.)	
10	Antenna Padder Assembly	77-0512
11	Wafer Switch	77-0506
12	Resistor (10,000 ohms)	33-310334
13	Wave Trap Padder	Part of 14
14	R. F. Transformer	65-0321
15	Resistor (1,000,000 ohms)	33-510154
16	Condenser (25 Mmfd.)	30-1067
17	Resistor (100,000 ohms)	33-410154
18	Silver Mica Condenser (280 Mmfd.)	61-0043
19	Oscillator Padder (on Tun. Cond.)	
20	Condenser (250 Mmfd.)	60-125157
21	Condenser (.05 Mfd.)	61-0101
22	Resistor (68,000 ohms)	33-368334
23	Padder (Pri. 1st I. F. Trans.)	
24	Silver Mica Condenser (485 Mmfd.)	61-0144
25	Resistor (22,000 ohms)	33-322434
26	Condenser (15 Mmfd.)	60-015327
27	Resistor (1,000,000 ohms)	33-510154
28	Condenser (.05 Mfd.)	61-0101
29	First I. F. Transformer	65-0319
30	Padder (Sec. 1st. I. F. Trans.)	
31	Resistor (470 ohms)	33-147336
32	Oscillator Transformer (550-1065 KC)	65-0173
33	Oscillator Transformer (600-1165 KC)	65-0172
34	Oscillator Transformer (660-1240 KC)	65-0171
35	Oscillator Transformer (750 1410 KC)	65-0170
36	Oscillator Transformer (855-1580 KC)	65-0169
37	Low Frequency Padder	63-0048
38	Manual Oscillator Transformer	65-0420
39	Resistor (330 ohms)	33-133334
40	Condenser (.1 Mfd.)	61-0104
41	Volume Control (350,000 ohms)	67-0043
42	Resistor (4700 ohms)	33-247334
43	Condenser (6000 Mmfd.)	61-0155
44	Resistor (27,000 ohms)	33-327154
45	Padder (Pri. 2nd I. F. Trans.)	
46	Second I. F. Transformer	65-0320
47	Padder (Sec. 2nd I. F. Trans.)	
48	Resistor (15,000,000 ohms)	33-615154
49	Condenser (.01 Mfd.)	61-0114
50	Resistor (220,000 ohms)	33-422334
51	Condenser (.01 Mfd.)	61-0120
52	Tone Control Switch Wafer	77-0733
53	Resistor (470,000 ohms)	33-447154
54	Filter Condenser (10-15-20 Mfd.)	61-0089
55	Resistor (220 ohms)	33-122436
56	Condenser (.015 Mfd.)	61-0138
57	Output Transformer	65-0419
58	Replacement Cone (For 73-0059-4 Speaker) (For 73-0059-9 Speaker)	91-0209 91-0213
59	Field Coil	Not Replaceable
60	Filament Choke	32-2729
61	Condenser (.5 Mfd.)	61-0106
62	Condenser (250 Mfd.)	60-125157
63	Condenser (250 Mmfd.)	60-125157
64	Resistor (180 ohms)	33-118336
65	Vibrator Choke	65-0075
66	Vibrator	83-0025
67	Condenser (.5 Mfd.)	61-0137
68	Resistor (220 ohms)	33-122334
69	Power Transformer	65-0318
70	Condenser (3000 Mmfd.)	61-0115
71	Resistor (1000 ohms)	33-210434
72	Condenser (250 Mmfd.)	60-125157
73	Test Socket	55-1118
74	Test Link	57-1121
75	On-Off Switch	85-0112
76	Pilot Lamp	34-2039
77	Condenser (.25 Mfd.)	61-0125
78	Condenser (.05 Mfd.)	61-0101
79	Resistor (150 ohms)	33-115334
80	Resistor (1500 ohms)	33-215334
81	Condenser (.07 Mfd.)	61-0152
82	Resistor (47,000 ohms)	33-347334
83	Condenser (6000 Mmfd.)	61-0155
	Radio Housing	77-0752FC59
	Control Assembly	85-0133
	Dial	55-1194
	Drive Cord	55-0935
	Drive Cord Spring	57-1425FA3
	Tuning Shaft	57-1385
	Volume Shaft	57-1384
	Push Button Shaft	57-1386
	Cable Clamps	57-1429FA38
	Pointer	57-1889FCP
	Station Indicator Drum	77-0755
	Tone Control Lead	95-0135
	Hook Bolt (Radio Mtg.)	57-1340FA3
	Lockwasher (Radio Mtg.)	W1668FE7
	Nut (Radio Mtg.)	W98FA3
	Speaker Unit	73-0059
	Interference Condenser	30-4007
	Distributor Resistor	33-1196
	Speaker Cover	57-1942FC59
	Wiring Side Cover	57-1345FC59
	Padder Cover	57-1348FC59
	Loktal Socket	55-0575
	Vibrator Socket	27-6153
	Screw & Core Assembly	57-1363
	Brass Coil Cup	W2032
	Speaker Cable	95-0192
	Volume Control Cable	95-0132
	Volume Control Nut	W684FA3
	Tone Switch Shaft	57-1839FA3

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PHILCO RADIO & TELEVISION CORP

PHILCO MODEL AR-55
I.F.= 455 KC

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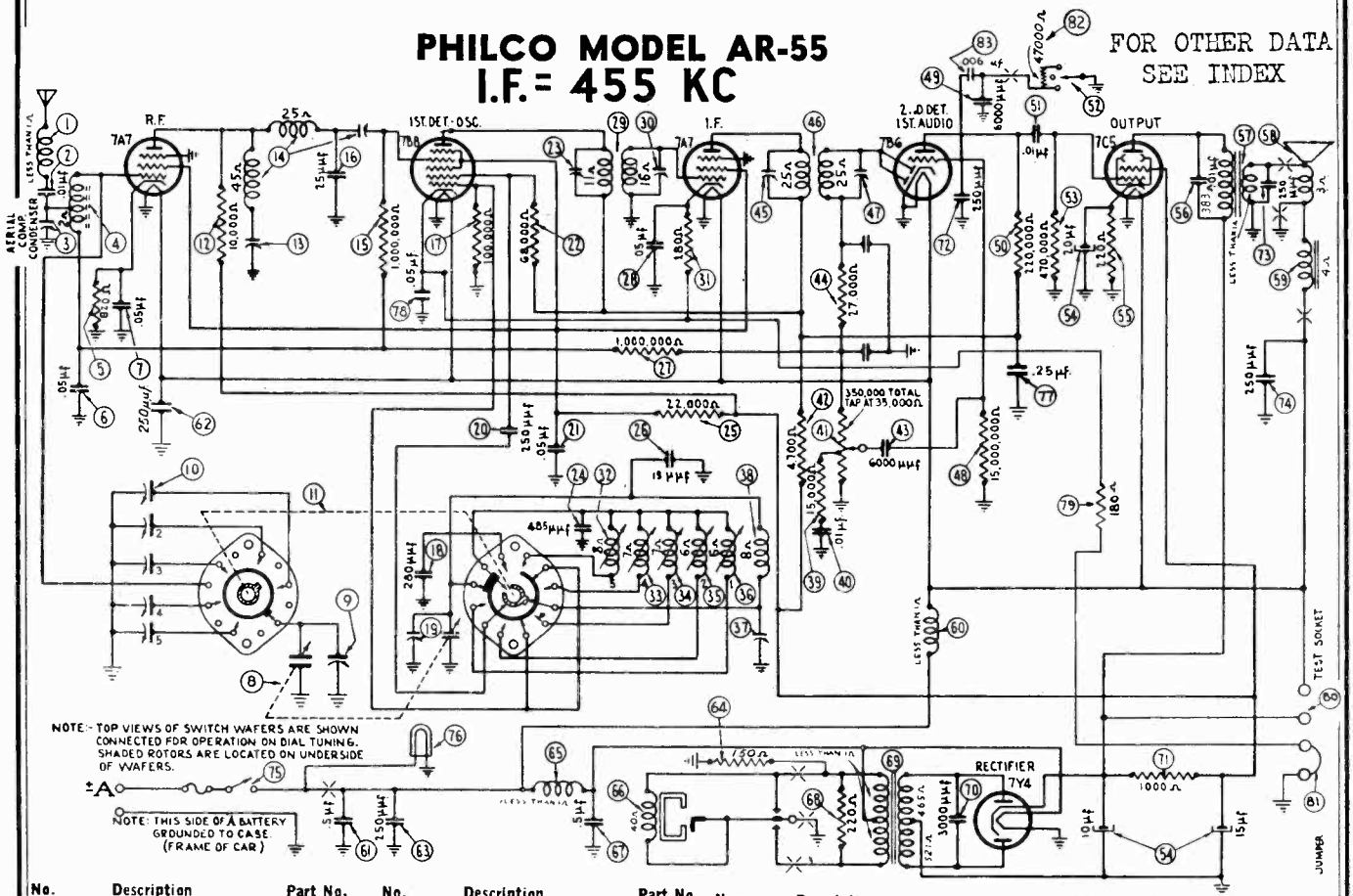


No.	Description	Part No.
1	Antenna Choke	65-0102
2	Condenser (.01 Mfd.)	61-0114
3	Aerial Compensator	Part of 10
4	Antenna Transformer	65-0323
5	Resistor (820 ohms)	33-182336
6	Condenser (.05 Mfd.)	61-0101
7	Condenser (.05 Mfd.)	61-0101
8	Tuning Condenser	63-0047
9	Antenna Padder (on Tun. Cond.)	
10	Antenna Padder Assembly (For Push Buttons)	77-0512
11	Wafer Switch	77-0506
12	Resistor (10,000 ohms)	33-310334
13	Wave Trap Padder	Part of 14
14	R. F. Transformer	65-0321
15	Resistor (1,000,000 ohms)	33-510154
16	Condenser (25 Mmfd.)	30-1067
17	Resistor (100,000 ohms)	33-410154
18	Condenser (280 Mmfd.)	61-0043
19	High Frequency Padder (on Tun. Cond.)	
20	Condenser (250 Mmfd.)	60-125157
21	Condenser (.05 Mfd.)	61-0101
22	Resistor (68,000 ohms)	33-368334
23	Padder (Pri. 1st I. F. Trans.)	
24	Condenser (485 Mmfd.)	61-0144
25	Resistor (22,000 ohms)	33-322434
26	Condenser (15 Mmfd.)	60-015327
27	Resistor (1,000,000 ohms)	33-510154
28	Condenser (.05 Mfd.)	61-0101
29	First I. F. Transformer	65-0319
30	Padder (Sec. 1st I. F. Trans.)	
31	Resistor (180 ohms)	33-118336
32	Oscillator Transformer (550-1065 KC)	65-0173
33	Oscillator Transformer (600-1165 KC)	65-0172
34	Oscillator Transformer (660-1240 KC)	65-0171
35	Oscillator Transformer (750-1410 KC)	65-0170
36	Oscillator Transformer (855-1580 KC)	65-0169
37	Low Frequency Padder	63-0048
38	Manual Oscillator Trans.	65-0420
39	Resistor (15,000 ohms)	33-315154
40	Condenser (.01 Mfd.)	61-0114
41	Volume Control (350,000 ohms)	67-0032
42	Resistor (4,700 ohms)	33-247334
43	Condenser (6,000 Mmfd.)	61-0155
44	Resistor (27,000 ohms)	33-327154
45	Padder (Pri. 2nd I. F. Trans.)	

No.	Description	Part No.
46	Second I. F. Transformer	65-0320
47	Padder (Sec. 2nd I. F. Trans.)	
48	Resistor (15,000,000 ohms)	33-615154
49	Condenser (6,000 Mmfd.)	61-0155
50	Resistor (220,000 ohms)	33-422334
51	Condenser (.01 Mfd.)	61-0120
52	Tone Control Switch Wafer	77-0733
53	Resistor (470,000 ohms)	33-447154
54	Filter Condenser (10-15-20 Mfd.)	61-0089
55	Resistor (220 ohms)	33-122436
56	Condenser (.01 Mfd.)	61-0124
57	Output Transformer	65-0408
58	Replacement Cone (For 73-0047-2 Speaker)	91-0086
	(For 73-0047-3 Speaker)	91-0126
	(For 73-0058-2 Speaker)	91-0086
	(For 73-0058-3 Speaker)	91-0126
59	Field Coil Assembly . Not Replaceable	
60	Filament Choke	32-2729
61	Condenser (.5 Mfd.)	61-0106
62	Condenser (250 Mmfd.)	60-125157
63	Condenser (250 Mmfd.)	60-125157
64	Resistor (150 ohms)	33-115334
65	Vibrator Choke	65-0075
66	Vibrator	83-0025
67	Condenser (.5 Mfd.)	61-0137
68	Resistor (220 ohms)	33-122334
69	Power Transformer	65-0318
70	Condenser (3,000 Mmfd.)	61-0115
71	Resistor (1,000 ohms)	33-210434
72	Condenser (250 Mmfd.)	60-125157
73	Condenser (250 Mmfd.)	60-125157
74	Condenser (250 Mmfd.)	60-125157
75	"On-Off" Switch	85-0112
76	Pilot Lamp	34-2039
77	Condenser (.25 Mfd.)	61-0125
78	Condenser (.05 Mfd.)	61-0101
79	Resistor (180 ohms)	33-118336
80	Test Socket	55-1118
81	Test Link	57-1121
82	Resistor (47,000 ohms)	33-347334
83	Condenser (6,000 Mmfd.)	61-0155
	Receiver Housing	77-0694FC59
	Control Assembly	85-0133
	Dial	55-1194
	Drive Cord	55-0935
	Drive Cord Spring	57-1425FA3
	Tuning Shaft	57-1385
	Volume Shaft	57-1384
	Push Button Shaft	57-1386
	Pointer	57-1889FCP
	Station Indicator Drum	77-0755
	Tone Control Lead	95-0135

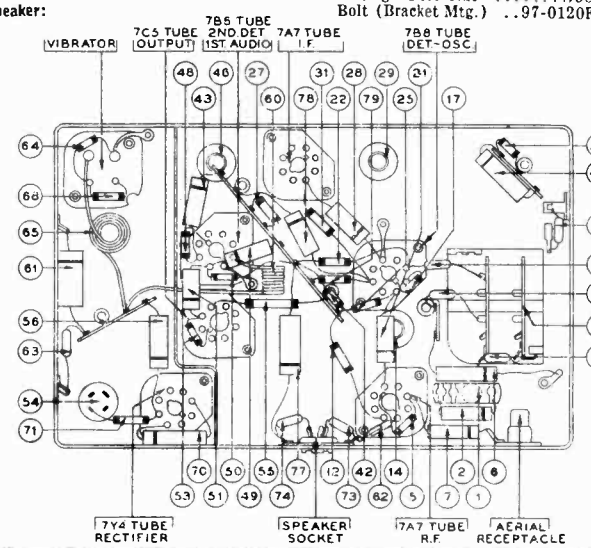
No.	Description	Part No.
	Hook Bolt (Receiver Mtg.)	57-1340FA3
	Lockwasher (Receiver Mtg.)	W166SFE7
	Nut (Receiver Mtg.)	W98FA3
	Cable Clamps	57-1429FA38
	Interference Condenser	30-4007
	Distributor Resistor	33-1196
	Tube Side Cover	318-2382
	Wiring Side Cover	57-1345FC59
	Padder Cover	57-1348FC59
	Speaker Socket	55-0443
	Loktal Socket	55-1075
	Vibrator Socket	27-6153
	Screw & Core Assembly	57-1363
	Coil Cups (Brass)	W-2032
	Volume Control Nut	W684FA3
	Tone Control Switch Shaft	57-1839FA3

The following parts are for the Dash Speaker:

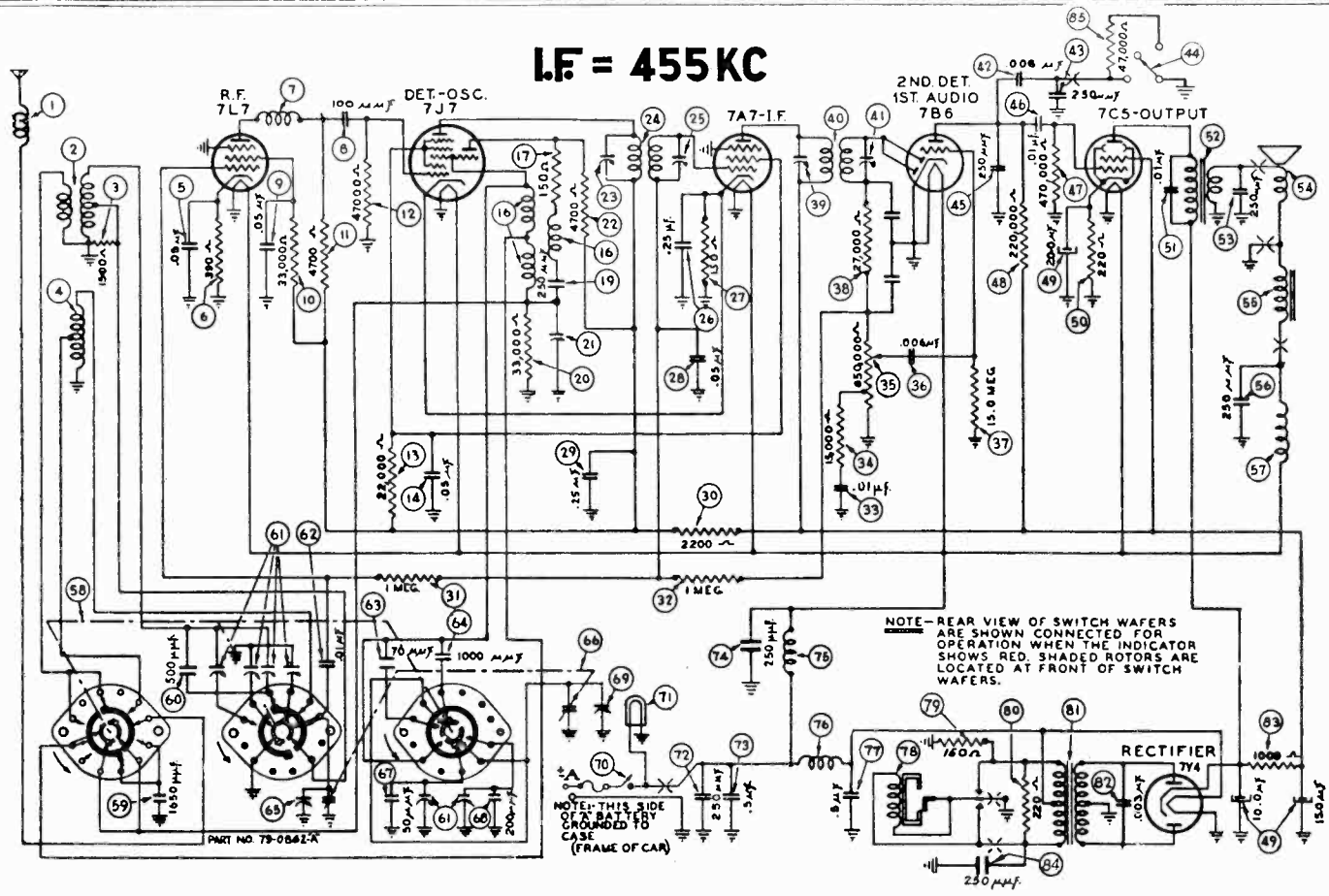
	Speaker & Housing Complete	318-2393
	Speaker Unit	73-0058
	Stud (Speaker Mtg.)	57-0892
	Washer (Speaker Mtg.)	2703FA3
	Lockwasher (Speaker Mtg.)	W338
	Nut (Speaker Mtg.)	W55FA3
	Wood Spacer (Speaker Mtg.)	55-0642

The following parts are for the Instrument Board Speaker:

	Speaker	73-0047
	"U" Bracket	57-0720FA3
	Rubber Gasket & Screen	55-0958
	Side Brackets	57-1461
	Cardboard Baffle	55-0957
	Cardboard Spacers	55-0449
	Nuts (Speaker Mtg.)	W124FA3
	Screw (Speaker Mtg.)	W1582FA4
	Lockwasher (Speaker Mtg.)	W291
	Lockwasher (Speaker Mtg.)	W286
	Carriage Bolt	97-0061FA3
	Carriage Bolt Nut	W98FA3
	Bolt (Bracket Mtg.)	97-0120FA34



I.F. = 455 KC



No.	Description	Part No.
(1)	Antenna Choke	65-0340
(2)	Short Wave Antenna Transformer	65-0341
(3)	Resistor (1500 ohms)	33-215334
(4)	Broadcast Antenna Transformer	65-0085
(5)	Condenser (.05 Mfd.)	61-0101
(6)	Resistor (390 ohms)	33-139436
(7)	Choke	65-0337
(8)	Condenser (100 Mmfd.)	60-110157
(9)	Condenser (.05 Mfd.)	61-0111
(10)	Resistor (33,000 ohms)	33-333344
(11)	Resistor (4700 ohms)	33-247334
(12)	Resistor 47,000 ohms)	33-347334
(13)	Resistor (22,000 ohms)	33-322434
(14)	Condenser (.05 Mfd.)	61-0101
(16)	Oscillator Transformer	65-0339
(17)	Resistor (150 ohms)	33-115334
(18)	Condenser (250 Mmfd.)	60-125157
(19)	Resistor (33,000 ohms)	33-333334
(21)	Low Frequency Padder	63-0048
(22)	Resistor (4700 ohms)	33-247344
(23)	Padder (Pri. 1st I. F. Trans.)	
(24)	First I. F. Transformer	65-0338
(25)	Padder (Sec. 1st I. F. Trans.)	
(26)	Condenser (.25 Mfd.)	61-0112
(27)	Resistor (150 ohms)	33-115336
(28)	Condenser (.05 Mfd.)	61-0101
(29)	Condenser (.25 Mfd.)	61-0125
(30)	Resistor (2200 ohms)	33-222434
(31)	Resistor (1,000,000 ohms)	33-510154
(32)	Resistor (1,000,000 ohms)	33-510154
(33)	Condenser (.01 Mfd.)	61-0114
(34)	Resistor (15,000 ohms)	33-315154
(37)	Volume Control (350,000 ohms)	67-0032-2
(38)	Condenser (6000 Mmfd.)	61-0103
(37)	Resistor (15,000,000 ohms)	33-615154
(38)	Resistor (27,000 ohms)	33-327154
(39)	Padder (Pri. 2nd I. F. Trans.)	
(40)	Second I. F. Transformer	65-0320
(41)	Padder (Sec. 2nd I. F. Trans.)	
(42)	Condenser (6000 Mmfd.)	61-0155
(43)	Condenser (250 Mmfd.)	60-125157
(44)	Tone Control Switch Wafer	77-0733
(45)	Condenser (250 Mmfd.)	60-125157
(46)	Condenser (.01 Mfd.)	61-0120
(47)	Resistor (470,000 ohms)	33-447154

No.	Description	Part No.
(48)	Resistor (220,000 ohms)	33-422334
(49)	Filter Condenser (10-15-20 Mfd.)	61-0089
(50)	Resistor (220 ohms)	33-122136
(51)	Condenser (.01 Mfd.)	61-0121
(52)	Output Transformer	65-0408
(53)	Condenser(250 Mmfd.)	60-125157
(54)	Replacement Cone	
	(For 73-0047-2 Speaker)	91-0086
	(For 73-0047-3 Speaker)	91-0126
	(For 73-0058-2 Speaker)	91-0086
	(For 73-0058-3 Speaker)	91-0126
(55)	Field Coil	Not Replaceable
(56)	Condenser (250 Mmfd.)	60-125157
(57)	"A" Choke	32-1644
(58)	Wafer Switch	77-0567
(59)	Mica Condenser (1650 Mmfd.)	5877
(60)	Silver Mica Condenser (500 Mmfd.)	61-0027
(61)	Padder Assembly	77-0560
(62)	Condenser (.01 Mfd.)	61-0110
(63)	Silver Mica Condenser (70 Mmfd.)	61-0146
(64)	Condenser (1000 Mmfd.)	61-0079
(65)	Antenna Padder (on Tun. Cond.)	
(66)	Tuning Condenser	63-0050
(67)	Silver Mica Condenser (50 Mmfd.)	61-0140
(68)	Silver Mica Condenser (200 Mmfd.)	61-0141
(69)	Oscillator Padder (on Tun. Cond.)	
(70)	"On-Off" Switch	85-0112
(71)	Pilot Lamp	34-2039
(72)	Condenser (250 Mmfd.)	60-125157
(73)	Condenser (.5 Mfd.)	61-0137
(74)	Condenser (250 Mmfd.)	60-125157
(75)	"A" Choke	32-1604
(76)	Vibrator Choke	65-0075
(77)	Condenser (.5 Mfd.)	61-0106
(78)	Vibrator	83-0025
(79)	Resistor (150 ohms)	33-115334
(80)	Resistor (200 ohms)	33-122334
(81)	Power Transformer	65-0318
(82)	Condenser (3000 Mmfd.)	61-0115
(83)	Resistor (1000 ohms)	33-210434
(84)	Condenser (250 Mmfd.)	60-125157
(85)	Resistor (47,000 ohms)	33-347334

Receiver Housing	77-0696FC55
Speaker Socket	55-0443
Loktal Socket	55-0575
Antenna Connector	57-0591
Tube Side Cover	57-1358FC55
Wiring Side Cover	57-1345FC55
Padder Plate	57-1348FC55
Hook Bolt (Radio Mtg.)	57-1340FA3
Nut (Radio Mtg.)	W98FA3
Lockwasher (Radio Mtg.)	W1668FE7
Cable Clamps	57-1429FA38
Interference Condenser	30-4007
Interference Condenser (Generator)	30-4490
Spark Plug Suppressor	33-1015
Distributor Resistor	33-1196
Hood Grounding Screws	97-0125FA3
Control Assembly	85-0132
Copper Braid (¾" wide, 24" long)	95-0145
Drive Cord	55-0935
Drive Cord Spring	57-1425FA3
Dial Background Plate	57-1887FCP
Volume Flexible Shaft	57-1384
Tuning Flexible Shaft	57-1385
Station Indicator Flexible Shaft	57-1386
Pointer	57-1889FCP
Tone Switch Shaft	57-1839FA3
Tone Switch Spring	57-1840
Dial	55-1196
Station Indicator Drum	77-0572
Slide & Pawl Assembly	77-0721

MODEL AR-65

PHILCO RADIO & TELEVISION CORP.

INSTRUCTIONS FOR ADJUSTING SHORT WAVE PADDERS
(FIGURE 3)

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE "RED" DOT APPEARS IN THE BAND INDICATOR WINDOW				
1	10 M.C.	To Aerial Receptacle on Radio	Note 1	Note 2	OSC. 10 M.C. Pad to Outer Peak
2	9.5 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 9.5 M.C. Signal	ANT. 9.5 M.C.
3	6 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 6 M.C. Signal	ANT. 6 M.C.
	PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE "WHITE" DOT APPEARS IN THE BAND INDICATOR WINDOW				
1	12.1 M.C.	To Aerial Receptacle on Radio	Note 1	Note 2	OSC. 12.1 M.C.
2	11.9 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 11.9 M.C. Signal	ANT. 11.9 M.C.
3	11.7 M.C.	To Aerial Receptacle on Radio	Note 1	Rotate Tuning Condenser to 11.7 M.C. Signal	ANT. 11.7 M.C.
4	OPERATIONS 2 AND 3 ARE IMPORTANT AND MUST BE REPEATED UNTIL MAXIMUM SIGNAL IS RECEIVED				

OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	PUSH IN THE RIGHT HAND KNOB ON THE CONTROL UNTIL THE BLACK DOT APPEARS IN THE BAND INDICATOR WINDOW AND STATIONS CAN BE TUNED IN BY MANUAL TUNING				
2	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	(41) (39) (25) (23) (40) (38) (25) (23)
3	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	(18)
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	(64) Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	(21) Note 3
6	1580 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	(18)
7	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 1400 K.C.	(64) Note 4
8	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Condenser at 580 K.C.	(21) Note 3

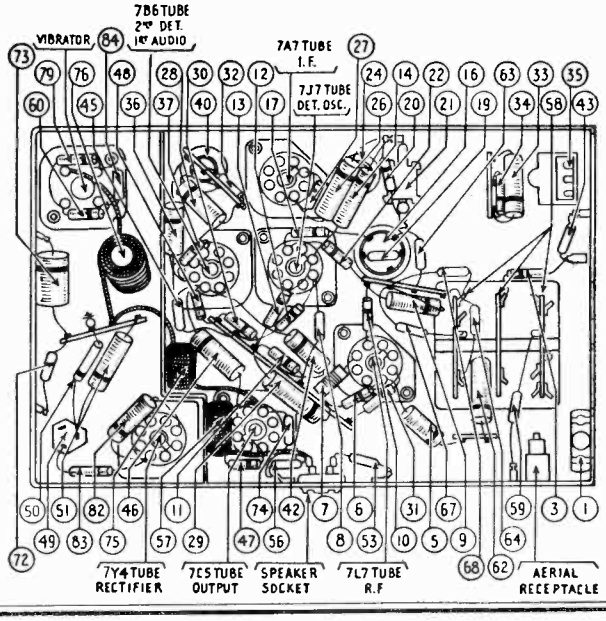
Make all adjustments for maximum reading on the output meter.

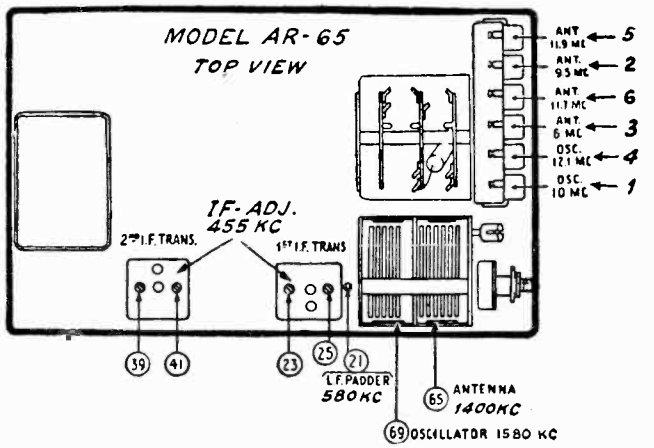
NOTE 1 — Connect the aerial lead, Part No. 95-0185, to the aerial receptacle in the radio. Connect a 10 mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 2 — Turn the condenser rotor plates completely out of mesh as far as they will go.

NOTE 3 — Rock the tuning condenser while adjusting the low frequency padder. Tune the condenser to the signal and adjust the padder for maximum output. Rotate the tuning condenser back and forth slightly for maximum output. Then readjust the padder for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.



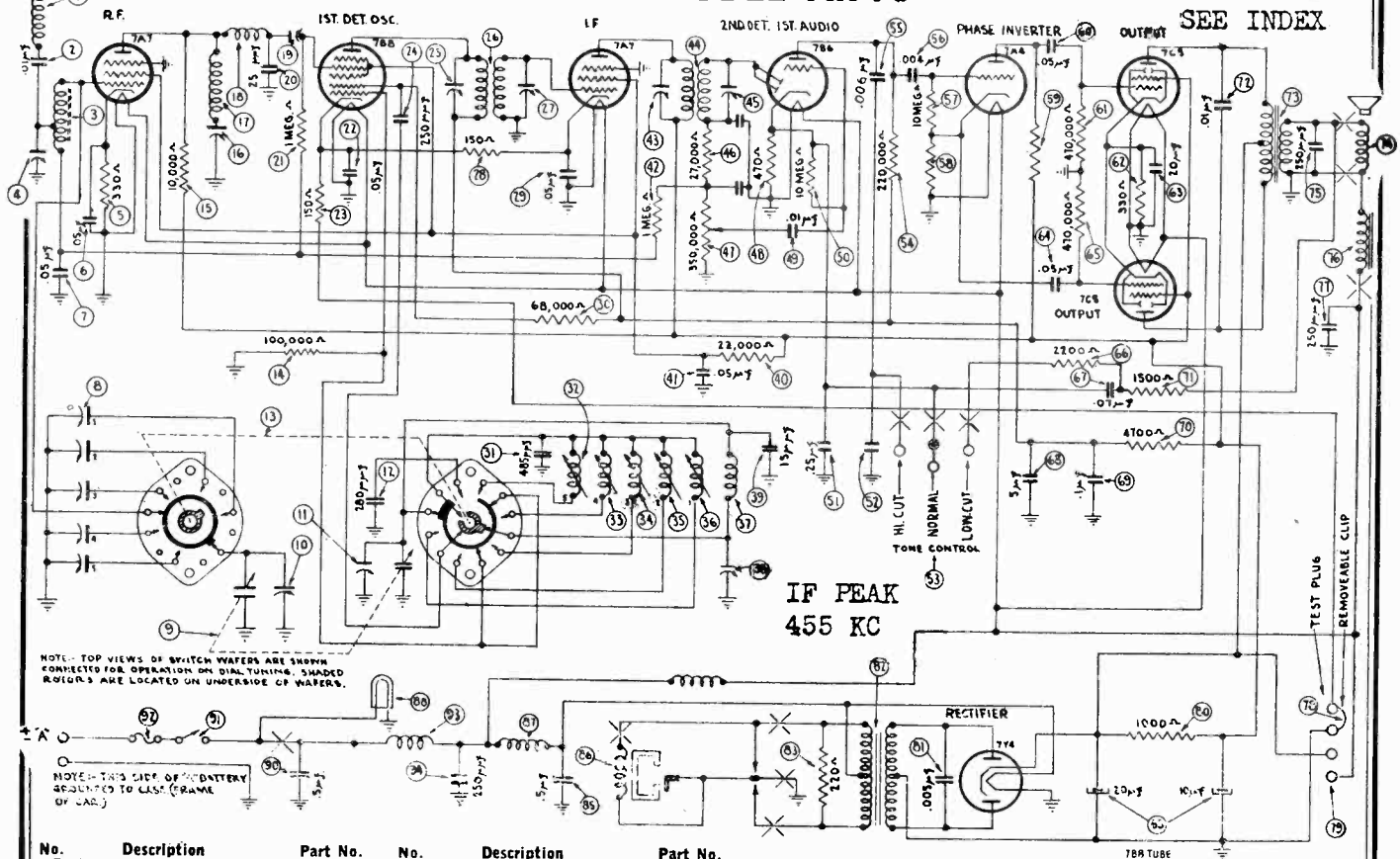


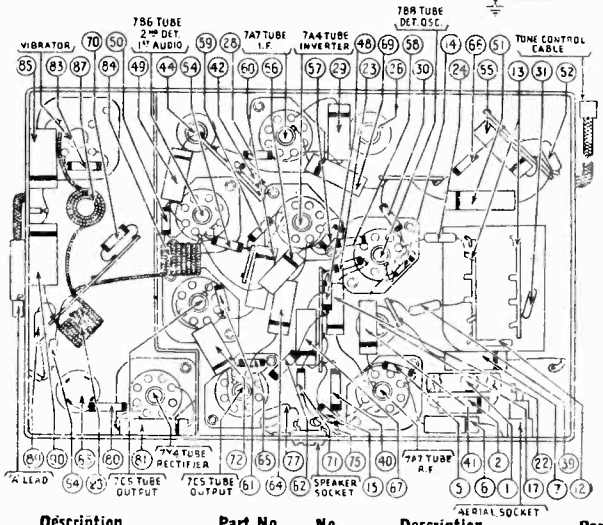
PHILCO RADIO & TELEVISION CORP.

MODEL AR-75

PHILCO MODEL AR-75

FOR OTHER DATA SEE INDEX





No.	Description	Part No.
①	Antenna Choke	65-0102
②	Condenser (.01 Mfd.)	61-0014
③	Antenna Transformer	65-0323
④	Aerial Compensator	Part of ⑧
⑤	Resistor (330 ohms)	33-133336
⑥	Condenser (.05 Mfd.)	61-0111
⑦	Condenser (.05 Mfd.)	61-0101
⑧	Antenna Padder Assembly	77-0512
⑨	Tuning Condenser	63-0047
⑩	R. F. Padder (on Tun. Cond.)	
⑪	Oscillator Padder (on Tun. Cond.)	
⑫	Silver Mica Condenser (280 Mmfd.)	61-0043
⑬	Wafer Switch Assembly	77-0506
⑭	Resistor (100,000 ohms)	33-410154
⑮	Resistor (10,000 ohms)	33-310334
⑯	I. F. Wave Trap Padder	Part of ⑰
⑰	R. F. Transformer	65-0321
⑱	Coil	Part of ⑰
⑲	Padder	Part of ⑰
⑳	Condenser (25 Mmfd.)	30-1067
㉑	Resistor (1,000,000 ohms)	33-510154
㉒	Condenser (.05 Mfd.)	61-0101
㉓	Resistor (150 ohms)	33-115336
㉔	Condenser (250 Mmfd.)	60-125157
㉕	Padder (Pri. 1st I. F. Trans.)	
㉖	First I. F. Transformer	65-0319
㉗	Padder (Sec. 1st I. F. Trans.)	
㉘	Resistor (150 ohms)	33-115336
㉙	Condenser (.05 Mfd.)	61-0111
㉚	Resistor (68,000 ohms)	33-368334
㉛	Silver Mica Condenser (485 Mmfd.)	61-0144
㉜	Oscillator Transformer (550-1065 K.C.)	65-0173
㉝	Oscillator Transformer (600-1165 K.C.)	65-0172
㉞	Oscillator Transformer (660-1240 K.C.)	65-0171
㉟	Oscillator Transformer (750-1410 K.C.)	65-0170
㊱	Oscillator Transformer (855-1580 K.C.)	65-0169
㊲	Manual Oscillator Transformer	65-0420
㊳	Low Frequency Padder	63-0048
㊴	Condenser (15 Mmfd.)	61-015327
㊵	Resistor (22,000 ohms)	33-322434
㊶	Condenser (.05 Mfd.)	61-0101
㊷	Resistor (1,000,000 ohms)	33-510154
㊸	Padder (Pri. 2nd I. F. Trans.)	
㊹	Second I. F. Transformer	65-0320
㊺	Padder (Sec. 2nd I. F. Trans.)	
㊻	Resistor (27,000 ohms)	33-327154
㊼	Volume Control	

No.	Description	Part No.
	(350,000 ohms)	67-0043
㊽	Resistor (470 ohms)	33-147336
㊾	Condenser (.01 Mfd.)	61-0170
㊿	Resistor (10,000,000 ohms)	33-610154
51	Condenser (.25 Mfd.)	61-0112
52	Condenser (100 Mmfd.)	60-11015
53	Tone Control Switch	77-0733
54	Resistor (220,000 ohms)	33-422334
55	Condenser (6,000 Mmfd.)	61-006211
56	Condenser (4,000 Mmfd.)	61-0129
57	Resistor (10,000,000 ohms)	33-610154
58	Resistor (47,000 ohms)	33-347334
59	Resistor (47,000 ohms)	33-347334
60	Condenser (.05 Mfd.)	61-0122
61	Resistor (470,000 ohms)	33-447154
62	Resistor (330 ohms)	33-133436
63	Filter Condenser (5-10-20-20 Mfd.)	61-0150
64	Condenser (.05 Mfd.)	61-0101
65	Resistor (470,000 ohms)	33-447154
66	Resistor (2,200 ohms)	33-222334
67	Condenser (.07 Mfd.)	61-0152
68	Condenser (.1 Mfd.)	61-0113
69	Resistor (4,700 ohms)	33-247334
70	Resistor (1,500 ohms)	33-215334
71	Condenser (.01 Mfd.)	61-0124
72	Output Transformer	65-0402
73	Cone & Voice Coil (For 73-0056-2 Speaker)	91-0164
	(For 73-0056-3 Speaker)	91-0165
74	Condenser (250 Mmfd.)	60-125157
75	Field Coil	Not Replaceable
76	Condenser (250 Mmfd.)	60-125157
77	Test Plug Link	57-1121
78	Test Socket	55-1118
79	Resistor (1,000 ohms)	33-210434
80	Condenser (5,000 Mmfd.)	61-0153
81	Power Transformer	65-0403
82	Resistor (220 ohms)	33-122334
83	Condenser (.5 Mfd.)	61-0134
84	Vibrator	83-0025
85	Vibrator Choke	65-0075
86	Pilot Lamp	34-2039
87	Condenser (.5 Mfd.)	61-0134
88	On-Off Switch	85-0112
89	Fuse	45-2559
90	"A" Choke	32-1561
91	Condenser (250 Mmfd.)	60-125157
	Housing	77-0694FC54
	Control Assembly	85-0129
	Dial	55-1194
	Cord	55-0935
	Tuning Shaft	57-1385
	Volume Shaft	57-1384
	Push Button Shaft	57-1386

Description	Part No.
Pointer	57-1889
Station Indicator Drum Assembly	77-0755
Tone Control Lead (Receiver End)	95-0176
Tone Control Lead (Control End)	95-0175
Hook Bolt (Radio Mtg.)	57-1340FA3
Lockwasher (Radio Mtg.)	W166SFE7
Nut (Radio Mtg.)	W98FA3
Interference Condenser	30-4007
Distributor Resistor	33-1196
Tube Side Cover	318-2326
Wiring Side Cover	57-1863FC54
Padder Cover	318-2325
Speaker Socket	55-1117
Loktal Socket	55-0575
Vibrator Socket	27-6153
Screw & Core Assembly	57-1363
Brass Coil Cups	W-2032

The following parts are used for instrument board speaker mounting:

Speaker Unit	73-0064
Cardboard Baffle	55-0957

No.	Description	Part No.
	Rubber Gasket and Screen	55-1320
	"U" Bracket	57-2162FA3
	Side Brackets	57-1461FA3
	Bolt (Bracket Mtg.)	97-0120FA3
	Cardboard Spacers	55-0449
	Nut (Speaker Mtg.)	W124FA3
	Screw (Speaker Mtg.)	W1582FA4
	Lockwasher (Speaker Mtg.)	W291
	Lockwasher (Speaker Mtg.)	W286
	Carriage Bolt	97-0061FA3
	Carriage Bolt Nut	W98FA3

The following parts are used for dash speaker mounting:

Speaker & Housing Complete	77-0748
Speaker Unit	73-0056
Speaker Housing	57-0642FC54
Stud (Speaker Mtg.)	6122
Washer (Speaker Mtg.)	4486
Washer (Speaker Mtg.)	W679
Nut (Speaker Mtg.)	W55A
Back Cover	77-0220
Screen & Cloth Assembly	77-0749
Ornament	57-0607FA8
Speaker Cable	95-0171

MODEL Studebaker Tuner
Part 77-0588
MODEL Packard Tuner
Part 77-0636

PHILCO RADIO & TELEVISION CORP.

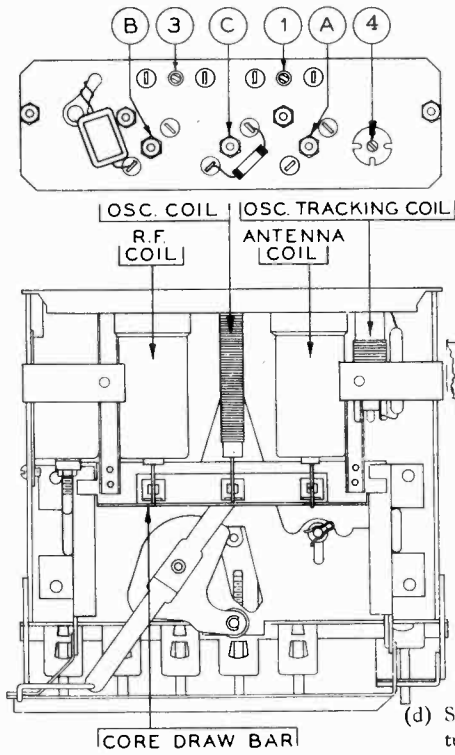


FIG. 1

USE THIS DRAWING FOR PACKARD ONLY

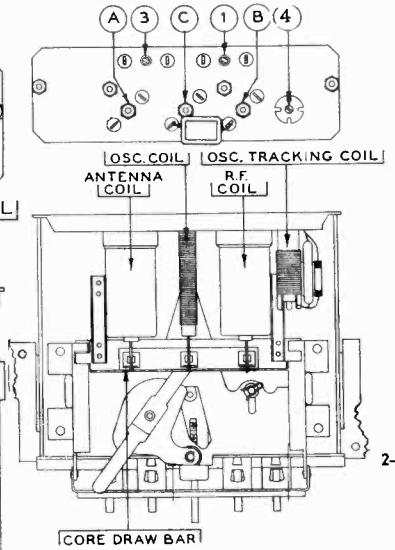


FIG. 1

USE THIS DRAWING FOR STUDEBAKER ONLY

1—COMPLETE ALIGNMENT PROCEDURE

(a) Push in the tuning control knob so that stations can be tuned in by manual tuning.

(b) Turn the tuning control knob clockwise as far as it will go so that the cores will be in the extreme "out" position. Set the signal generator to 1600 K.C. and adjust padder (3) (Fig. 1) for maximum signal. *(1) FOR PACKARD*

(c) Adjust padder (2) aerial compensator in radio and padder (1) (see Fig. 1) for maximum signal. *(3) FOR PACKARD*

(d) Set the signal generator at 1400 K.C. and tune the manual control to 1400 K.C. Adjust the R.F. and antenna coil for maximum signal by turning the mounting nuts (A) and (B).

(e) Repeat (c) and (d) until no further improvement is noticed.

(f) Set the signal generator at 600 K.C. and the tuning control at 600 K.C. Adjust the screw (4) (see Fig. 1) for maximum signal. Rock the tuning control when making this adjustment. Tune the control to the signal and adjust the screw for maximum output. Rotate the tuning control back and forth slightly until maximum output is obtained. Then readjust the screw until no further improvement is noticed.

(g) In case a great adjustment was necessary in (f) the adjustments (c) and (d) should be repeated.

(h) In case the dial calibration is off frequency, it can be corrected by changing the starting position of the oscillator core. This is done by unsoldering the piano wire from the lug and moving the core slightly. A change of 1/64 in the position of the core is equivalent to approximately 20 K.C. on the dial. If the dial reads low, it can be corrected by starting the oscillator core further in the coil form. If it reads high, the core should be pulled out. If this position is changed, it will be necessary to realign the radio as described above.

2—ALIGNMENT WHEN ONLY THE ANTENNA COIL OR CORE IS REPLACED

(a) Set the piano wire end of the core 1¼" from the end of the coil form when the core draw bar is in the extreme "out" position, and solder the wire to the lug.

(b) Set up the signal generator to 1600 K.C., and adjust the aerial compensator (2) in the radio for maximum signal.

(c) Adjust the signal generator to 1400 K.C. and set the tuning control at 1400 K.C. Adjust the coil for maximum signal by turning the mounting nut (A) until maximum signal is obtained. In case a peak cannot be obtained, it may be necessary to unsolder the piano wire and move the core slightly, either in or out.

(d) Repeat (b) and (c).

3—AILGNMENT WHEN ONLY THE R.F. TRANSFORMER OR CORE IS REPLACED

(a) Set the piano wire end of core 1¼" from the end of the coil form when the core draw bar is in the extreme "out" position and solder the wire to the lug.

(b) Set up the signal generator to 1600 K.C. and adjust padder (1) (see Fig. 1) for maximum signal. *(3) FOR PACKARD*

(c) Adjust the signal generator to 1400 K.C adn set the tuning control at 1400 K.C Adjust the coil form by turning the mounting nut (B) until maximum signal is obtained. In case a peak cannot be obtained, it may be necessary to unsolder the piano wire and move the core slightly, either in or out.

4—ALIGNMENT WHEN ONLY THE OSCILLATOR TRACKING COIL OR CORE IS REPLACED

(a) Set the signal generator to 600 K.C. and the tuning control at 600 K.C. Adjust screw (4) (see Fig. 1) for maximum signal. Rock the tuning control while making this adjustment. Tune the control to the signal and adjust the screw for maximum output. Rotate the tuning control back and forth slightly until maximum output is obtained. Then readjust the screw until no further improvement is noticed.

(b) Check and readjust the aerial compensator (2) in the radio, and padders (1), (2), and (4) as described in 1.

5—ALIGNMENT WHEN ONLY THE OSCILLATOR COIL OR CORE IS REPLACED

(a) Set the piano wire end of the core 1¼" from the end of the coil form when the core draw bar is in the extreme "out" position, and solder the wire to the lug.

(b) Set up the signal generator to 1600 K.C. and adjust padder (3) (see Fig. 1) for maximum signal. *(1) FOR PACKARD*

(c) Follow the same procedure as outlined under "1—Complete Alignment Procedure".

PHILCO RADIO & TELEVISION CORP.

MODEL S-1616

INSTALLING CALL LETTERS IN AUTOMATIC TUNING DIAL

One of the "A" leads on the back of the control head must be connected so that the current is supplied to operate the automatic control dial. Insert the fuse in the fuse housing in the separate "A" lead (supplied in the radio package), and connect to the "A" lead on the control. The eyelet end of this lead should be connected to the terminal of the Gas Gauge nearest the center of the car.

1—Select and remove from the Call Letter Sheets, the Call Letters of five popular stations in the area in which the radio is to be operated and that comes within the frequency range of the positions on the dial as shown in Illustration for Model S-1616.

2—If the section of the dial in which the tab marked "DIAL" is not at the indicator window, push the Automatic Station Selector until it is in position in the indicator window. The control must be held against the edge of the instrument panel in order to complete the electrical circuit.

3—Push the Automatic Station Selector once more and No. 1 section of the dial will rotate to the front. Insert in this position the call letter tab of the station having the highest kilocycle frequency.

EXAMPLE: The No. 1 position may have the call letters of a station operating on 1400 kilocycles; the No. 2 position, a station operating on 1050 kilocycles. etc.

4—Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

5—The control unit should now be completely installed. Remove the trim panel covering the control openings and place the control unit in position in the back of the instrument panel. Insert the bezel windows in the bezel plate, and apply the bezel plate to the front of the panel. The control and bezel are assembled to the instrument with gland nuts. Using the special gland nut wrench provided, tighten the nuts and then apply the two knobs.

SETTING UP THE RECEIVER FOR AUTOMATIC TUNING

Before setting up the Receiver for automatic tuning, it is necessary to synchronize the automatic dial to the Receiver as follows:

Try to tune in a station with the tuning control knob. If no station can be picked up, push the automatic station selector button until the position is found where stations can be tuned in. This is the "DIAL" position. Remove the automatic control cable from the Receiver and again push the automatic station selector button until the word "DIAL" appears in the dial window. The automatic control cable should then be replaced in its socket on the Receiver and secured with the two self threading screws supplied.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the control end of the Receiver and can easily be pried off.

2—Push the automatic station selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in the No. 5 position on the dial (the lowest frequency station) and note the program. Push the automatic selector button five times and this station's call letters will appear at the indicator window.

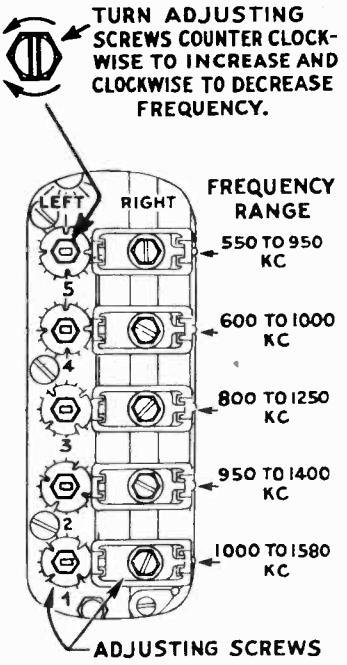
IMPORTANT—Start adjustments with low frequency screws.

3—With a small screwdriver, turn the No. 5 adjusting screw (See Illustration for Model S-1616) in the left column to the right or left until the station is tuned in. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

4—Press the automatic station selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the No. 4 position on the automatic dial (the next higher frequency). Press the automatic button four times and adjust the number 4 set of adjusting screws to this station.

Repeat this procedure until each of the five pairs of adjusting screws has been tuned to its respective station.

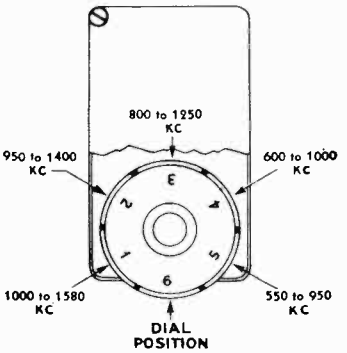
It is NECESSARY that the setting of the adjusting screws be repeated to be sure they are properly set so that maximum performance may be had.



VIEW OF AUTOMATIC ADJUSTING SCREWS

Be sure and save the unused call letters giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

If the Stations set up on the Automatic Tuning Dial should at some time tune in at the wrong position, the dial can be easily synchronized to the radio as follows:



PHANTOM VIEW OF THE AUTOMATIC-DIAL SHOWING POSITIONS ON DIAL AND FREQUENCY RANGE OF EACH

1—Find "DIAL" position as explained in the second Paragraph under "Setting up the Receiver for Automatic Tuning."

2—Remove the automatic cable from the socket on the end of the Receiver.

3—Press the automatic station selector button until "DIAL" appears in the Automatic Window.

4—Replace automatic cable.

FOR OTHER DATA SEE INDEX

MODEL P-1617

FOR OTHER DATA ON THESE MODELS SEE INDEX

PREPARING FOR AUTOMATIC TUNING ADJUSTMENTS

Turn on the Receiver and allow it to operate for TWENTY minutes before starting this procedure.

1—Try to tune in a station with the manual tuning control knob. If no station is received, press the Automatic Station Selector button and again try to tune in a station. Repeat if necessary until the Automatic Station Dial has rotated to a point where stations may be tuned in with the manual tuning knob. This point will be the "DIAL" position of the Automatic Station Selector and call letters may now be inserted in the dial.

2—Remove the right knob, gland nut cover, gland nut and bezel.

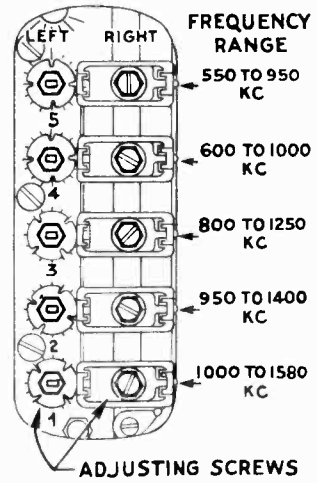
Remove the pilot lamp assembly from the automatic dial housing.

Remove the two screws in the front right side of the automatic dial housing. (These screws can be seen thru the opening in the instrument panel when the bezel is removed.

3—Remove the Automatic Control Dial and assembly from the control units and drop it down below the edge of the instrument panel so that the dial is accessible.

4—Select and remove from the call letter sheets, the call letters of five popular stations received in the area in which the radio is to be operated, and that come within the frequency range of the adjusting screws as shown in Illustration for Model P-1617. Also remove the tab marked "DIAL."

5—Insert the "DIAL" tab in the slot in the dial which is now at the front. (The position just located by being able to tune in a station).



6—Hold the dial assembly against the edge of the instrument panel to complete the electrical connection and press the Automatic Station Selector button once. The dial will now rotate one position. The front slot is for the call letters of the station with the highest frequency in kilocycles.

Press the Selector button once more and insert the call letters of the station with the next highest frequency in kilocycles.

EXAMPLE: The first position may have a station operating on 1400 kilocycles; the second position, station operating on 1050 kilocycles, etc.

Repeat this procedure until all five station call letter tabs selected are inserted in the dial in the order of their frequencies. Be sure to record the call letters with respect to their position on the dial for use in setting up adjusting screws.

7—Replace dial assembly, dial assembly screws, bezel, gland nut, and knob.

8—Remove the plate on the end of the Receiver which covers the adjusting screws. This is held by snap springs and can easily be pried off.

AUTOMATIC TUNING ADJUSTMENTS

It is necessary to adjust the "LOW" frequency adjusting screws first.

Push the Automatic Selector Button until the word "DIAL" appears in the dial window. Tune in the broadcast station whose call letters are in the No. 5 position on the automatic dial (the lowest frequency station) and note the program.

Push the Automatic Selector Button five times and this station's call letters well appear in the dial window.

With a small screwdriver, turn the No. 5 adjusting screw in the left column to the right or left until the same station is tuned in. See illustration for Model P-1617. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

Press the Automatic Selector Button until "DIAL" again appears in the window and tune in the station whose call letters are in the No. 4 position. Then press the automatic selector button four times and adjust the No. 4 set of adjusting screws.

Repeat this procedure until all five parts of adjusting screws have been set on their respective station. It is NECESSARY to recheck the setting of the adjusting screws to be sure they are properly set so that maximum performance may be had. Stations may be set up before installing the Receiver but final adjustment must be made with the radio operating on the antenna in the car.

If at any time the Stations set up on the Automatic Tuning Dial should tune in at the wrong position, the dial can be easily synchronized to the radio as follows:

1—Find "DIAL" position as explained in Paragraph 1, under "Preparing for Automatic Tuning Adjustments."

2—Remove the automatic cable from the socket on the end of the Receiver.

3—Press the Automatic Station Selector button until "DIAL" appears in the Automatic Window.

4—Replace automatic cable.

MODEL C-1708

1. With the antenna installed and connected, turn on the radio and allow it to operate for TWENTY minutes before making adjustments.

The Receiver must be adjusted with the Skyway antenna fully extended and it is recommended that adjustments be made with the car in a shielded area such as under a viaduct or in a steel constructed building. However best results may be obtained using the new signal Antennuator. This permits setting up nearby local stations on the buttons without having the car in a shielded area.

2. Push in the dial button and tune with manual control a weak station between 1350 and 1500 kilocycles. Pull push buttons off. Adjust the antenna compensator with a screw driver by turning the adjusting screw either to the left or right until maximum volume is reached. See illustration.

3. If numbers on buttons are not desired, select and remove from the call letter sheet, five call letter tabs of popular stations received in the area in which the receiver is to be operated, selecting stations within the range of each button as shown in illustration, Model C-1708. Reference to programs published in your local newspaper aids in quick selection of stations. Remove metal caps to install the tabs in push buttons.

4. Push dial button and tune in the station you have selected for the No. 1 button, identify the program and push in the No. 1 push button shaft. Using a small screw driver, turn the No. 1 adjusting screw (inner screw) and tune in the station selected for this position by turning the screw driver counter-clockwise to increase frequency and clockwise to decrease frequency.

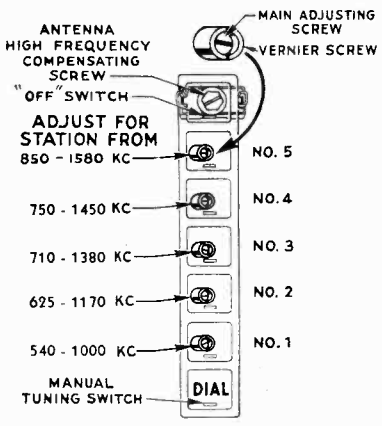
After the station has been tuned in accurately, (see illustration) a finer adjustment can be made by adjusting the vernier screw, which is the outside shell of the adjusting screw. Use a larger screw driver for this operation. Careful adjustment of this screw will insure maximum performance in areas where broadcasting reception is poor.

Proceed in like manner with the adjustment of No. 2, 3, 4 and 5 screws in the order of frequency until all five stations have been tuned in. It is recommended that the above procedure of setting up stations should be repeated in order that accurate adjustments may be insured, for satisfactory reception at some distance from stations.

5. The push buttons may now be replaced on their respective shafts.

The Receiver may be set up before installing in the car, but FINAL adjustments must be made with the radio operating on the antenna in the car. Eight hundred call letter tabs in sheet form are furnished so that at least five popular radio broadcasting stations can be selected.

BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.

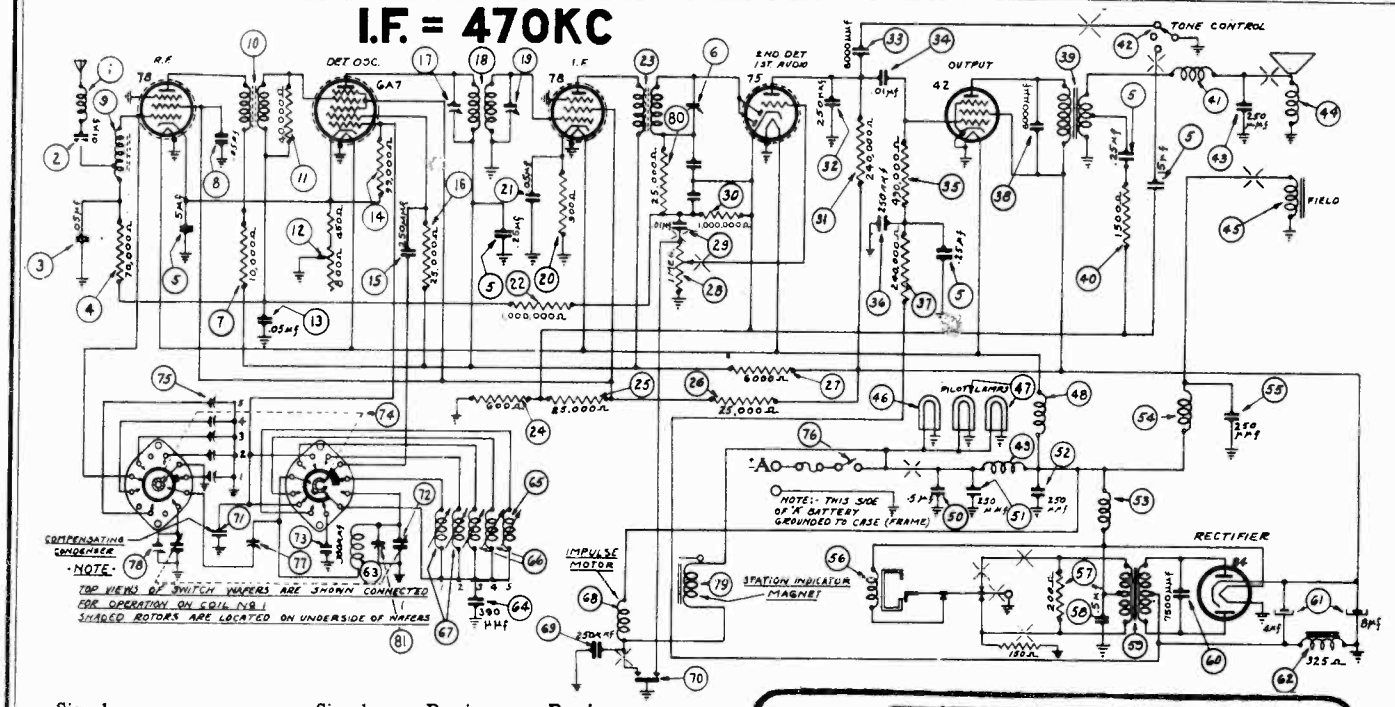


AUTOMATIC ADJUSTING SCREWS

PHILCO RADIO & TELEVISION CORP.

MODELS S-1626 G-1628

I.F. = 470KC



Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Control grid of 6A7	0.1 mf	470 kc	Note 1	Note 2	6
"	"	"	"	"	19
"	"	"	"	"	17
Ant.[3]	20 mmf	1580 kc	"	"	81
"	"	1400 kc	"	1400 kc	78
"	"	580 kc	"	580 kc	77 *
"	"	1580 kc	"	Note 2	81
"	"	1400 kc	"	1400 kc	78 [4]

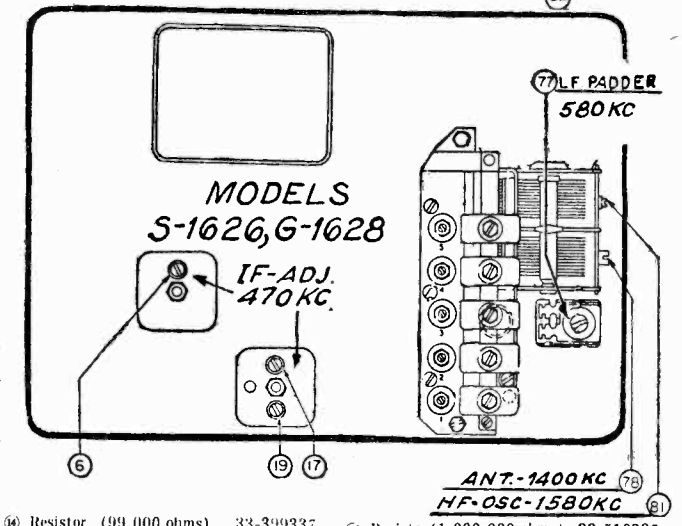
Note 1.—Press Automatic Station-Selector button until "DIAL" appears in the window and stations can be tuned in by manual tuning.

Note 2.—Turn condenser rotor plates completely out of mesh as far as they will go.

Note 3.—Connect antenna lead, Part No. L-2765, to the antenna receptacle in the radio. Connect 20 mmf condenser in series between signal-generator and antenna lead.

Note 4.—When the antenna-stage adjustment is made with the radio installed in the car, the radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal-generator output lead to a wire placed near the car antenna, but not connected to it.

* While rocking.



No.	Description	Part No.
①	Antenna Choke	32-1956
②	Condenser (.01 mfd.)	61-0014
③	Condenser (.05 mfd.)	30-4569
④	Resistor (70,000 ohms)	33-370337
⑤	Condenser (.15-.25-.25-.25-.5 mfd.)	61-0017
⑥	Padder (Sec. 2nd I. F. Trans.)	
⑦	Resistor (10,000 ohms)	33-310337
⑧	Condenser (.05 mfd.)	30-4444
⑨	Antenna Transformer	65-0100
⑩	R. F. Transformer	65-0009
⑪	Resistor (40,000 ohms)	33-339137
⑫	Sensitivity Control	33-5264-4
⑬	Condenser (.05 mfd.)	30-4444
⑭	Resistor (99,000 ohms)	33-399337
⑮	Condenser (250 mmfd.)	30-1038
⑯	Resistor (25,000 ohms)	33-325337
⑰	Padder (Pri. 1st I. F. Trans.)	
⑱	First I. F. Transformer	65-0002
⑲	Padder (Sec. 2nd I. F. Trans.)	
⑳	Resistor (900 ohms)	33-190438
㉑	Condenser (.05 mfd.)	30-4569
㉒	Resistor (1,000,000 ohms)	33-510337
㉓	Second I. F. Transformer	65-0003
㉔	Resistor (600 ohms)	33-160438
㉕	Resistor (25,000 ohms)	33-325337
㉖	Resistor (25,000 ohms)	33-325437
㉗	Resistor (6,000 ohms)	33-260337
㉘	Volume Control (1,000,000 ohms) and On-Off Switch	67-0012-1
㉙	Condenser (.01 mfd.)	30-4479
㉚	Resistor (330,000 ohms)	33-433337
㉛	Resistor (240,000 ohms)	33-424337
㉜	Condenser (250 mmfd.)	30-1032
㉝	Condenser (6,000 mmfd.)	30-4504
㉞	Condenser (.01 mfd.)	30-4501
㉟	Resistor (490,000 ohms)	33-449337
㊱	Condenser (250 mmfd.)	30-1032
㊲	Resistor (240,000 ohms)	33-424337
㊳	Condenser (6,000 mmfd.)	30-4024
㊴	Output Transformer	65-0053
㊵	Resistor (1,500 ohms)	33-215337
㊶	Choke	32-1374
㊷	Tone Control Switch complete	85-0030
㊸	Condenser (250 mmfd.)	30-1032
㊹	Cone and Voice Coil	91-0041
㊺	Field Coil	Not Replaceable
㊻	Pilot Lamp	34-2040
㊼	Pilot Lamp	34-2039
㊽	Filament Choke	32-1604
㊾	"A" Choke	32-1644
㊿	Condenser (.5 mfd.)	30-4474
(51)	Condenser (250 mmfd.)	30-1032
(52)	Condenser (250 mmfd.)	30-1032
(53)	Vibrator Choke	32-2812
(54)	Choke	32-2657
(55)	Condenser (250 mmfd.)	30-1032
(56)	Vibrator	41-3170
(57)	Resistor (200 ohms)	33-120337
(58)	Condenser (.5 mfd.)	30-4565
(59)	Power Transformer	65-0016
(60)	Condenser (7,500 mmfd.)	30-4567
(61)	Filter Condenser (4-8 mfd.)	30-2295
(62)	Filter Choke (325 ohms)	32-7910
(63)	Oscillator Transformer	65-0052
(64)	Silver Cap Condenser (390 mmfd.)	61-0031
(65)	Oscillator Transformer (Low Freq.)	65-0051
(66)	Oscillator Transformer (Med. Freq.)	65-0050
(67)	Oscillator Transformer (High Freq.)	65-0049
(68)	Choke	32-1644
(69)	Condenser (250 mmfd.)	30-1032
(70)	Push Button Switch complete	85-0031
(71)	Thermel Coupling Condenser	61-0011
(72)	Tuning Condenser	63-0012
(73)	Silver Cap Condenser (300 mmfd.)	61-0003
(74)	Wafer Switch	77-0185
(75)	Antenna Padder Assembly	77-0035
(76)	On-Off Switch and Volume Control	67-0012-1
(77)	Low Frequency Padder	63-0017
(78)	First Padder (on Tun. Cond.)	
(79)	Impulse Motor	77-0120
(80)	Resistor (25,000 ohms)	33-325337
(81)	Second Padder (on Tun. Cond.) Dial Assembly	85-0020

MODELS S-1626
G-1628

PHILCO RADIO & TELEVISION CORP.

MODELS S-1626 and G-1628

SETTING UP THE RECEIVER FOR AUTOMATIC TUNING

Select and remove from the Call Letter Sheets, the Call Letters of five popular stations received in the area in which the radio is to be operated and that come within the frequency range of the adjusting screws as shown in Illustration for Models S-1626, G-1628. Also remove the tab marked "DIAL."

Insert the "DIAL" tab in the slot in the dial which is at the front.

Hold the control against the edge of the instrument panel in order to complete the electrical circuit and push the automatic selector button. The dial will rotate one position. Insert in the dial, the call letter tab of the station having the highest frequency in kilocycles. Press the selector button once more and insert the call letters of the station with the next highest frequency in kilocycles.

EXAMPLE—The first position may have the call letters of a station operating on 1400 kilocycles; the second position, a station operating on 1050 kilocycles, etc. Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

Before setting up the Receiver for automatic tuning, it is necessary to synchronize the automatic dial to the Receiver as follows:

Try to tune in a station with the tuning control knob. If no station can be picked up, push the automatic station selector button until the position is found where stations can be tuned in. This is the "DIAL" position. Remove the automatic control cable from the Receiver and again push the automatic station selector button until the word "DIAL" appears in the dial window. The automatic control cable should then be replaced in its socket on the Receiver and secured with the two self threading screws supplied.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the front of the Receiver and can easily be pried off.

2—Push the automatic station selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in No. 5 position on the dial (the lowest frequency station) and note the program. Push the automatic selector button five times and this station's call letters will appear at the indicator window.

3—With a small screwdriver, turn the No. 5 adjusting screw (See Illustration for Models S-1626, S-1628) in the left column to the right or left until the station is tuned in. Now adjust the corresponding screw in the right column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

4—Press the automatic station selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the No. 4 position on the automatic dial (the next higher frequency). Press the automatic button four times and adjust the number 4 set of adjusting screws.

Repeat this procedure until each of the five pairs of adjusting screws has been tuned to its respective station.

It is NECESSARY that the setting of the adjusting screws be repeated to be sure they are properly set so that maximum performance may be had.

Be sure and save the unused call letters, giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

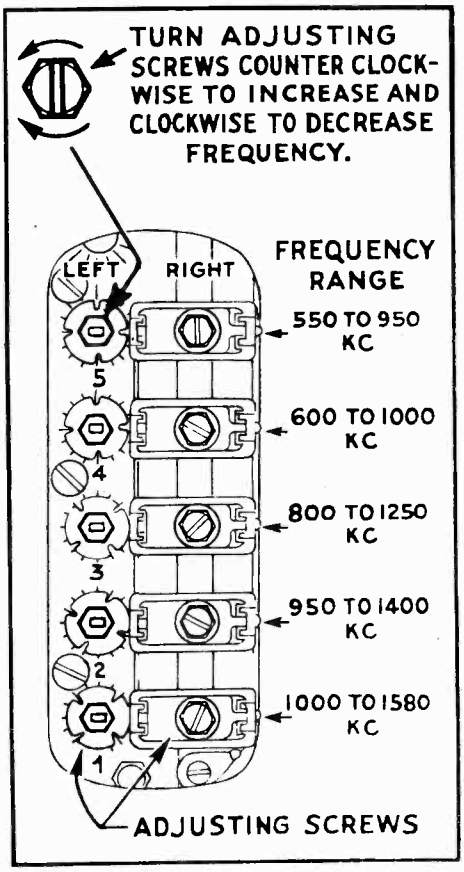
If the Stations set up on the Automatic Tuning Dial should at some time tune in at the wrong position, the dial can be easily synchronized to the radio as follows:

1—Find "DIAL" position as explained in the second Paragraph under "Setting up the Receiver for Automatic Tuning."

2—Remove the automatic cable from the socket on the end end of the Receiver.

3—Press the automatic station selector button until "DIAL" appears in the Automatic Window.

4—Replace automatic cable.

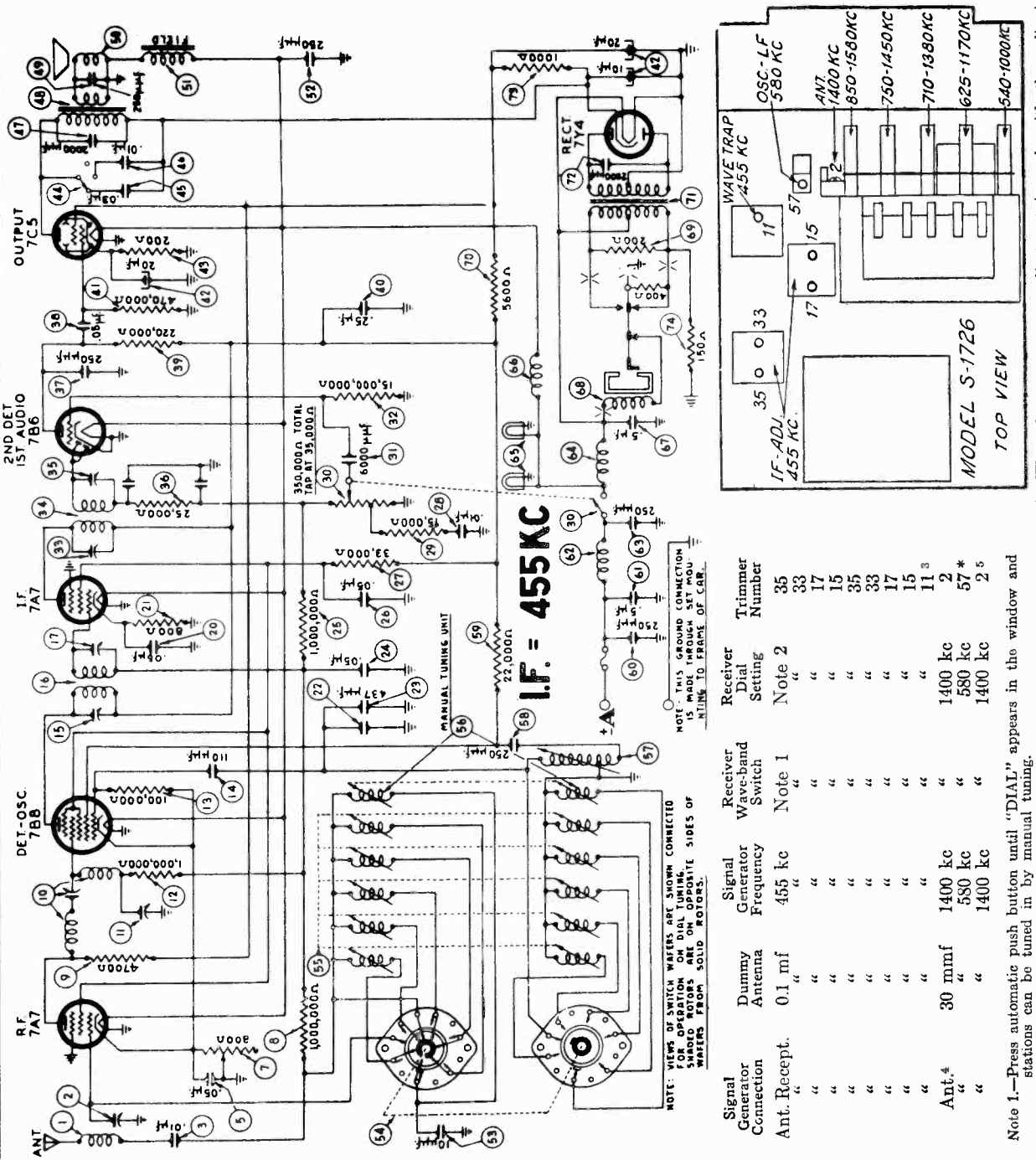


VIEW OF AUTOMATIC ADJUSTING SCREWS

MODEL S-1726

PHILCO RADIO & TELEVISION CORP.

No.	Description	Part No.
⊖	Antenna Choke	65-0102
⊖	Antenna Padder	63-0035
⊖	Condenser (.01 mfd.)	61-0014
⊖	Condenser (.05 mfd.)	61-0101
⊖	Sensitivity Control	67-0025
⊖	Resistor (1,000,000 ohms)	33-510154
⊖	Resistor (4700 ohms)	33-247154
⊖	R. F. Transformer	65-0276
⊖	I. F. Wave Trap Padder	
⊖	Resistor (1,000,000 ohms)	33-510154
⊖	Resistor (100,000 ohms)	33-410154
⊖	Condenser (110 mmfd.)	30-1031
⊖	Padder (Pri. 1st I. F. Trans.)	
⊖	First I. F. Transformer	65-0274
⊖	Padder (Sec. 1st I. F. Trans.)	
⊖	Condenser (.05 mfd.)	61-0101
⊖	Resistor (800 ohms)	33-180334
⊖	Thermal Compensator	61-0080
⊖	Sil. Mica Cond. (437 mmfd.)	61-0071
⊖	Condenser (.05 mfd.)	61-0101
⊖	Resistor (1,000,000 ohms)	33-510154
⊖	Condenser (.05 mfd.)	61-0101
⊖	Resistor (33,000 ohms)	33-333434
⊖	Condenser (.01 mfd.)	61-0110
⊖	Resistor (15,000 ohms)	33-315154
⊖	Volume Control (350,000 ohms) and On-Off Switch	67-0028
⊖	Condenser (6000 mmfd.)	61-0103
⊖	Resistor (15,000,000 ohms)	33-615154
⊖	Padder (Pri. 2nd I. F Trans.)	
⊖	Second I. F. Transformer	65-0275
⊖	Padder (Sec. 2nd I. F. Trans.)	
⊖	Resistor (25,000 ohms)	33-325334
⊖	Condenser (250 mmfd.)	61-0033
⊖	Condenser (.05 mfd.)	61-0122
⊖	Resistor (220,000 ohms)	33-422334
⊖	Condenser (.25 mfd.)	61-0125
⊖	Resistor (470,000 ohms)	33-447154
⊖	Filter Cond. (10-20-20 mfd.)	61-0089
⊖	Resistor (200 ohms)	33-120334
⊖	Tone Control Switch	85-0104
⊖	Condenser (.03 mfd.)	61-0126
⊖	Condenser (.01 mfd.)	61-0124
⊖	Condenser (2000 mmfd.)	61-0123
⊖	Output Transformer	65-0277
⊖	Condenser (250 mmfd.)	61-0033
⊖	Replacement Cone (For 73-0038-4 Speaker)	91-0101
⊖	(For 73-0038-2 Speaker)	91-0102
⊖	Field Coil ..... Not Replaceable	
⊖	Condenser (250 mmfd.)	61-0033
⊖	Condenser (10 mmfd.)	61-0065
⊖	Wafer Switch	318-1782
⊖	Push-Button Trans. Assy.	77-0412
⊖	Inductive Tuning Unit	77-0469
⊖	Oscil. Tracking Coil	65-0270
⊖	Condenser (250 mmfd.)	61-0033
⊖	Resistor (22,000 ohms)	33-322334
⊖	Condenser (250 mmfd.)	61-0033
⊖	Condenser (.5 mfd.)	61-0106
⊖	"A" Choke	32-1644
⊖	Condenser 250 mmfd.)	61-0033
⊖	Vibrator Choke	65-0075
⊖	Pilot Lamps	34-2064
⊖	Filament Choke	32-1374
⊖	Condenser (.5 mfd.)	61-0107
⊖	Vibrator	83-0017
⊖	Resistor (200 ohms)	33-120334
⊖	Resistor (5600 ohms)	33-256154
⊖	Power Transformer	65-0272
⊖	Condenser (2000 mmfd.)	61-0074
⊖	Resistor (1000 ohms)	33-210434
⊖	Resistor (150 ohms)	33-115334
⊖	Push-Button	55-0729



Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Ant. Recept.	0.1 mf	455 kc	Note 1	Note 2	35
"	"	"	"	"	33
"	"	"	"	"	17
"	"	"	"	"	15
"	"	"	"	"	35
"	"	"	"	"	33
"	"	"	"	"	17
"	"	"	"	"	15
"	"	"	"	"	11 [3]
Ant.[4]	30 mmf	1400 kc	"	1400 kc	2
"	"	580 kc	"	580 kc	57 *
"	"	1400 kc	"	1400 kc	2 [5]

Note 1.—Press automatic push button until "DIAL" appears in the window and stations can be tuned in by manual tuning.

Note 2.—Turn tuning-control knob clockwise as far as it will go.

Note 3.—Adjust (11) to obtain minimum output.

Note 4.—Connect antenna lead, Part No. 95-0120, to the antenna receptacle on the radio. Connect 30 mmf condenser in series between signal-generator and antenna lead. Ground the shield pigtail to the signal-generator.

Note 5.—When the antenna-stage adjustment is made with the radio installed in the car, the radio antenna lead must be connected to the cowl antenna in the usual manner. Connect the signal-generator output lead to a wire placed near the car antenna lead, but not connected to it; and adjust trimmer (2) for maximum signal at 1400 kc.

* While rocking.

PHILCO RADIO & TELEVISION CORP.

MODEL S-1726

The antenna and touch tuning station adjustments are accessible from the front of the receiver when the two screws holding the cover plate are removed. On cars equipped with the "Climatizer", it will be necessary to remove the screws holding the "Climatizer" control assembly to the lower edge of the instrument panel and drop it down out of the way while making the adjustments.

1—Turn on the radio set and allow it to heat for at least twenty minutes before starting any adjustments.

2—Press the touch control button until the word "DIAL" appears in the "DIAL" window. Tune in a weak station on the manual dial between 1350 and 1500 kilocycles. Now adjust the antenna high frequency compensating screw (See Illustration) until maximum volume is obtained.

3—Select five stations within the frequency range shown over each set of adjusting screws (See Illustration). Remove the call letters for these stations from the call letter tab sheet. Remove the top cover of the set; this exposes the plastic drum into which the tabs should be inserted. It is important to insert these tabs in a definite relationship with respect to frequency in order that tuning adjustments can be made properly. Arrange the tabs in the order of frequency from high to low, placing the highest frequency on the drum immediately next to the dial tab in a counter clockwise direction. Insert the remaining tabs in the order of frequency in this same counter clockwise direction. If the tabs have been inserted correctly, it will be found that when the word "DIAL" shows in the window, the next push of the button will place the call letter for the highest frequency station in the window. Each successive push of the control button will place a next lower frequency station in the window until the series is repeated.

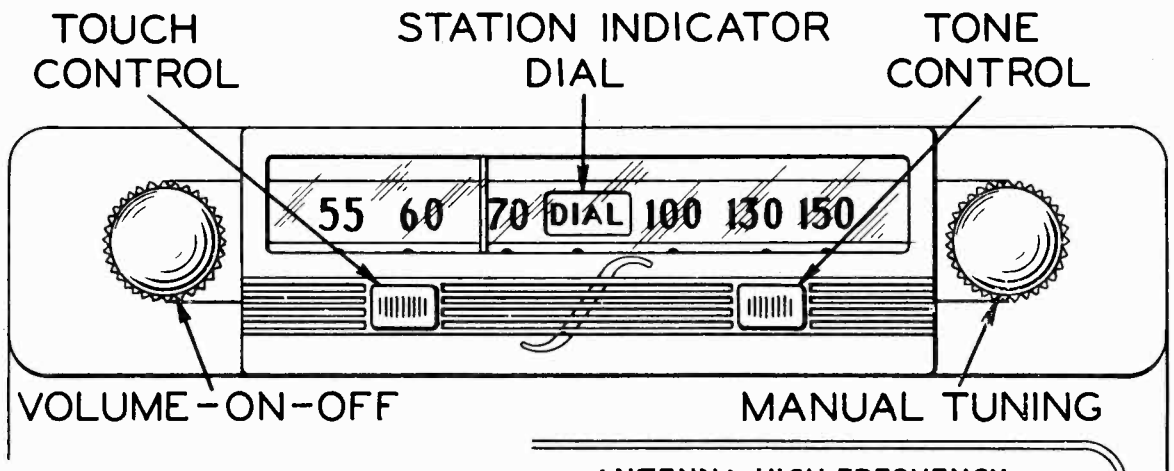
4—With "DIAL" showing in the dial window, manually tune in the station to be set up on push button number 1 and identify the program.

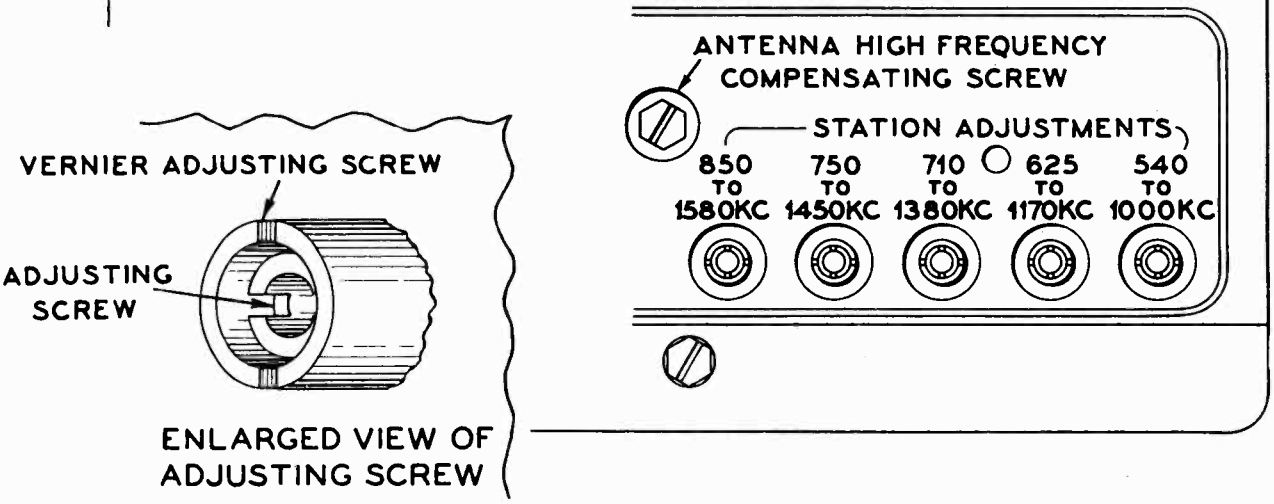
5—Press the touch control button once and adjust the left hand screw using the small end of the special screw driver, until the station identified has been tuned in as accurately as possible. A final adjustment can be made by inserting the large end of the screw driver into the vernier adjusting screw. Careful adjustment of this screw will insure maximum performance in areas where reception is poor. **NOTE:** Stations of the higher frequencies are tuned in by turning the screws to the left or counter clockwise. Lower frequency stations are tuned by turning to the right or clockwise. Proceed in like manner with the adjustment of each of the remaining stations in the order of frequency until all five stations selected have been tuned in. Because there is some detuning of the coils due to the movements of the cores in adjacent coils, it is necessary to re-check the adjustments again going back from right to left and again re-checking from left to right. This is important for accurate reception while driving at a distance from the broadcasting stations.

6—This final re-checking of adjustments should be made in an area of low signal strength in your service station or in some known "dead" spot where signals can just barely be heard.

7—Replace the cover plate over the adjusting screws and replace the "Climatizer" controls.

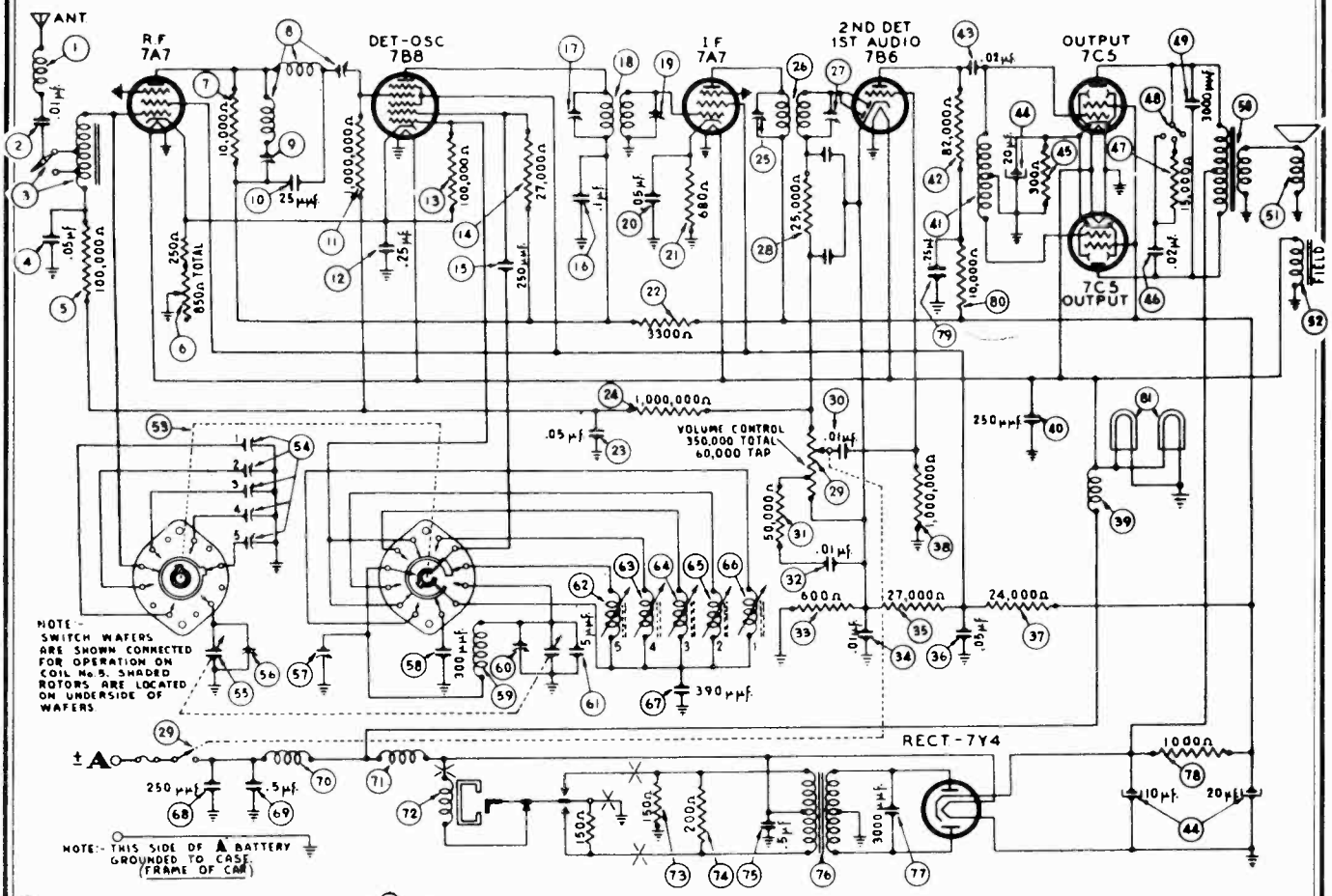
BE SURE AND SAVE THE UNUSED CALL LETTERS, GIVING THEM TO THE OWNER AS THEY MAY BE NEEDED AT SOME FUTURE TIME IF THE RADIO IS TO BE OPERATED IN A DIFFERENT AREA WHERE THE LOCAL STATIONS ARE NOT THE SAME.

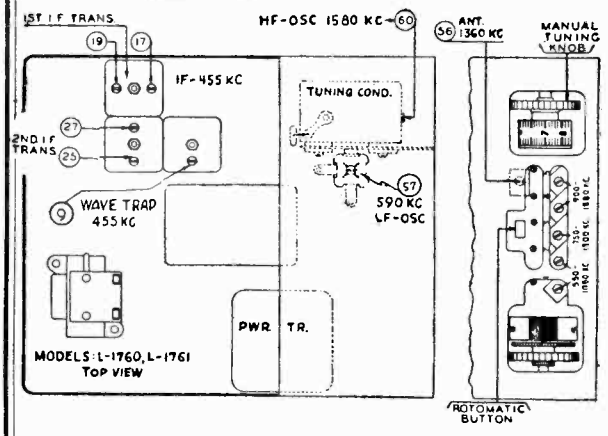




MODELS L-1760, L-1761

PHILCO RADIO & TELEVISION CORP.





I.F.= 455 KC.

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Ant. Recept.	0.1 mf	455 kc	Note 1	Note 2	27
"	"	"	"	"	25
"	"	"	"	"	19
"	"	"	"	"	17
"	"	"	"	"	27
"	"	"	"	"	25
"	"	"	"	"	19
"	"	"	"	"	17
"	"	"	"	"	9 [3]
Ant. [4]	Note 4	1580 kc	"	"	60
"	"	1360 kc	"	1360 kc	56
"	"	590 kc	"	590 kc	57 *
"	"	1580 kc	"	Note 2	60
"	"	1360 kc	"	1360 kc	56 [5]

Note 1.—Press "Rotomatic" Station-Selector button until "DIAL" appears in the window and stations can be tuned in by manual tuning.

Note 2.—Turn condenser rotor plates completely out of mesh as far as they will go.

Note 3.—Adjust (9) for minimum output.

Note 4.—When *TIRE-COMPARTMENT DOOR* antenna is used; connect antenna lead, part number 95-0120, to the antenna receptacle on the radio. Connect an 830 mmf condenser in series between antenna lead and signal-generator. Ground the shield pigtail on the antenna lead to the signal-generator. Be sure antenna switch (3) is turned clockwise.

When *COWL* antenna is used; connect the antenna lead, part number 95-0120, to the antenna receptacle in the radio. Connect a 45 mmf condenser in series between antenna lead and signal-generator. Ground the shield pigtail on the antenna lead to the signal-generator. Be sure antenna switch (3) is turned counter-clockwise.

Note 5.—When the antenna-stage adjustment is made with the radio installed in the car, the radio antenna lead must be connected to the car antenna in the usual manner. Connect the signal-generator output lead to a wire placed near the car antenna, but not connected to it.

* While rocking.

No.	Description	Part No.
	Tone Control Knob	57-0922FA8
	Push-Button	55-0763
	Indicator Dial Strip	55-0792
	Drive Cord	55-0793
	Dial Scale	55-0844
	Bezel Plate	77-0430
	Distributor Condenser	30-4404
	Gas Gauge Condenser	30-4663
	Generator Condenser	61-0040
	Water and Oil Gauge Cond.	61-0087
	Mounting Bracket	57-1107
	Bolt	97-0102
	Bolt	57-1154FA3
	Wing Nut	97-0103FA3
	Speaker	73-0039
	Pilot Lamp	34-2044
	Antenna Lead	95-0110
	Upper Insulator	55-0732
	Lower Insulator	55-0733
	Gland Nut	57-1072
	Mounting Bracket	57-1093
	Gland Nut Wrench	57-1074

MODELS L-1760,
L-1761

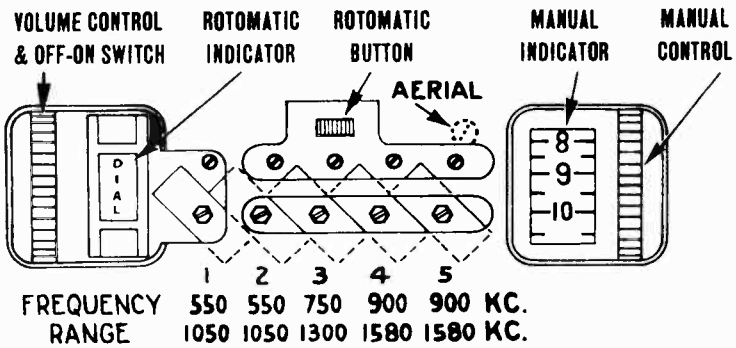
PHILCO RADIO & TELEVISION CORP.

MODELS L-1760 and L-1761

The Aerial and Rotomatic adjustments are easily accessible through the openings in the instrument panel. (See Illustration).

1—Turn the radio set on and allow it to heat for at least TWENTY minutes before starting any adjustments.

2—Press the Rotomatic button until the word "DIAL" appears in the Rotomatic indicator. Tune in a weak station on the manual dial between 1400 and 1500 kilocycles. Now adjust the aerial screw until maximum volume is obtained. (When the special concealed cowl aerial is used, adjustment should be made with the aerial fully extended.)



AUTOMATIC ADJUSTING SCREWS

3—Select five stations within the frequency range shown under each set of adjustment screws shown in Illustration.

4—With "DIAL" showing on the Rotomatic indicator, manually tune in the station to be set up on position No. 1 and identify the program.

5—Press the Rotomatic button until No. 1 appears on the Rotomatic indicator. Now adjust the top screw at position No. 1 until the station selected is brought in with loudest volume. Then adjust the slotted hex screw at the bottom until maximum volume is obtained. NOTE: Stations of the higher frequencies are tuned in by turning the screws to the left or counter clockwise. Lower frequency stations are tuned by turning to the right or clockwise.

6—Proceed with setting up the remaining four stations in the same manner as described under Paragraphs 4 and 5.

7—Because there is some detuning of the coils due to the movements of the cores in adjacent coils, **it is necessary to recheck** the adjustments again going back from Position No. 5 to No. 1 and again rechecking from No. 1 to No. 5. This is important for accurate reception while driving at a distance from the broadcasting stations.

8—**This final rechecking** of adjustments should be made in an area of low signal strength in your service station or in some known "dead" spot where signals can just **barely be heard.**

9—Should the Special Concealed Cowl Aerial be installed after the original installation, it is absolutely essential that the aerial change-over switch be shifted counter-clockwise and also that **all** automatic adjustments be made again as described in Paragraphs Nos. 1 to 8 inclusive.

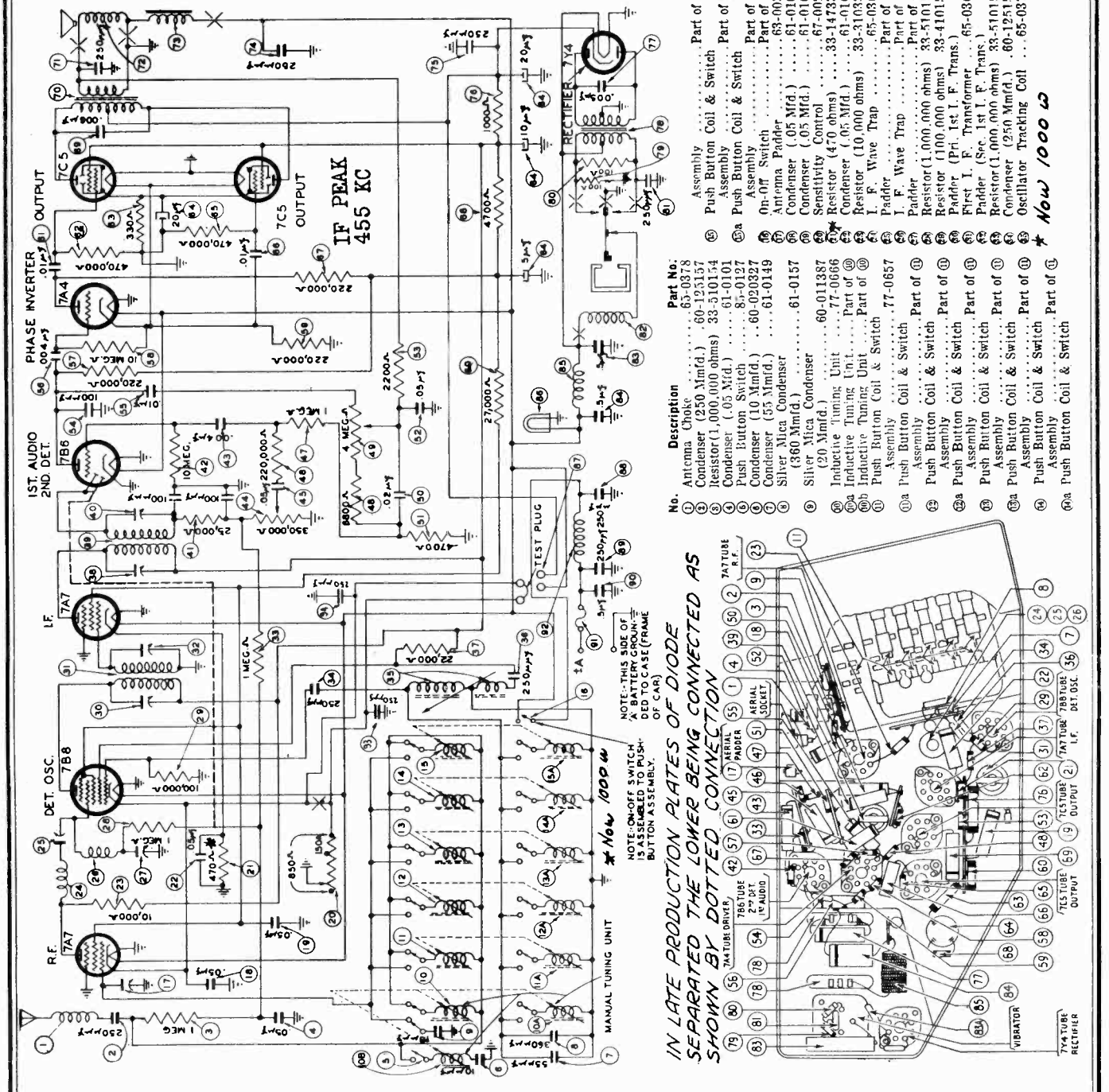
PARTS LIST

No.	Description	Part No.
①	Antenna Choke	65-0168
②	Condenser (.01 mfd.)	61-0014
③	Antenna Transformer	65-0306
④	Condenser (.05 mfd.)	30-4569
⑤	Resistor (100,000 ohms)	33-410334
⑥	Sensitivity Control	67-0029
⑦	Resistor (10,000 ohms)	33-310334
⑧	R. F. Transformer	65-0305
⑨	I. F. Wave Trap Padder	
⑩	Condenser (25 mmfd.)	33-1108
⑪	Resistor (1,000,000 ohms)	33-510234
⑫	Condenser (.25 mfd.)	61-0088
⑬	Resistor (100,000 ohms)	33-410334
⑭	Resistor (27,000 ohms)	33-327334
⑮	Condenser (250 mmfd.)	61-0034
⑯	Condenser (.1 mfd.)	30-4455
⑰	Padder (Pri. 1st I. F. Trans.)	
⑱	First I. F. Transformer	65-0303
⑲	Padder (Sec. 1st I. F. Trans.)	
⑳	Condenser (.05 mfd.)	30-4444
㉑	Resistor (680 ohms)	33-168334
㉒	Resistor (3300 ohms)	33-233354
㉓	Condenser (.05 mfd.)	30-4569
㉔	Resistor (1,000,000 ohms)	33-510154
㉕	Padder (Pri. 2nd I. F. Trans.)	
㉖	Second I. F. Transformer	65-0304
㉗	Padder (Sec. 2nd I. F. Trans.)	
㉘	Resistor (25,000 ohms	33-325234
㉙	Volume Control (350,000 ohms) and On-Off Switch	67-0026
㉚	Condenser (.01 mfd.)	61-0014
㉛	Resistor (50,000 ohms)	33-347134
㉜	Condenser (.01 mfd.)	30-4479
㉝	Resistor (600 ohms)	33-160334
㉞	Condenser (.01 mfd.)	30-4479
㉟	Resistor (27,000 ohms)	33-327334
㊱	Condenser (.05 mfd.)	30-4444
㊲	Resistor (24,000 ohms)	33-324434
㊳	Resistor (1,000,000 ohms)	33-510154
㊴	Choke	65-0300
㊵	Condenser (250 mmfd.)	61-0033
㊶	Input Transformer	65-0293
㊷	Resistor (82,000 ohms)	33-382334
㊸	Condenser (.02 mfd.)	30-4481
㊹	Filter Cond. (10-20-20 mfd.)	61-0086
㊺	Resistor (300 ohms)	33-130436
㊻	Condenser (.02 mfd.)	30-4419
㊼	Resistor (15,000 ohms)	33-315354
㊽	Tone Control Switch	85-0106
㊾	Condenser (3000 mmfd.)	30-4469
㊿	Output Transformer	65-0295
(51)	Replacement Cone (For 73-0039-2 Speaker)	91-0113
	(For 73-0039-4 Speaker)	91-0114
(52)	Field Coil	Not Replaceable
(53)	Wafer Switch	77-0408
(54)	Antenna Padder Assembly	77-0391
(55)	Tuning Condenser	63-0036
(56)	First Padder (On Tuning Cond.)	
(57)	Low Frequency Padder	63-0037
(58)	Sil. Mica Cond. (300 mmfd.)	61-0003
(59)	Manual Oscil. Transformer	65-0301
(60)	Second Padder (On Tun. Cond.)	
(61)	Condenser (15 mmfd.)	61-0038
(62)	Oscil. Trans. (900-1580 K.C.)	65-0255
(63)	Oscil. Trans. (900-1580 K.C.)	65-0255
(64)	Oscil. Trans. (750-1300 K.C.)	65-0256
(65)	Oscil. Trans. (550-1050 K.C.)	65-0257
(66)	Oscil. Trans. (550-1050 K.C.)	65-0257
(67)	Sil. Mica Cond. (390 mmfd.)	61-0031
(68)	Condenser (250 mmfd.)	61-0033
(69)	Condenser (.5 mfd.)	61-0083
(70)	"A" Choke	32-1644
(71)	Vibrator Choke	Part of ⑫
(72)	Vibrator	83-0017
(73)	Resistor (150 ohms)	33-115354
(74)	Resistor (200 ohms)	33-120354
(75)	Condenser (.5 mfd.)	61-0083
(76)	Power Transformer	65-0294
(77)	Condenser (3000 mmfd.)	61-0059
(78)	Resistor (1000 ohms)	33-210554
(79)	Condenser (.25 mfd.)	61-0125
(80)	Resistor (10,000 ohms)	33-310334
(81)	Pilot Lamps	34-2064
	Volume Control Knob	55-0748
	Manual Control Knob	55-0750

MODEL C-1808

PHILCO RADIO & TELEVISION CORP.

No.	Description	Part No.
(55)	Condenser (250 Mmfd.)	60-125157
(56)	Resistor (22,000 ohms)	33-322334
(57)	Padder (Pri. 2nd I. F. Trans.)	
(58)	Second I. F. Transformer	65-0366
(59)	Padder Sec. 2nd I. F. Trans.)	
(60)	Resistor (25,000 ohms)	33-325154
(61)	Resistor (10,000,000 ohms)	33-610154
(62)	Condenser (4,000 Mmfd.)	61-0128
(63)	Volume Control (350,000 ohms)	67-0040
(64)	Condenser (.05 Mfd.)	61-0101
(65)	Resistor (220,000 ohms)	33-422154
(66)	Resistor (1,000,000 ohms)	33-510154
(67)	Resistor (6,800 ohms)	33-268154
(68)	Tone Control (4,000,000 ohms)	Part of (64)
(69)	Condenser (.02 Mfd.)	61-0154
(70)	Resistor (4,700 ohms)	33-247334
(71)	Condenser (.05 Mfd.)	61-0111
(72)	Resistor (2,200 ohms)	33-222154
(73)	Condenser (100 Mmfd.)	60-110157
(74)	Condenser (.01 Mfd.)	61-0110
(75)	Condenser (4,000 Mmfd.)	61-0128
(76)	Resistor (220,000 ohms)	33-422154
(77)	Resistor (10,000,000 ohms)	33-610154
(78)	Resistor (220,000 ohms)	33-422154
(79)	Resistor (27,000 ohms)	33-327334
(80)	Condenser (.01 Mfd.)	61-0100
(81)	Resistor (470,000 ohms)	33-447154
(82)	Resistor (330 ohms)	33-133436
(83)	Filter Condenser (10-20-20 Mfd.)	61-0150
(84)	Resistor (470,000 ohms)	33-447154
(85)	Condenser (.01 Mfd.)	61-0114
(86)	Resistor (220,000 ohms)	33-422154
(87)	Resistor (4,700 ohms)	33-247334
(88)	Condenser (6,000 Mmfd.)	61-0105
(89)	Output Transformer	65-0363
(90)	Condenser (250 Mmfd.)	60-125157
(91)	Cone & Voice Coil (For 73-00051-2 Speaker)	91-0164
(92)	(For 73-00051-3 Speaker)	91-0165
(93)	Field Coil	Not Replaceable
(94)	Condenser (250 Mmfd.)	60-125157
(95)	Condenser (250 Mmfd.)	60-125157
(96)	Resistor (1,000 ohms)	33-210334
(97)	Condenser (5,000 Mmfd.)	61-0153
(98)	Power Transformer	65-0347
(99)	Resistor (100 ohms)	33-110034
(100)	Resistor (100 ohms)	33-110334
(101)	Condenser (250 Mmfd.)	60-125157
(102)	Vibrator	83-0027
(103)	Condenser (.5 Mfd.)	61-0137
(104)	Condenser (.5 Mfd.)	61-0106
(105)	Vibrator Choke	65-0389
(106)	Pilot Lamp	34-2064
(107)	Test Socket	55-1104
(108)	Condenser (250 Mmfd.)	60-125157
(109)	Condenser (250 Mmfd.)	60-125157
(110)	Condenser (.5 Mfd.)	61-0134
(111)	Fuse	45-2559
(112)	"A" Choke	32-1644
(113)	Condenser (250 Mmfd.)	60-125157
(114)	Condenser (250 Mmfd.)	60-125157
(115)	Sneaker Unit	83-0051
(116)	Fuel Gauge Resistor	67-0041
(117)	Call Letter Kit	81-0256
(118)	Radio Mtg. Bracket	57-1712FA3
(119)	Tube Socket	27-6151
(120)	Vibrator Socket	27-6044
(121)	Pointer Drive Cord	55-1071
(122)	Tone Drive Cord	55-1072



No.	Description	Part No.
(1) (2)	Antenna Choke	63-0378
(3)	Condenser (250 Mmfd.)	60-125157
(4)	Resistor(1,000,000 ohms)	33-510154
(5)	Condenser (.05 Mfd.)	61-0101
(6)	Push Button Switch	83-0127
(7)	Condenser (10 Mmfd.)	60-020327
(8)	Condenser (55 Mmfd.)	61-0149
(9)	Silver Mica Condenser (360 Mmfd.)	61-0157
(10)	Silver Mica Condenser (20 Mmfd.)	60-011387
(10a)	Inductive Tuning Unit	77-0066
(10b)	Inductive Tuning Unit	Part of (10)
(11)	Inductive Tuning Unit	Part of (10)
(11a)	Push Button Coil & Switch Assembly	77-0657
(12)	Push Button Coil & Switch Assembly	Part of (11)
(12a)	Push Button Coil & Switch Assembly	Part of (11)
(13)	Push Button Coil & Switch Assembly	Part of (11)
(13a)	Push Button Coil & Switch Assembly	Part of (11)
(14)	Push Button Coil & Switch Assembly	Part of (11)
(14a)	Push Button Coil & Switch Assembly	Part of (11)
(15)	Push Button Coil & Switch Assembly	Part of (11)
(15a)	Push Button Coil & Switch Assembly	Part of (11)
(16)	On-Off Switch	Part of (6)
(17)	Antenna Padder	63-0035
(18)	Condenser (.05 Mfd.)	61-0101
(19)	Condenser (.05 Mfd.)	61-0101
(20)	Sensitivity Control	67-0025
(21)	Resistor (470 ohms)	33-147336
(22)	Condenser (.05 Mfd.)	61-0101
(23)	Resistor (10,000 ohms)	33-310334
(24)	I. F. Wave Trap	65-0382
(25)	Padder	Part of (26)
(25a)	I. F. Wave Trap	Part of (26)
(26)	Padder	Part of (26)
(27)	Resistor(1,000,000 ohms)	33-510154
(28)	Resistor (100,000 ohms)	33-410154
(29)	Padder (Pri. 1st I. F. Trans.)	
(30)	First I. F. Transformer	65-0365
(31)	Padder (Sec. 1st I. F. Trans.)	
(32)	Resistor(1,000,000 ohms)	33-510154
(33)	Condenser (250 Mmfd.)	60-125157
(34)	Oscillator Tracking Coil	65-0379

★ NOW 1000 Ω

IN LATE PRODUCTION PLATES OF DIODE SEPARATED THE LOWER BEING CONNECTION AS SHOWN BY DOTTED CONNECTION

MODEL C-1808

PHILCO RADIO & TELEVISION CORP.

MODEL C-1808 — ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

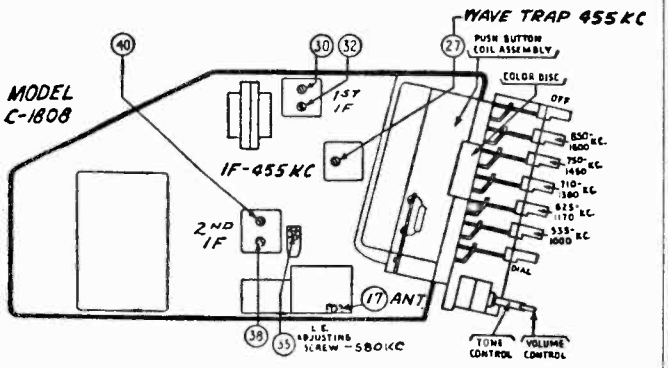
EQUIPMENT — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Signal generator, 027 Philco Vacuum tube voltmeter and set tester or audio output meter, 45-2610 Padding screw driver.

GENERAL — VACUUM TUBE VOLTMETER. The model 027 Vacuum tube voltmeter is an extremely sensitive and accurate test instrument and is recommended for use when aligning and adjusting auto radios. Connect the negative (—) terminal of the Vacuum Tube Voltmeter to the high side (ungrounded side) of the volume control. Connect the positive (+) terminal to the radio housing. Connect the "AC" cord to a 110 volt AC socket. Press the VTVM button and the 10 volt button. Turn the "Set Zero Ohms — VTVM" control clockwise until a click is heard. Allow the tubes to heat up for a few minutes. Short the 150 meg. VTVM terminals and adjust the "Set Zero 150 meg." control until the meter reads zero on the 0-10 range scale (bottom scale). The needle will deflect from left to right.

AUDIO OUTPUT METER. If an audio output meter is used, connect the leads across the voice coil of the speaker. Use the 0-30 volt scale.

the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.



OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	PRESS THE "DIAL" BUTTON AND STATIONS CAN BE TUNED IN BY "DIAL" TUNING				
2	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	㊳㊵㉚㉜ ㊳㊵㉚㉜
3	455 K.C.	To Aerial Receptacle on Radio	.1 Mfd.	Note 2	㉗ Min.
4	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1400 K.C.	⑰ Note 4
5	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 580 K.C.	㉟ Note 3
6	1400 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1400 K.C.	⑰ Note 4
7	580 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 580 K.C.	㉟ Note 3

Make all adjustments for maximum reading on the meter.

NOTE 1 — Connect the aerial lead, Part No. 95-0111, to the aerial receptacle in the radio. Connect a 25 Mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 2—Turn the tuning control clockwise as far as it will go.

NOTE 3 — Rock the tuning control while adjusting the low frequency screw. Tune the control to the signal and adjust the screw for maximum output. Rotate the tuning control back and forth slightly for maximum output. Then readjust the screw for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

INSTRUCTIONS FOR SETTING UP ELECTRIC PUSH BUTTONS

1. Turn on the radio and allow it to operate for twenty minutes or longer if possible. All adjustments MUST be made with the aerial fully extended. Turn the volume control on full and set the tone control on voice. In metropolitan areas it is best to adjust the push buttons in a shielded building or under a viaduct.

2. Push in the DIAL button so that stations can be tuned in by manual tuning and tune in a weak station around 1400 K.C. on the dial. Then adjust the aerial padder (⑰) for maximum signal.

3. Select the five stations which you desire to use on push button tuning. Tune in a station between 535 and 1000 Kilocycles. Remove the No. 1 push button cover and push in the No. 1 button. Using a coin or a small screw driver, adjust the button until the station selected is tuned in with the loudest volume. Turning the button counter-clockwise will increase the frequency, and clockwise will decrease the frequency. Check the station by pushing in the DIAL button again to identify the program.

4. Proceed in the same manner for adjusting No. 2, No. 3, No. 4 and No. 5 buttons.

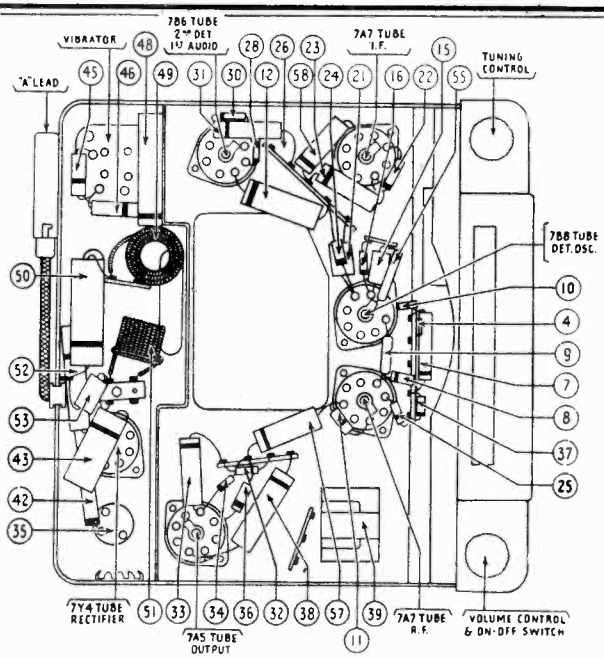
The stations may be set up before installing the radio in the car, but the final adjustments must be made after installation of the radio and connected to the aerial in the car.

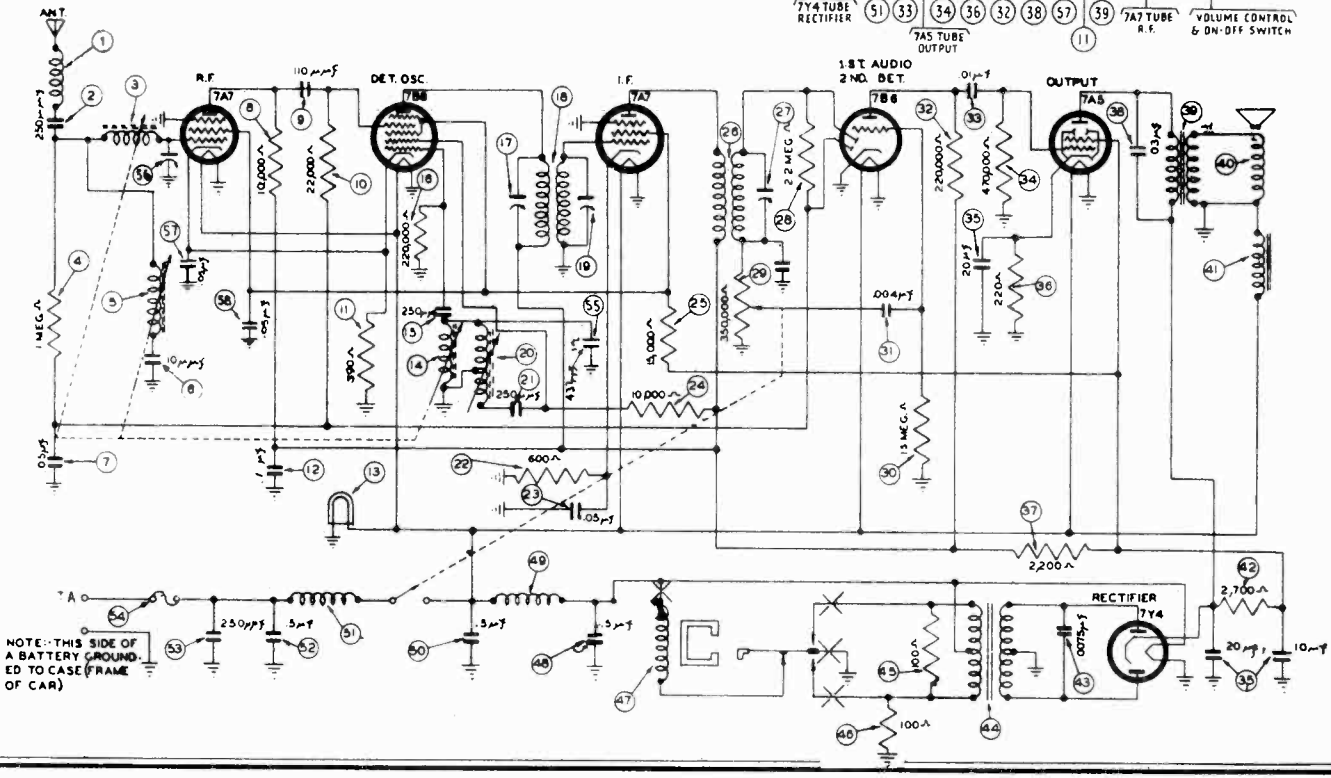
MODEL S-1824

SCHEMATIC

I.F. = 455KC

No.	Description	Part No.
①	Antenna Choke	65-0378
②	Condenser (250 Mmfd.)	60-125157
③	Inductive Tuning Unit	77-0709
④	Resistor (1,000,000 ohms)	33-510154
⑤	Image Trap Coil	(Part of ③)
⑥	Condenser (10 Mmfd.)	(Part of ③)
⑦	Condenser (.05 Mfd.)	61-0111
⑧	Resistor (10,000 ohms)	33-310334
⑨	Condenser (110 Mmfd.)	60-110157
⑩	Resistor (22,000 ohms)	33-322154
⑪	Resistor (390 ohms)	33-139336
⑫	Condenser (.1 Mfd.)	61-0104
⑬	Pilot Lamp	34-2064
⑭	Oscillator Coil	(Part of ③)
⑮	Condenser (250 Mmfd.)	60-125157
⑯	Resistor (220,000 ohms)	33-422154
⑰	Padder (Pri. 1st I. F. Trans.)	
⑱	First I. F. Transformer	65-0399
⑲	Padder (Sec. 1st I. F. Trans.)	
⑳	Oscillator Tracking Coil	65-0401
㉑	Condenser (250 Mmfd.)	60-125157
㉒	Resistor (600 ohms)	33-160336
㉓	Condenser (.05 Mfd.)	61-0111
㉔	Resistor (10,000 ohms)	33-310334
㉕	Resistor (15,000 ohms)	33-315334
㉖	Second I. F. Transformer	65-0400
㉗	Padder (Sec. 2nd I. F. Trans.)	
㉘	Resistor (2,200,000 ohms)	33-522154
㉙	Volume Control (350,000 ohms) & On-Off Switch	67-0037
㉚	Resistor (15,000,000 ohms)	33-615154
㉛	Condenser (4,000 Mmfd.)	61-004311
㉜	Resistor (220,000 ohms)	33-422334
㉝	Condenser (.01 Mfd.)	61-010311
㉞	Resistor (470,000 ohms)	33-447154
㉟	Filter Condenser (10-20-20 Mfd.)	61-0072
㊱	Resistor (220 ohms)	33-122336
㊲	Resistor (2,200 ohms)	33-222334
㊳	Condenser (.03 Mfd.)	61-0119
㊴	Output Transformer	65-0395
㊵	Replacement Cone (For 73-0054-2)	91-0166
㊶	Field Coil	(Not Replaceable)
㊷	Resistor (2,700 ohms)	33-227431
㊸	Condenser (7,500 Mmfd.)	61-007512
㊹	Power Transformer	65-0404
㊺	Resistor (100 ohms)	33-110434
㊻	Resistor (100 ohms)	33-110434
㊼	Vibrator	83-0027
㊽	Condenser (.5 Mfd.)	61-500013
㊾	Vibrator Choke	65-0151
㊿	Condenser (.5 Mfd.)	61-0106
(51)	"A" Choke	32-1644
(52)	Condenser (.5 Mfd.)	61-500013
(53)	Condenser (250 Mmfd.)	60-125157
(54)	Fuse	45-2559
(55)	Silver Mica Condenser (437 Mmfd.)	61-0071
(56)	Aerial Padder	63-0064
(57)	Condenser (.05 Mfd.)	61-0101
(58)	Condenser (.05 Mfd.)	61-0111
	Housing	77-0690FC54
	Tube Side Cover	57-1547FC54
	Speaker Cover	57-1548FC54
	Vibrator Socket	27-6153
	Loktal Socket	27-6151
	Volume Control Cable	95-0154
	Speaker Cable	95-0161
	"A" Switch Cable	95-0155
	"A" Lead	77-0638
	Fuse Lead	77-0052
	Volume Control Nut	W684FA3
	Speaker Unit	73-0054
	Speaker Gasket	55-1045
	Nuts (Speaker Mtg.)	W124FA3
	Bolts (Speaker Mtg.)	W1582FA26
	Lockwashers (Speaker Mtg.)	W291FE7
	Dial Background Plate	55-1159
	Dial	55-1151
	Gland Nuts (Radio Mtg.)	28-6558FA8
	Drive Cord	55-1158
	Pointer Spring	57-1425FA3
	Pointer	57-1797FCP
	Bezel	57-1801FA8
	Tuning & Volume Knob	77-0633
	Fuel Gauge Resistor	77-0760
	Ground Strap	77-0336
	Wing Nut (Radio Mtg.)	97-0048FA3
	Hook Bolt (Radio Mtg.)	97-0135FA3
	Antenna Connector	57-0591FA3
	Screw (Bezel to Housing)	97-0111FA3
	Screw (Wiring Side Cover)	97-0111FA26
	Gland Nut Wrench	28-5636FA3
	Interference Condenser	30-4007
	Interference Condenser	60-125157
	Distributor Suppressor	32-2250





MODEL S-1824
Studebaker "Custom"

PHILCO RADIO & TELEVISION CORP.

MODEL S-1824 — ADJUSTMENTS

All padding adjustments are carefully made at the factory and ordinarily no readjustments are necessary. However, when readjustments are required, the procedure given below must be followed in detail.

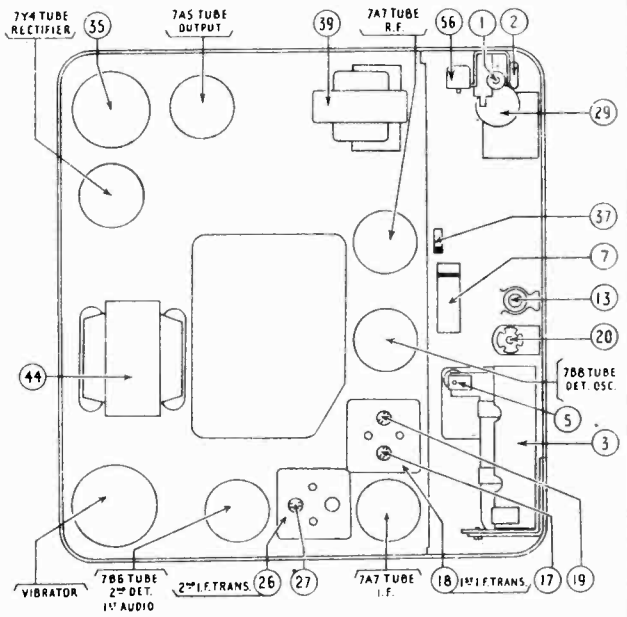
EQUIPMENT — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Signal generator, 027 Philco Vacuum tube voltmeter and set tester or audio output meter, 45-2610 Padding screw driver.

GENERAL — VACUUM TUBE VOLTMETER. The model 027 Vacuum tube voltmeter is an extremely sensitive and accurate test instrument and is recommended for use when aligning and adjusting auto radios. Connect the negative (—) terminal of the Vacuum Tube Voltmeter to the high side (ungrounded side) of the volume control. Connect the positive (+) terminal to the radio housing. Connect the "AC" cord to a 110 volt AC socket. Press the VTVM button and the 10 volt button. Turn the "Set Zero Ohms — VTVM" control clockwise until a click is heard. Allow the tubes to heat up for a few minutes. Short the 150 meg. VTVM terminals and adjust the "Set Zero 150 meg." control until the meter reads zero on the 0-10 range scale (bottom scale). The needle will deflect from left to right.

AUDIO OUTPUT METER. If an audio output meter is used, connect the leads across the voice coil of the speaker. Use the 0-30 volt scale.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.



OPERATION	SIGNAL GENERATOR		DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
	FREQUENCY	CONNECTION			
1	455 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	(27) (19) (17) (27) (19) (17)
2	1360 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1360 K.C.	(56)
3	590 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 590 K.C.	(20) Note 3
4	1360 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1360 K.C.	(56)
5	1200 to 1400 K.C.	Note 5	Note 5	Note 5	(50) Note 4

Make all adjustments for maximum reading on the meter.

NOTE 1 — Connect the aerial lead, Part No. 95-0111, to the aerial receptacle in the radio. Connect a 35 Mmfd. Condenser in series between the signal generator and the aerial lead.

NOTE 2—Turn the tuning control clockwise as far as it will go.

NOTE 3 — Rock the tuning control while adjusting the low frequency screw. Tune the control to the signal and adjust the screw for maximum output. Rotate the tuning control back and forth slightly for maximum output. Then readjust the screw for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the aerial compensator (50) (see Figure 3) for maximum signal.

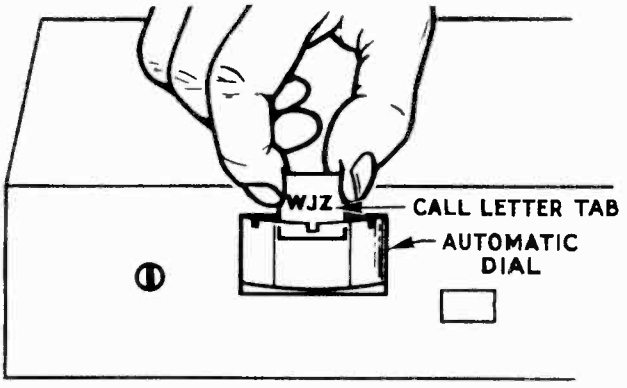
PHILCO RADIO & TELEVISION CORP.

S-1722

INSTALLING CALL LETTERS

Before installing the Receiver, the Call Letters of the stations which are to be tuned in automatically must be inserted in the Automatic Dial. See Illustration, Models S-1622, S-1722. Select and remove from the Call Letter Sheets, the Call Letters of five popular stations received in the area in which the radio is to be operated and that come within the frequency range of the adjusting screws as shown in Illustration Models S-1622, S-1722. Each of the adjusting screws cover the portion of the broadcast band as indicated in Illustration, Models S-1622, S-1722. It is important, therefore, that only such stations be selected as can be tuned in in the range as covered by each screw.

Push the Automatic Station Selector until the word "DIAL" is at the front. This is the starting point. Push the Automatic Station Selector once more and the first position of the dial will be at the front. Insert in this position the call letter tab of the station having the highest frequency in kilocycles. Insert in back of each tab one of the clear celluloid tabs. Press the Automatic Station Selector button once more and insert the call letters of the station with the next highest frequency in kilocycles in the second position.

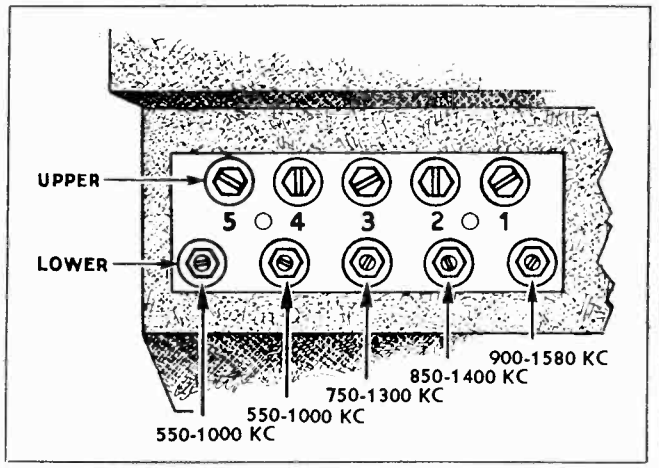


Installing Call Letter Tabs

EXAMPLE—The first position may have the call letters of a station operating on 1400 kilocycles; the second position, a station operating on 1050 kilocycles, etc. Repeat this procedure until all five call letter tabs selected are inserted in the dial in the order of their frequency. Be sure and record the call letters with respect to their position on the dial for use in setting up the adjusting screws.

1—Turn the Receiver on and allow it to operate for TWENTY minutes. Remove the cover plate over the automatic tuning adjusting screws. This plate is on the front of the Receiver and is removed by removing two screws.

2—Push the Automatic Station Selector button until the word "DIAL" is at the indicator window. Tune in the station whose call letters are in the first position on the dial (the highest frequency station) and note the program. Push the Automatic Selector button once and this station's call letters will appear at the indicator window.



3—With a small screwdriver, turn the No. 1 adjusting screw (See Illustration, Models S-1622, S-1722) in the lower column, to the right or left until this station is tuned in. Now adjust the corresponding screw in the upper column until maximum volume is obtained. Make these adjustments carefully, as it may be easy to pass by the loudest point on some stations.

When adjusting for Automatic Tuning on strong local stations the antenna rod should be all the way down and the adjustments made with the car in a shielded area, such as in a steel constructed building or under a viaduct. This is necessary in order to obtain a weak signal so the adjustments can be accurately made.

4—Press the Automatic Station Selector button until "DIAL" again is at the indicator window and tune in the station whose call letters are in the second position on the automatic dial (the next lowest frequency). Press the automatic button two times and adjust the number 2 set of adjusting screws.

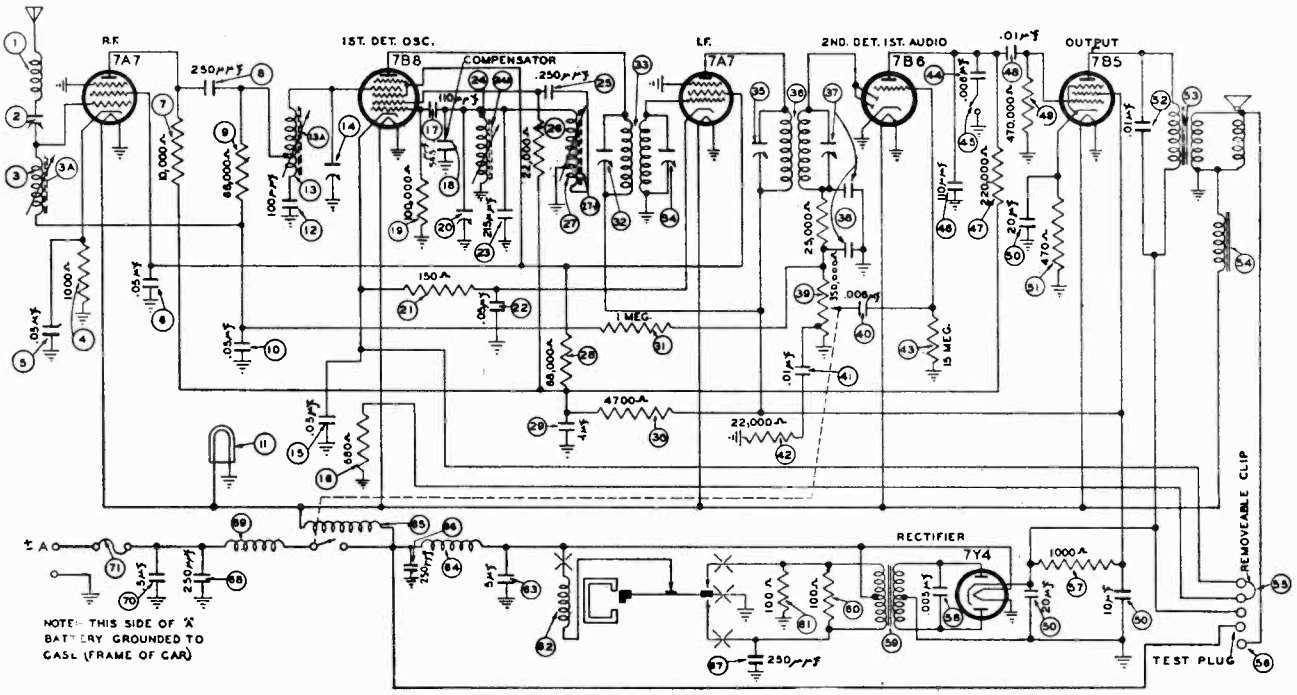
Repeat this procedure until each pair of the five pairs of adjusting screws has been tuned to its respective station.

IT IS NECESSARY THAT THE SETTING OF THE ADJUSTING SCREWS BE REPEATED TO BE SURE THEY ARE PROPERLY SET SO THAT MAXIMUM PERFORMANCE MAY BE HAD.

Be sure and save the unused call letters giving them to the owner as they may be needed at some future time if the radio is to be operated in a different area where the local stations are not the same.

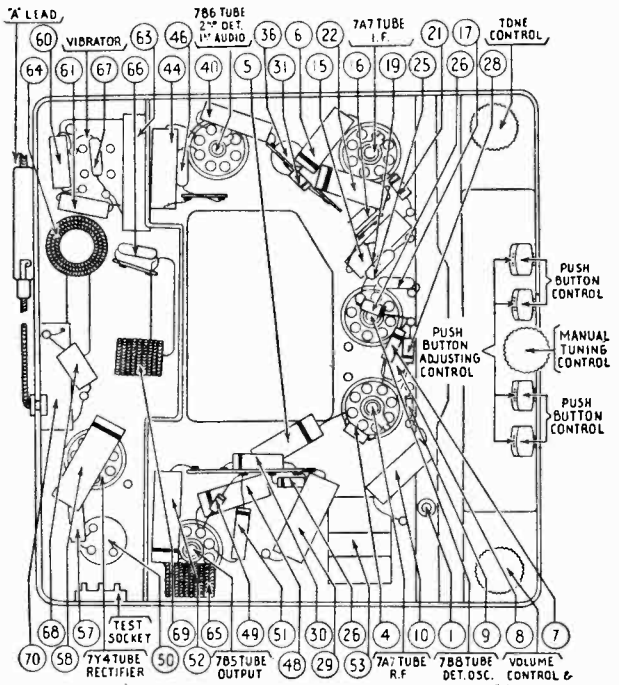
MODEL S-1825
Studebaker "Custom"

PHILCO RADIO & TELEVISION CORP.



PARTS LIST — S-1825

No.	Description	Part No.
1	Antenna Choke	65-0378
2	Antenna Padder	63-0053
3	Antenna Transformer	65-0349
3a	Iron Core	57-1541
4	Resistor (1,000 ohms)	33-210334
5	Condenser (.05 Mfd.)	61-0101
6	Condenser (.05 Mfd.)	61-0111
7	Resistor (10,000 ohms)	33-310334
8	Condenser (250 Mmfd.)	60-125157
9	Resistor (68,000 ohms)	33-368154
10	Condenser (.05 Mfd.)	61-0101
11	Pilot Lamp	34-2064
12	Condenser(100 Mmfd.)	60-110327
13	R. F. Transformer	65-0359
13a	Iron Core	57-1541
14	Padder	63-0055
15	Condenser (.05 Mfd.)	61-0111
16	Resistor (680 ohms)	33-168336
17	Condenser (110 Mmfd.)	60-110157
18	Condenser (54.5 Mmfd.)	61-0149
19	Resistor (100,000 ohms)	33-410154
20	Padder	63-0052
21	Resistor (150 ohms)	33-115336
22	Condenser (.05 Mfd.)	61-0111
23	Condenser (215 Mmfd.)	61-0148
24	Oscillator Transformer	65-0350
24a	Iron Core	57-1542
25	Condenser (250 Mmfd.)	60-125157
26	Resistor (22,000 ohms)	33-322334
27	Series Tracking Transformer	65-0351
27a	Series Tracking Core	57-1659
28	Resistor (68,000 ohms)	33-368334
29	Condenser (.1 Mfd.)	61-0113
30	Resistor (4,700 ohms)	33-247434
31	Resistor(1,000,000 ohms)	33-510154
32	Padder (Pri. 1st I. F. Trans.)	
33	First I. F. Transformer	65-0352
34	Padder (Sec. 1st I. F. Trans.)	
35	Padder (Pri. 2nd I. F. Trans.)	
36	Second I. F. Transformer	65-0353
37	Padder (Sec. 2nd I. F. Trans.)	
38	Resistor (25,000 ohms)	33-325154
39	Volume Control (350,000 ohms) & On-Off Switch	67-0039
40	Condenser (6,000 Mmfd.)	61-0103
41	Condenser (.01 Mfd.)	61-0110
42	Resistor (22,000 ohms)	33-322154
43	Resistor (15,000,000 ohms)	33-615154
44	Condenser (6,000 Mmfd.)	61-0155
45	Tone Control Switch	85 0126
46	Condenser (110 Mmfd.)	60-110157
47	Resistor (220,000 ohms)	33-422334
48	Condenser (.01 Mfd.)	61-0100
49	Resistor (470,000 ohms)	33-447154
50	Filter Condenser (10-20-20 Mfd.)	61-0072
51	Resistor (470 ohms)	33-147436
52	Condenser (.01 Mfd.)	61-0124
53	Output Transformer	65-0364
54	Field Coil	Not Replaceable
54a	Cone & Voice Coil	91-0166
55	Jumper	57-1121
56	Test Socket	55-1078
57	Resistor (1,000 ohms)	33-210434
58	Condenser (5,000 Mmfd.)	61-0153
59	Power Transformer	65-0347
60	Resistor (100 ohms)	33-110434
61	Resistor (100 ohms)	33-110434
62	Vibrator	83-0027
63	Condenser (.5 Mfd.)	61-0137
64	Vibrator Choke	65-0151
65	Filament Choke	32-1604
66	Condenser (250 Mmfd.)	60-125157
67	Condenser (250 Mmfd.)	60-125157
68	Condenser (250 Mmfd.)	60-125157
69	"A" Choke	32-1644
70	Condenser (.5 Mfd.)	61-0137
71	Fuse	45-2559
	Manual Knob Sleeve	57-1623
	Manual Knob Spacer	57-1669
	Manual Knob Spring	57-1628FA3
	Manual Knob Skirt	55-1061
	Manual Knob	55-1087
	Tone & Volume Knob	77-0633
	Speaker Cable	95-0161
	Screw (Cover Mtg.)	W-2212FA35
	Tube Side Cover	57-1547FC54
	Wiring Side Cover	57-1548FC54
	Speaker Unit	73-0053
	Speaker Gasket	55-1045
	Bezel Front	57-1582FA8
	Speed Nut	97-0136FE7
	Dial	55-1012
	Gland Nuts	28-6558FA8
	Housing	77-0660FC54
	Vibrator Socket	27-6153
	Tube Socket	27-6151
	Push Button Knob	77-0612
	Tuning Switch	77-0640
	Coil Form Spring	57-1538
	Coil Form Screw	97-0126
	Core Draw Bar Spring	57-1649

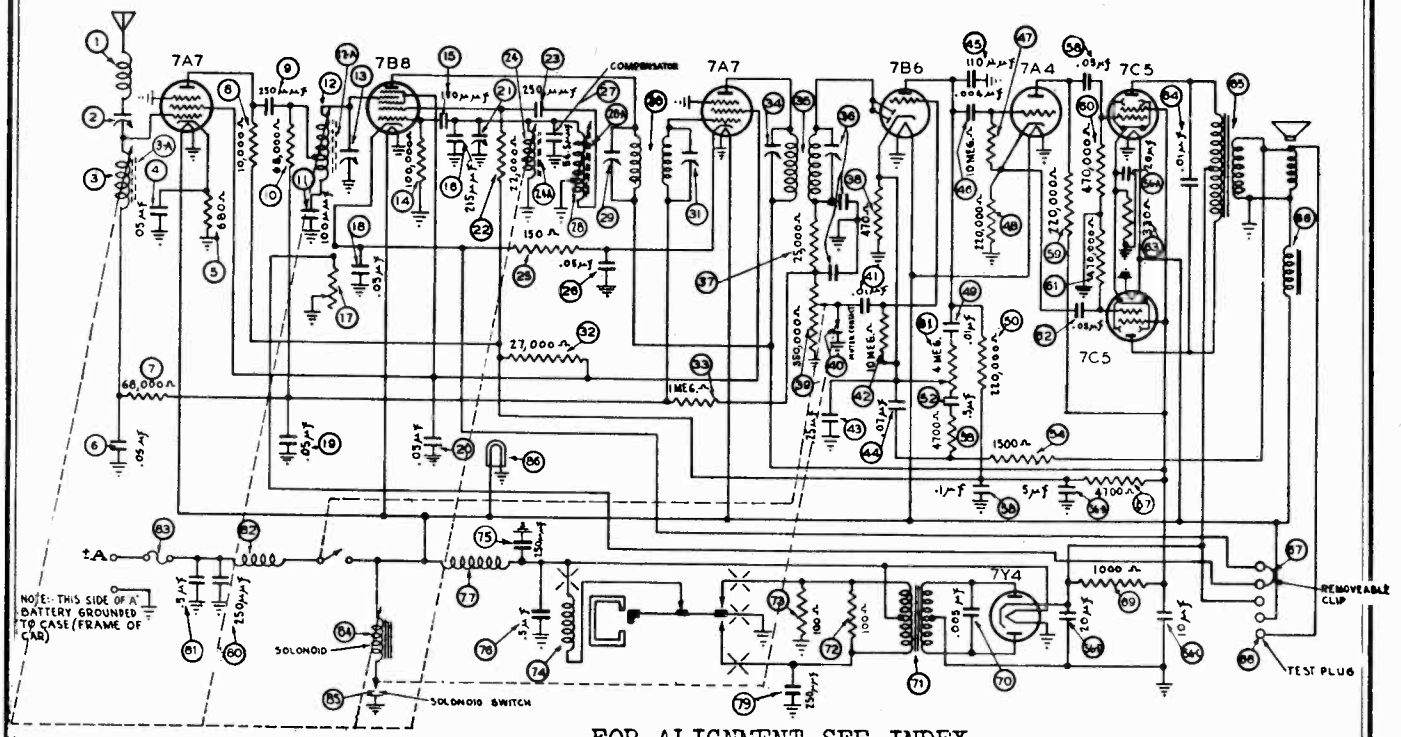


Description	Part No.
Latch Bar Spring	57-1650
Push Bar Spring	57-1651
Pointer Spring	57-1653
Pointer & Cam Assembly	77-0647
Gland Nut Wrench	28-5636FA3
Generator Condenser	30-4007
Distributor Resistor	30-2250

No.	Description	Part No.
	Distributor Condenser	60-125157
	Fuel Gauge Resistor	67-0041
	Ground Strap	77-0336
	Wiring Nut (Radio Mtg.)	97-0048FA3
	Hook Bolt (Radio Mtg.)	97-0135FA3

MODEL S-1826

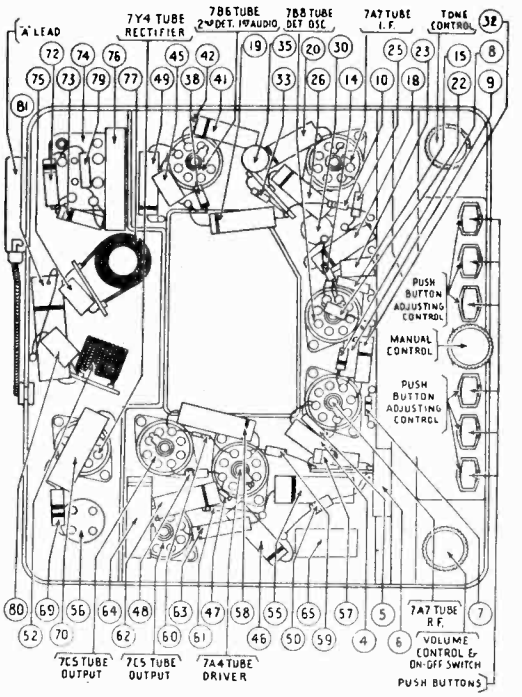
PHILCO RADIO & TELEVISION CORP. Studebaker "Custom"



FOR ALIGNMENT SEE INDEX

PARTS LIST — S-1826

No.	Description	Part No.
①	Antenna Choke	65-0378
②	Antenna Padder	63-0053
③	Antenna Transformer	65-0349
③a	Iron Core	57-1541
④	Condenser (.05 Mfd.)	61-0111
⑤	Resistor (680 ohms)	33-168334
⑥	Condenser (.05 Mfd.)	61-0111
⑦	Resistor (68,000 ohms)	33-368154
⑧	Resistor (10,000 ohms)	33-310334
⑨	Condenser (250 Mmfd.)	60-125157
⑩	Resistor (68,000 ohms)	33-368154
⑪	Condenser (100 Mmfd.)	60-110157
⑫	R. F. Transformer	65-0359
⑫a	Iron Core	57-1541
⑬	Padder	63-0052
⑭	Resistor (100,000 ohms)	33-410154
⑮	Condenser (110 Mmfd.)	60-110157
⑯	Condenser (215 Mmfd.)	61-0148
⑰	Sensitivity Control	67-0036
⑱	Condenser (.05 Mfd.)	61-0111
⑲	Condenser (.05 Mfd.)	61-0111
⑳	Condenser (.05 Mfd.)	61-0101
㉑	Padder	63-0055
㉒	Resistor (22,000 ohms)	33-322334
㉓	Condenser (250 Mmfd.)	60-125157
㉔	Oscillator Transformer	65-0350
㉔a	Iron Core	57-1542
㉕	Resistor (150 ohms)	33-115336
㉖	Condenser (.05 Mfd.)	61-0111
㉗	Condenser (54.5 Mmfd.)	61-0149
㉘	Oscillator Tracking Trans.	65-0351
㉘a	Oscillator Tracking Core	57-1659
㉙	Padder (Pri. 1st I. F. Trans.)	
㉚	First I. F. Transformer	65-0352
㉛	Padder (Sec. 1st I. F. Trans.)	
㉜	Resistor (27,000 ohms)	33-327434
㉝	Resistor (1,000,000 ohms)	33-510154
㉞	Padder (Pri. 2nd I. F. Trans.)	
㉟	Second I. F. Transformer	65-0410
㊱	Padder (Sec. 2nd I. F. Trans.)	
㊲	Resistor (25,000 ohms)	33-325154
㊳	Resistor (470 ohms)	33-147336
㊴	Volume Control (350,000 ohms) & On-Off Switch	67-0037
㊵	Muter Switch	85-0125
㊶	Condenser (.01 Mfd.)	61-0100
㊷	Resistor (10,000,000 ohms)	33-610154
㊸	Condenser (.25 Mfd.)	61-0151
㊹	Condenser (.07 Mfd.)	61-0152
㊺	Condenser (110 Mmfd.)	60-110157
㊻	Condenser (4,000 Mmfd.)	61-0129
㊼	Resistor (10,000,000 ohms)	33-610154
㊽	Resistor (220,000 ohms)	33-422334
㊾	Condenser (.01 Mfd.)	61-0100
㊿	Resistor (220,000 ohms)	33-422334
(51)	Tone Control (4,000,000 ohms)	67-0038
(52)	Condenser (.5 Mfd.)	61-0134
(53)	Resistor (4,700 ohms)	33-247154
(54)	Resistor (1,500 ohms)	33-215154
(55)	Condenser (.1 Mfd.)	61-0113
(56)	Filter Condenser (5-10-20-20 Mfd.)	61-0150
(57)	Resistor (4,700 ohms)	33-247434
(58)	Condenser (.05 Mfd.)	61-0122
(59)	Resistor (220,000 ohms)	33-422334
(60)	Resistor (470,000 ohms)	33-447154
(61)	Resistor (470,000 ohms)	33-447154
(62)	Condenser (.05 Mfd.)	61-0101
(63)	Resistor (330 ohms)	33-133436
(64)	Condenser (.01 Mfd.)	61-0124
(65)	Output Transformer	65-0409
(66)	Field Coil	Not Replaceable
(66a)	Cone & Voice Coil (For 73-0052-2 Speaker)	91-0164
	(For 73-0052-3 Speaker)	91-0165
(67)	Jumper	57-1121
(68)	Test Socket	55-1078
(69)	Resistor (1,000 ohms)	33-210434
(70)	Condenser (5,000 Mmfd.)	61-0153
(71)	Power Transformer	65-0358
(72)	Resistor (100 ohms)	33-110434
(73)	Resistor (100 ohms)	33-110434
(74)	Vibrator	83-0027
(75)	Condenser (250 Mmfd.)	60-125157
(76)	Condenser (.5 Mfd.)	61-0137
(77)	Vibrator Choke	65-0151
(78)	Condenser (250 Mmfd.)	60-125157
(79)	Condenser (250 Mmfd.)	60-125157
(80)	Condenser (.5 Mfd.)	61-0137
(81)	"A" Choke	32-1644
(82)	Fuse	45-2559
(83)	Solenoid	65-0360
(84)	Solenoid Switch	Part of 85-0125
(85)	Pilot Lamp	34-2064
	Tuning & Volume Knob	77-0633
	Hook Bolt (Radio Mtg.)	97-0135FA3
	Wing Nut (Radio Mtg.)	97-0048FA3
	Gland Nut Wrench	28-5636FA3
	Condenser (Generator)	30-4007
	Condenser (Distributor)	60-125157
	Distributor Suppressor	32-2250
	Ground Strap	77-0336
	Fuel Gauge Resistor	67-0041
	Front Bezel	57-1549FA3
	Speed Nut (Bezel Mtg.)	97-0136FE7
	Color Disc Assembly	77-0646
	Tuning Switch	77-0600
	Dial	55-1012
	Push Button Knob	77-0612



Description	Part No.
Speaker Gasket	55-1045
Speaker Cable	95-0161
Speaker Unit	73-0052
Vibrator Socket	27-6153
Tube Socket	27-6151
Manual Knob Spacer	57-1669
Manual Knob	55-1067
Manual Knob Sleeve	57-1623
Manual Knob Spring	57-1628FA3
Manual Knob Skirt	55-1061
Gland Nut	28-6558FA8
R. F. Coil Spring	57-1538
Core Draw Bar Spring	57-1649
Latch Bar Spring	57-1650
Push Button Spring	57-1651
Muter Spring	57-1652

No.	Description	Part No.
	Pointer Spring	57-1653
	Pointer & Cam Assembly	77-0647
	Screws (Bezel Mtg.)	97-0111FA26
	Screw (Cover Mtg.)	W2212FA26
	Housing & Bracket Assembly (Ludington Green)	77-0660FC54
	Housing & Bracket Assembly (English Grey)	77-0060FC55
	Wiring Side Cover (Ludington Green)	57-1548FC54
	Wiring Side Cover (English Grey)	57-1548FC55
	Tube Side Cover (Ludington Green)	57-1547FC54
	Tube Side Cover (English Grey)	57-1547FC55

MODEL S-1825
MODEL S-1826 MODEL P-1835

PHILCO RADIO & TELEVISION CORP.

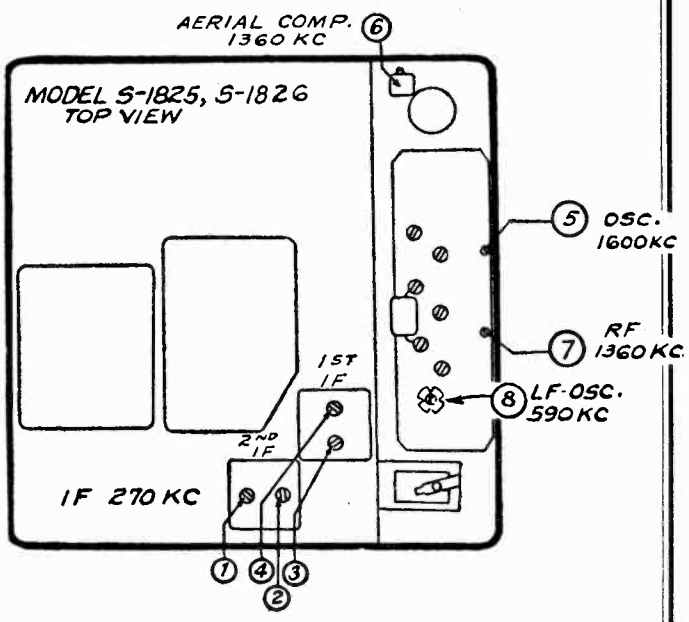
EQUIPMENT — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Signal generator, 027 Philco Vacuum tube voltmeter and set tester or audio output meter, 45-2610 Padding screw driver.

GENERAL — VACUUM TUBE VOLTMETER. The model 027 Vacuum tube voltmeter is an extremely sensitive and accurate test instrument and is recommended for use when aligning and adjusting auto radios. Connect the negative (—) terminal of the Vacuum Tube Voltmeter to the high side (ungrounded side) of the volume control. Connect the positive (+) terminal to the radio housing. Connect the "AC" cord to a 110 volt AC socket. Press the VTVM button and the 10 volt button. Turn the "Set Zero Ohms — VTVM" control clockwise until a click is heard. Allow the tubes to heat up for a few minutes. Short the 150 meg. VTVM terminals and adjust the "Set Zero 150 meg." control until the meter reads zero on the 0-10 range scale (bottom scale). The needle will deflect from left to right.

AUDIO OUTPUT METER. If an audio output meter is used, connect the leads across the voice coil of the speaker. Use the 0-30 volt scale.

With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.



OPERATION	SIGNAL GENERATOR FREQUENCY	SIGNAL GENERATOR CONNECTION	DUMMY CAPACITY	SPECIAL INSTRUCTIONS	ADJUST PADDER
1	PUSH IN THE TUNING CONTROL KNOB UNTIL STATIONS CAN BE TUNED IN BY MANUAL TUNING				
2	270 K.C.	To Aerial Receptacle on Radio	See Note 1	Note 2	34 36 29 31 / 34 36 29 31
3	1600 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1600 K.C.	21
4	1360 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1360 K.C.	2 13 Note 4
5	590 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 590 K.C.	28 Note 3
6	1600 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1600 K.C.	21
7	1360 K.C.	To Aerial Receptacle on Radio	See Note 1	Set Tuning Control at 1360 K.C.	2 13 Note 4
8	1200 to 1400 K.C.	Note 5	Note 5	Note 5	2 Note 4

Make all adjustments for maximum reading on the meter.

NOTE 1 — Connect the aerial lead Part No. 95-0111, to the aerial receptacle in the radio. Connect a 35 Mmfd. Condenser in series between the signal gnerator and the aerial lead.

NOTE 2—Turn the tuning control clockwise as far as it will go.

NOTE 3 — Rock the tuning control while adjusting the low frequency screw. Tune the control to the signal and adjust the screw for maximum output. Rotate the tuning control back and forth slightly for maximum output. Then readjust the screw for maximum output. Repeat this procedure until no further improvement is noticed.

NOTE 4 — When the aerial stage adjustment is made with the Radio installed in the car, the Radio aerial lead must be connected to the car aerial in the usual manner. Connect the signal generator output lead to a wire placed near the car aerial but not connected to it.

NOTE 5 — When installing the radio in the car, follow the installation instructions carefully. Tune in a weak broadcast signal between 1200 and 1400 Kilocycles on the control scale. Remove the plug button on the end of the radio and adjust the aerial compensator ② (see Figure 3) for maximum signal.

INSTRUCTIONS FOR SETTING UP THE AUTOMATIC TUNING BUTTONS

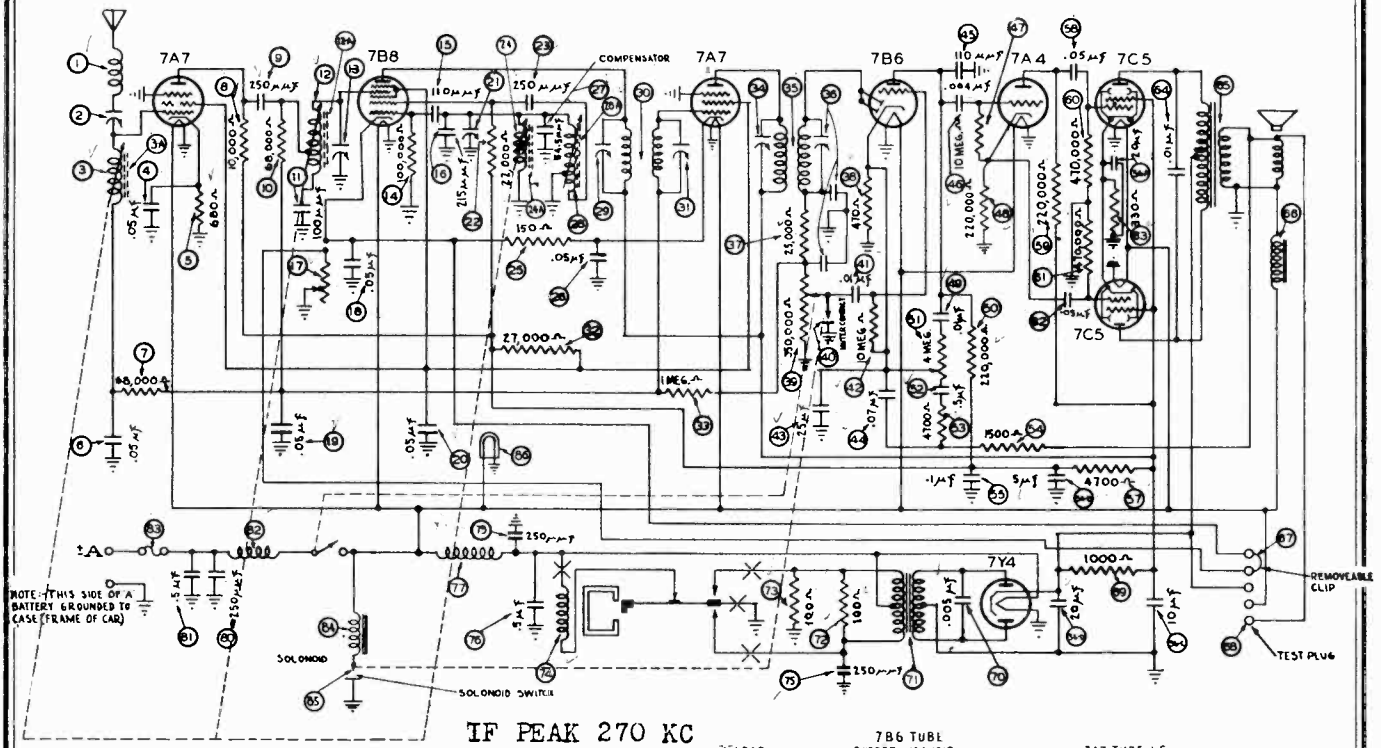
Turn on the radio and allow it to operate for twenty minutes or longer if possible.

Press in any automatic button so that it remains engaged. Then tune in the station desired by turning the small wheel in the button. The station can be identified by the pointer, which indicates the frequency of the station in Kilocycles. The automatic buttons may be readjusted to any station within the range of the broadcast band. The automatic buttons may be readjusted to stations in any sequence desired. However, for convenience in remembering stations, it is recommended that the buttons be set up in the same order that the stations appear across the dial.

CAUTION — All adjustments must be carefully made so that reception can be received best when remote from the broadcasting station. Careless tuning off to one side, even though the signal is heard, will result in distorted reception.

MODEL P-1835
Packard

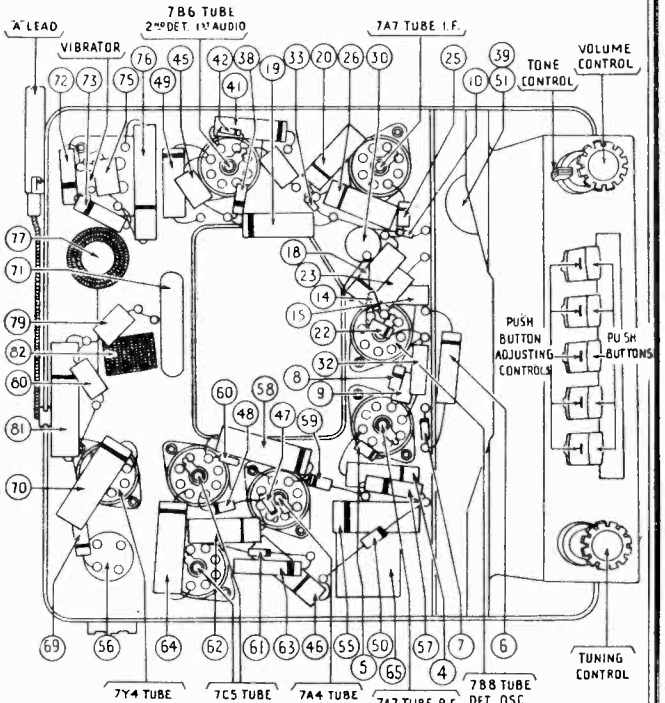
PHILCO RADIO & TELEVISION CORP.



IF PEAK 270 KC

PARTS LIST — P-1835

No.	Description	Part No.
①	Antenna Choke	65-0378
②	Antenna Padder	63-0054
③	Antenna Transformer	65-0349
③a	Iron Core	57-1541
④	Condenser (.05 Mfd.)	61-0111
⑤	Resistor (680 ohms)	33-168334
⑥	Condenser (.05 Mfd.)	61-0111
⑦	Resistor (68,000 ohms)	33-368154
⑧	Resistor (10,000 ohms)	33-310334
⑨	Condenser (250 Mmfd.)	60-125157
⑩	Resistor (68,000 ohms)	33-368154
⑪	Condenser (100 Mmfd.)	60-110327
⑫	R. F. Transformer	65-0359
⑫a	Iron Core	57-1541
⑬	Padder	61-0055
⑭	Resistor (100,000 ohms)	33-410154
⑮	Condenser (110 Mmfd.)	60-110157
⑯	Condenser (215 Mmfd.)	61-0148
⑰	Sensitivity Control	67-0036
⑱	Condenser (.05 Mfd.)	61-0111
⑲	Condenser (.05 Mfd.)	61-0111
⑳	Condenser (.05 Mfd.)	61-0101
㉑	Padder	61-0052
㉒	Resistor (22,000 ohms)	33-322334
㉓	Condenser (250 Mmfd.)	60-125157
㉔	Oscillator Transformer	65-0367
㉔a	Iron Core	57-1542
㉕	Resistor (150 ohms)	33-115336
㉖	Condenser (.05 Mfd.)	61-0111
㉗	Condenser (54.5 Mmfd.)	61-0149
㉘	Oscillator Tracking Transformer	65-0351
㉘a	Oscillator Tracking Core	57-0996
㉙	Padder (Pri. 1st I. F. Trans.)	
㉚	First I. F. Transformer	65-0352
㉛	Padder (Sec. 1st I. F. Trans.)	
㉜	Resistor (27,000 ohms)	33-327434
㉝	Resistor (1,000,000 ohms)	33-510154
㉞	Padder (Pri. 2nd I. F. Trans.)	
㉟	Second I. F. Transformer	65-0353
㊱	Padder (Sec. 2nd I. F. Trans.)	
㊲	Resistor (25,000 ohms)	33-325154
㊳	Resistor (470 ohms)	33-147336
㊴	Volume Control (350,000 ohms) & Tone Control & On-Off Switch	67-0035
㊵	Muter Switch	85-0125
㊶	Condenser (.01 Mfd.)	61-0100
㊷	Resistor (10,000,000 ohms)	33-610154
㊸	Condenser (.25 Mfd.)	61-0151
㊹	Condenser (.07 Mfd.)	61-0152
㊺	Condenser (110 Mmfd.)	60-110157
㊻	Condenser (4,000 Mmfd.)	61-0129
㊼	Resistor (10,000,000 ohms)	33-610154
㊽	Resistor (220,000 ohms)	33-422334
㊾	Condenser (.01 Mfd.)	61-0100
㊿	Resistor (220,000 ohms)	33-422334
(51)	Tone Control (4,000,000 ohms)	Part of ㊴
(52)	Condenser (.5 Mfd.)	65-0134
(53)	Resistor (4,700 ohms)	33-247154
(54)	Resistor (1,500 ohms)	33-215154
(55)	Condenser (.1 Mfd.)	61-0113
(56)	Filter Condenser (5-10-20-20 Mfd.)	61-0150
(57)	Resistor (4,700 ohms)	33-247434
(58)	Condenser (.05 Mfd.)	61-0122
(59)	Resistor (220,000 ohms)	33-422334
(60)	Resistor (470,000 ohms)	33-447154
(61)	Resistor (470,000 ohms)	33-447154
(62)	Condenser (.05 Mfd.)	61-0111
(63)	Resistor (330 ohms)	33-133436
(64)	Condenser (.01 Mfd.)	61-0124
(65)	Output Transformer	65-0354
(66)	Field Coil	Not Replaceable
(66a)	Cone & Voice Coil (For 73-0050-2 Speaker)	91-0167
	(For 73-0050-4 Speaker)	91-0168
(67)	Jumper	57-1121
(68)	Test Socket	55-1078
(69)	Resistor (1,000 ohms)	33-210434
(70)	Condenser (5,000 Mmfd.)	61-0153
(71)	Power Transformer	65-0347
(72)	Resistor (100 ohms)	33-110434
(73)	Resistor (100 ohms)	33-110434
(74)	Vibrator	83-0027
(75)	Condenser (250 Mmfd.)	60-125157
(76)	Condenser (.5 Mfd.)	61-0137
(77)	Vibrator Choke	65-0151
(79)	Condenser (250 Mmfd.)	60-125157
(80)	Condenser (250 Mmfd.)	60-125157
(81)	Condenser (.5 Mfd.)	61-0137
(82)	"A" Choke	32-1644
(83)	Fuse	45-2559
(84)	Solenoid	65-0360
(85)	Solenoid Switch	Part of 85-0125
(86)	Pilot Lamp	34-2064
	Front Bezel	57-1550FA8
	Color Disc Assembly	77-0649
	Coupling & Key Assembly	77-0651
	Tuning Switch only	77-0601
	R. F. Transformer Spring	57-1538
	R. F. Transformer Mtg. Screw	97-0126
	Core Draw Bar Spring	57-1649

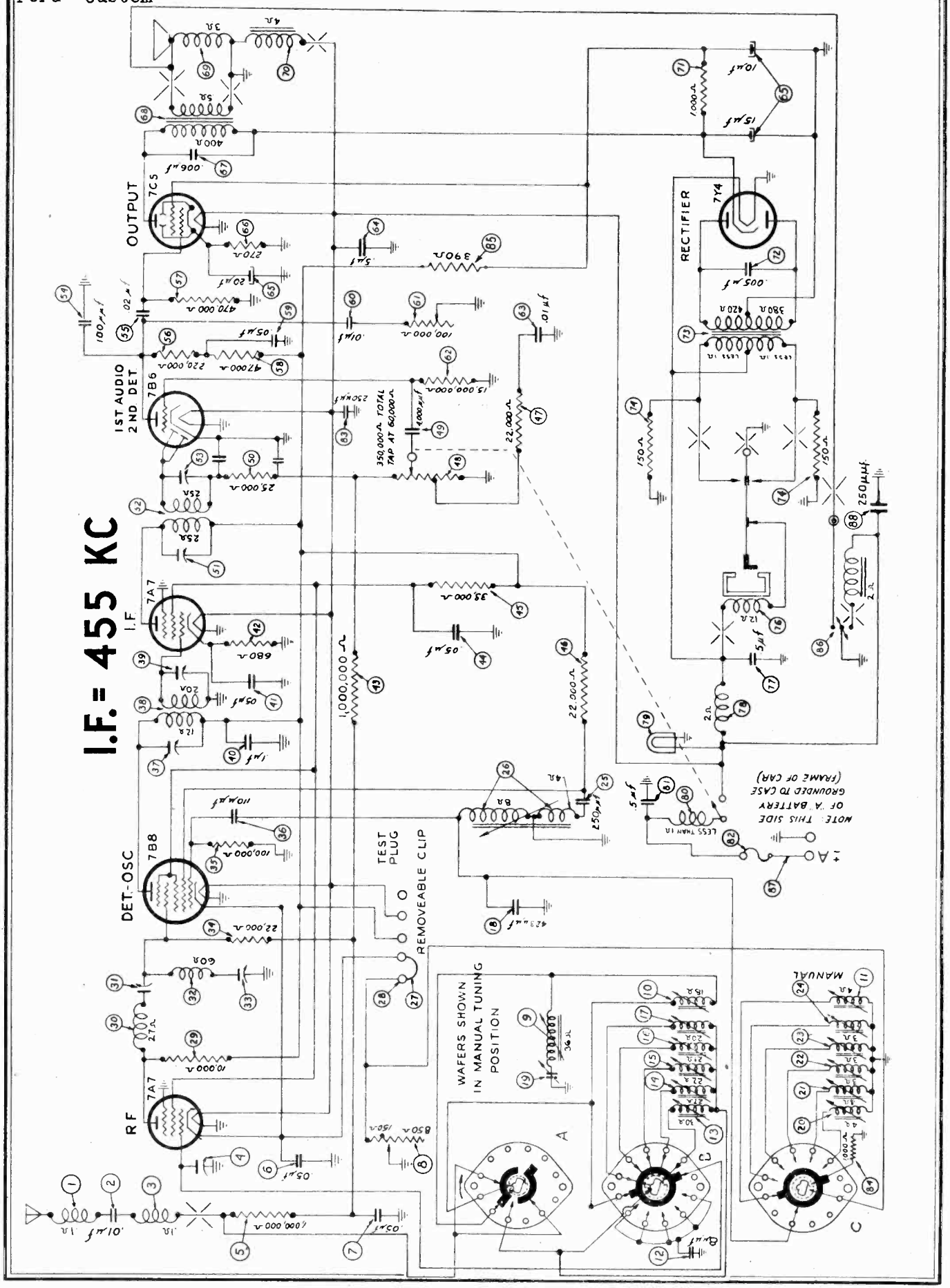


Description	Part No.
Latch Bar Spring	57-1650
Push Button Spring	57-1651
Push Button Knob	77-0613
Muter Spring	57-1652
Pointer Spring	57-1653
Pointer & Cam Assembly	77-0650
Dial	55-1034
Tuning & Volume Knob	77-0643
Tone Lever	57-1559FA8
Manual Return Spring	57-1620FA3
Speaker Gasket	55-1037
Speaker Unit	73-0050
Speaker Cable	95-0161

Description	Part No.
Vibrator Socket	27-6153
Tube Socket	27-6151
Hook Bolt (Radio Mtg.)	57-1560FA3
Wing Nut (Radio Mtg.)	W895FA3
Ignition Switch Condenser	30-4007
Generator Condenser	30-4475
Distributor Resistor	33-1196
Screw (Bezel Mtg.)	97-0111FA4
Speaker Cover & Bracket	77-0663
Tube Side Cover	57-1554FC51
Speed Nut (Dial Mtg.)	97-0137FE7
Housing & Bracket	77-0662FC51
Screw (Cover Mtg.)	W-2212FA26

MODEL F-1841
Ford "Custom"

PHILCO RADIO & TELEVISION CORP.



PARTS LIST — F-1841

No.	Description	Part No.
1	Antenna Choke	65-0102
2	Condenser (.01 Mfd.)	61-0114
3	Antenna Choke	32-2063
4	Aerial Compensator	63-0063
5	Resistor (1,000,000 ohms)	33-510154
6	Condenser (.05 Mfd.)	61-0111
7	Condenser (.05 Mfd.)	61-0101
8	Sensitivity Control	67-0025
9	Image Trap Coil	Part of 10
10	Inductive Tuning Unit	77-0701
11	Oscillator Transformer	Part of 10
12	Condenser (8 Mmfd.)	60-008337
13	Push Button Transformer Assembly	77-0815
14	Push Button Transformer	Part of 13
15	Push Button Transformer	Part of 13
16	Push Button Transformer	Part of 13
17	Push Button Transformer	Part of 13
18	Silver Mica Condenser (423 Mmfd.)	61-0066
19	Image Trap Padder	63-0071
20	Push Button Transformer	Part of 13
21	Push Button Transformer	Part of 13
22	Push Button Transformer	Part of 13
23	Push Button Transformer	Part of 13
24	Push Button Transformer	Part of 13
25	Condenser (250 Mmfd.)	60-125157
26	Oscillator Tracking Transformer	65-0388
27	Test Link	57-1121
28	Test Socket	55-1104
29	Resistor (10,000 ohms)	33-310334
30	R. F. Transformer (Pri.)	65-0415
31	Padder	Part of 30
32	R. F. Transformer (Sec.)	Part of 30
33	Padder	Part of 30
34	Resistor (22,000 ohms)	33-322334
35	Resistor (100,000 ohms)	33-410154
36	Condenser (110 Mmfd.)	60-110157
37	Padder (Pri. 1st I. F. Trans.)	
38	First I. F. Transformer	65-0386
39	Padder (Sec. 1st I. F. Trans.)	
40	Condenser (.1 Mfd.)	61-0113
41	Condenser (.05 Mfd.)	61-0101
42	Resistor (680 ohms)	33-168336
43	Resistor (1,000,000 ohms)	33-510154
44	Condenser (.05 Mfd.)	61-0101
45	Resistor (33,000 ohms)	33-333434
46	Resistor (22,000 ohms)	33-322334
47	Resistor (22,000 ohms)	33-322154
48	Volume Control (350,000 ohms) & On-Off Switch	67-0042
49	Condenser (4,000 Mmfd.)	61-0129
50	Resistor (25,000 ohms)	33-325154
51	Padder (Pri. 2nd I. F. Trans.)	
52	Second I. F. Transformer	65-0387
53	Padder (Sec. 2nd I. F. Trans.)	
54	Condenser (100 Mmfd.)	60-110157
55	Condenser (.02 Mfd.)	61-0108
56	Resistor (220,000 ohms)	33-422334
57	Resistor (470,000 ohms)	33-447154
58	Resistor (47,000 ohms)	33-347334
59	Condenser (.05 Mfd.)	61-0122
60	Condenser (.01 Mfd.)	61-0100
61	Tone Control (100,000 ohms)	85-0128
62	Resistor (15,000,000 ohms)	33-615154
63	Condenser (.01 Mfd.)	61-0110
64	Condenser (.5 Mfd.)	61-0106
65	Filter Condenser (10-15-20 Mfd.)	61-0089
66	Resistor (270 ohms)	33-127436
67	Condenser (6,000 Mmfd.)	61-0105
68	Output Transformer	65-0391
69	Replacement Cone (For 73-0054-3 Speaker)	91-0210
	(For 73-0054-9 Speaker)	91-0211
70	Field Coil	Not Replaceable
71	Resistor (1,000 ohms)	33-210434
72	Condenser (5,000 Mmfd.)	61-0153
73	Power Transformer	65-0347-N
74	Resistor (150 ohms)	33-115334
75	Vibrator	83-0026
77	Condenser (.5 Mfd.)	61-0137
78	Vibrator Choke	65-0398
79	Pilot Lamp	34-2064
80	"A" Choke	65-0037
81	Condenser (.5 Mfd.)	61-0137
82	Fuse	45-2659
83	Condenser (250 Mmfd.)	60-125157
84	Resistor (1,000 ohms)	33-210334
85	Resistor (390 ohms)	33-139334
86	Foot Switch Control	77-0808
87	Fuse Lead Assy.	77-0824
88	Condenser (250 Mmfd.)	60-125157
89	Solonoid	
	Selector Switch Knob Assembly	318-2376
	Tuning & Volume Knob	77-0708
	Rubber Baffle Gasket	55-1154
	Speaker Cover Screw	W2212FA4
	Speed Nut (Dial Mtg.)	97-0136

Description	Part No.
Dial	55-1143
Bezel	55-1140
Bezel Spring	57-1769FA3
Bezel Clip	57-1772FA3
Tone Knob	57-1780FA8
Tone Knob Speed Nut	97-0144FE7
Tone Slide Bar	57-1774FA3
Tone Knob Spring	57-1937
Drive Cord	55-1157
Drive Cord Spring	57-1425FA3
Pointer	57-1794FCP
Screw (Wiring Side Cover)	W2212FA4
Housing	318-2411
Wiring Side Cover	57-1718FC1
Speaker Cover	57-1717FC1
Speaker Unit	73-0054
Bolt (Speaker Mtg.)	W1582FA4
Lockwasher (Speaker Mtg.)	W291FE7
Nut (Speaker Mtg.)	W124FA3
Loktal Socket	27-6151
Vibrator Socket	27-6153
Wafer Switch	77-0817
Hook Bolt (Radio Mtg.)	97-0094FA3
Wing Nut (Radio Mtg.)	97-0048FA3
Gland Nut & Sleeve	77-0459
Interference Condenser ("A" & Voltage Regulator)	61-0162
Interference Condenser (Oil Gauge & Dist.)	61-0163
Ground Lead Assembly (Voltage Regulator)	77-0810

MODEL P-1841

Signal Generator Connection	Dummy Antenna	Signal Generator Frequency	Receiver Wave-band Switch	Receiver Dial Setting	Trimmer Number
Ant. recept.	0.1 mf	455 kc	Note 1	Note 2	37
"	"	"	"	"	39
"	"	"	"	"	51
"	"	"	"	"	53
"	"	"	"	"	37
"	"	"	"	"	39
"	"	"	"	"	51
"	"	"	"	"	53
"	"	"	"	"	33 [3]
Note 4	20 mmf	1360 kc	"	1360 kc	4 [5]
"	"	590 kc	"	590 kc	26 *
"	"	1400 kc	"	1400 kc	4 [5]
"	"	590 kc	"	590 kc	26 *

Note 1.—Turn selector switch knob to "D" so that stations can be tuned in by manual tuning.
Note 2.—Turn tuning control clockwise as far as it will go.
Note 3.—Adjust (33) for minimum output response.
Note 4.—Connect antenna lead, Part No. 95-0111, to antenna receptacle in radio. Connect a 20 mmf condenser in series between signal generator and antenna lead.
Note 5.—When antenna stage adjustment is made with radio installed in car, the radio antenna lead must be connected to car antenna in usual manner. Connect signal generator output lead to a wire placed near car antenna but not connected to it.
* While rocking.

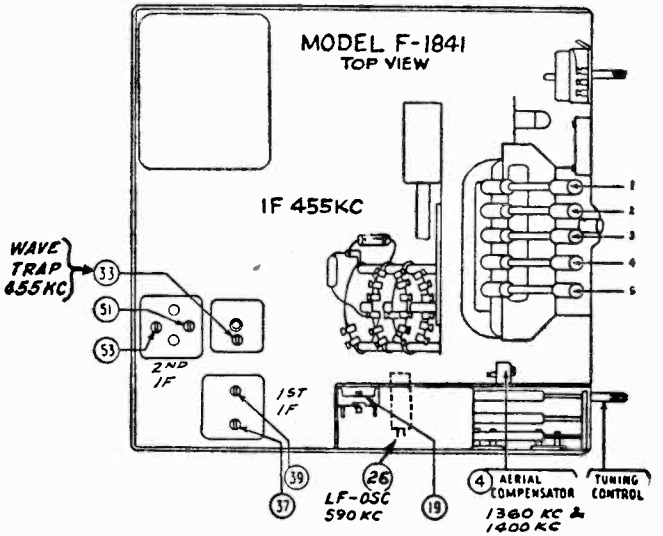


Image trap trimmer (19) adjusted at the factory. Do not disturb adjustment.

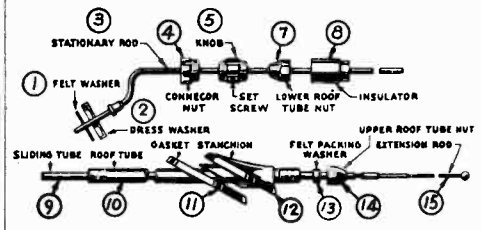


FIGURE 4

CLOSED CAR AERIAL PARTS LIST (Figure 4)

No.	Description	Part No.	List Price
①	Felt Washer (per 100)	55-0811	$1.25
②	Dress Washer	57-1137FA8	.10
③	Stationary Tube	77-0726	.90
④	Connector Nut	55-1166	.15
⑤	Knob	77-0723	.40
⑥	Knob Set Screw	W2105FA4	.10
⑦	Lower Roof Tube Nut	57-1131FA8	.15
⑧	Insulator	55-0783	.10
⑨	Sliding Tube	77-0725	.85
⑩	Roof Tube	77-0724	.50
⑪	Gasket	55-0785	.05
⑫	Stanchion	55-0781	.15
⑬	Felt Washer	55-0786	.02
⑭	Upper Roof Tube Nut	57-1135-FA8	.15
⑮	Part of ⑨		
	Set Screw Wrench	28-4696	.10
	Template	57-1828	.05
	Complete Aerial	91-0178	3.50

Prices subject to change without notice.

OPEN CAR AERIAL PARTS LIST (Figure 5)

No.	Description	Part No.	List Price
①	Aerial Rod	77-0866	$1.25
②	Gasket	55-0285	.03
③	Adjusting Screw	57-1836	.06
④	Aerial Head & Shaft Assy.	91-0182	2.75
⑤	Aerial Insulator Assy.	55-1165	.45
⑥	Insulating Bushing	55-1300	.40
⑦	Control Knob	77-0736	.50
⑧	Rubber Grommet	77-0735	.25
⑨	Lead-in Tip	57-1838	.40
⑩	Lead-in Rod	77-0734	.45
⑪	Connector Nut	55-1166	.15
⑫	Dress Washer	57-1137	.10
	Felt Washer (per 100)	55-0811	1.25
	Lead-in Spring	57-1218	.10
	Set Screw Wrench	28-4696	.10
	Screw (Aerial Rod)	W1944	.10
	Complete Aerial	91-0179	4.50

Prices subject to change without notice.

1941 OPEN CAR AERIAL

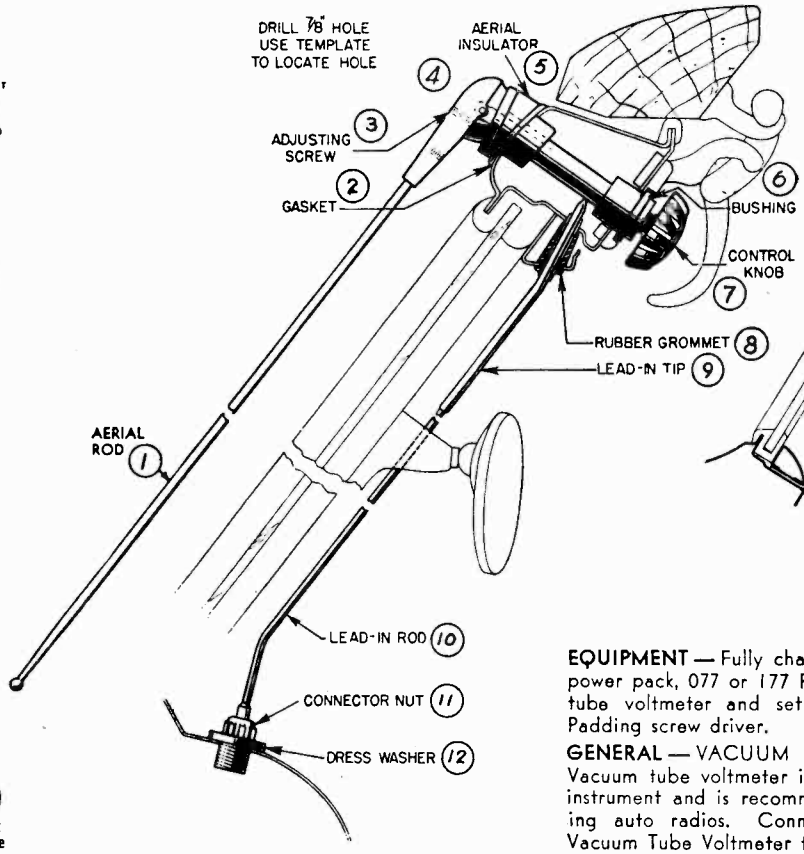
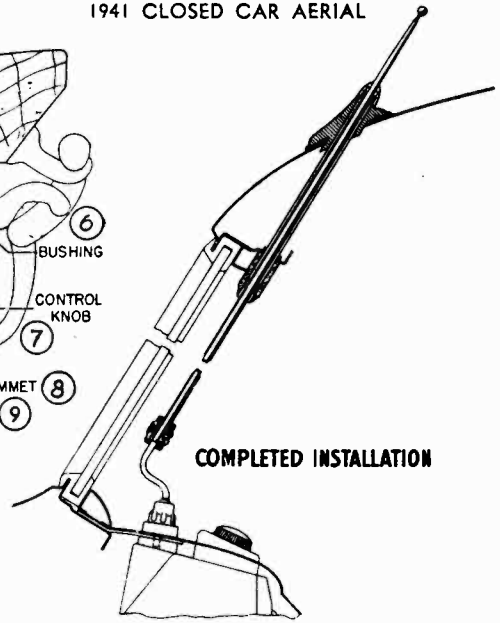


FIGURE 5

1941 CLOSED CAR AERIAL



MODEL F-1841

FORD CUSTOM

AUTO RADIO

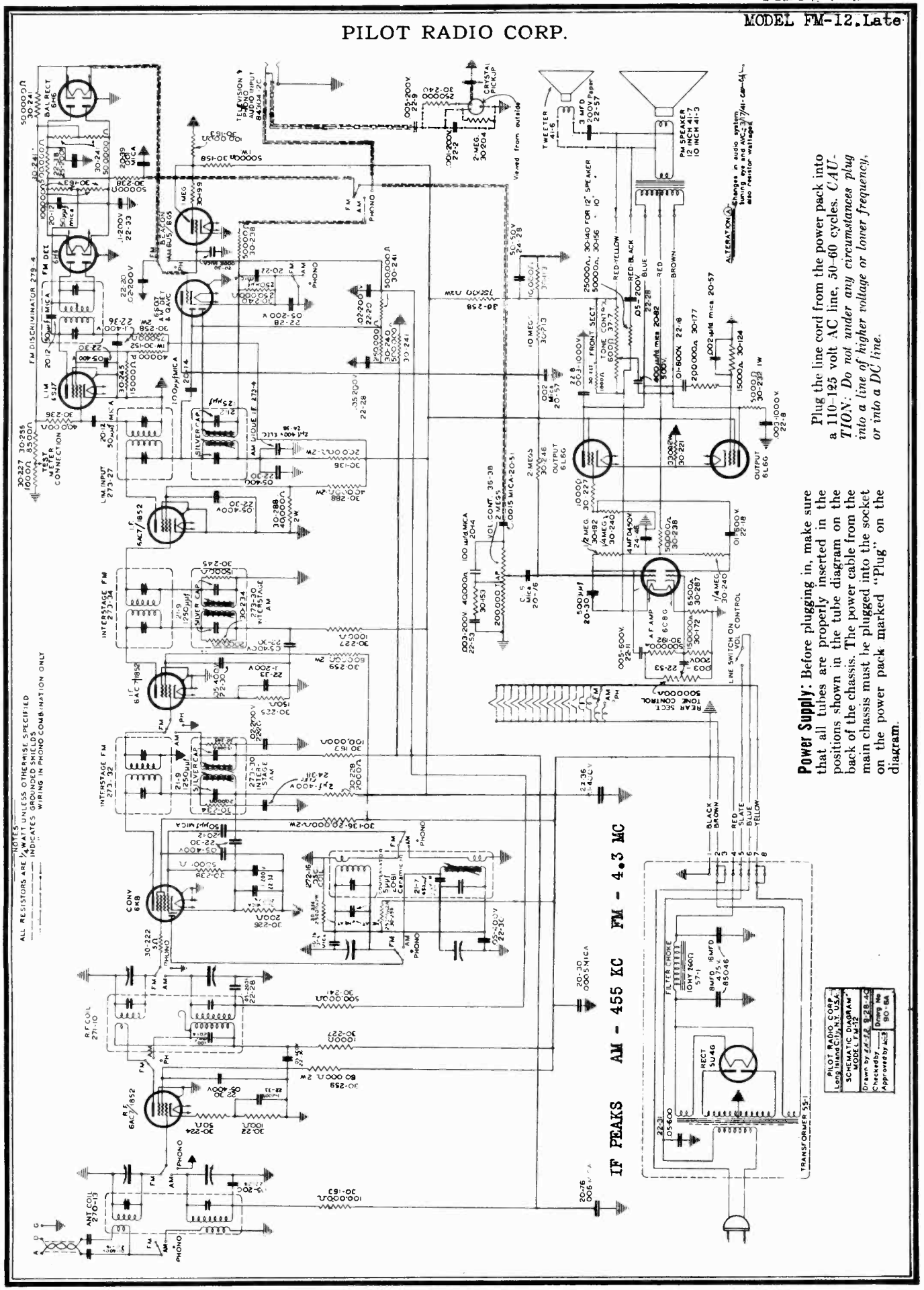
EQUIPMENT — Fully charged heavy duty storage battery or 6 volt power pack, 077 or 177 Philco Signal generator, 027 Philco Vacuum tube voltmeter and set tester or audio output meter, 45-2610 Padding screw driver.

GENERAL — VACUUM TUBE VOLTMETER. The model 027 Vacuum tube voltmeter is an extremely sensitive and accurate test instrument and is recommended for use when aligning and adjusting auto radios. Connect the negative (—) terminal of the Vacuum Tube Voltmeter to the high side (ungrounded side) of the volume control. Connect the positive (+) terminal to the radio housing. Connect the "AC" cord to a 110 volt AC socket. Press the VTVM button and the 10 volt button. Turn the "Set Zero Ohms — VTVM" control clockwise until a click is heard. Allow the tubes to heat up for a few minutes. Short the 150 meg. VTVM terminals and adjust the "Set Zero 150 meg." control until the meter reads zero on the 0-10 range scale (bottom scale). The needle will deflect from left to right.

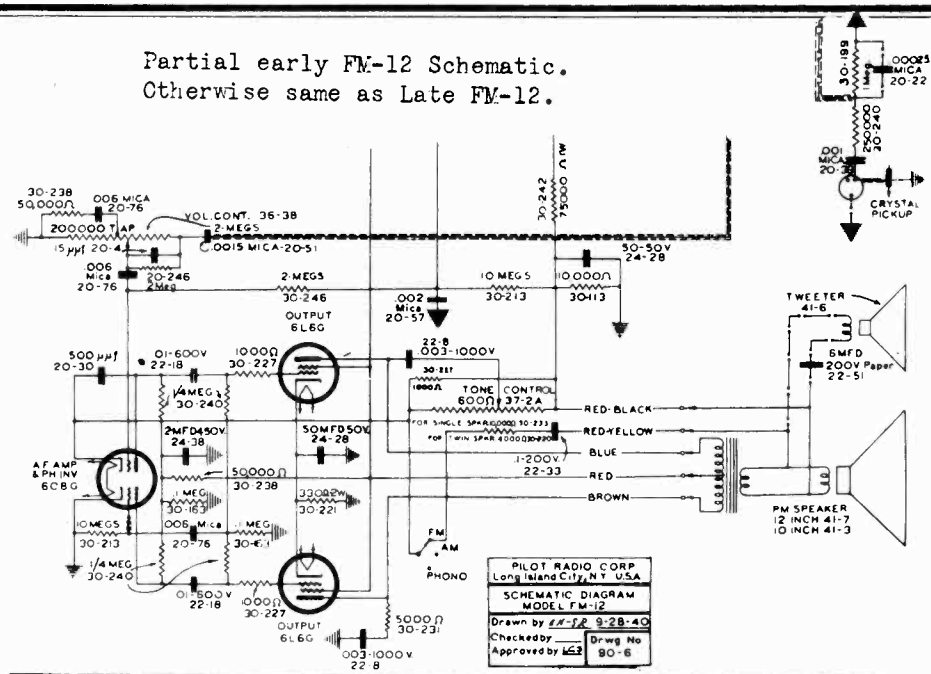
AUDIO OUTPUT METER. If an audio output meter is used, connect the leads across the voice coil of the speaker. Use the 0-30 volt scale.

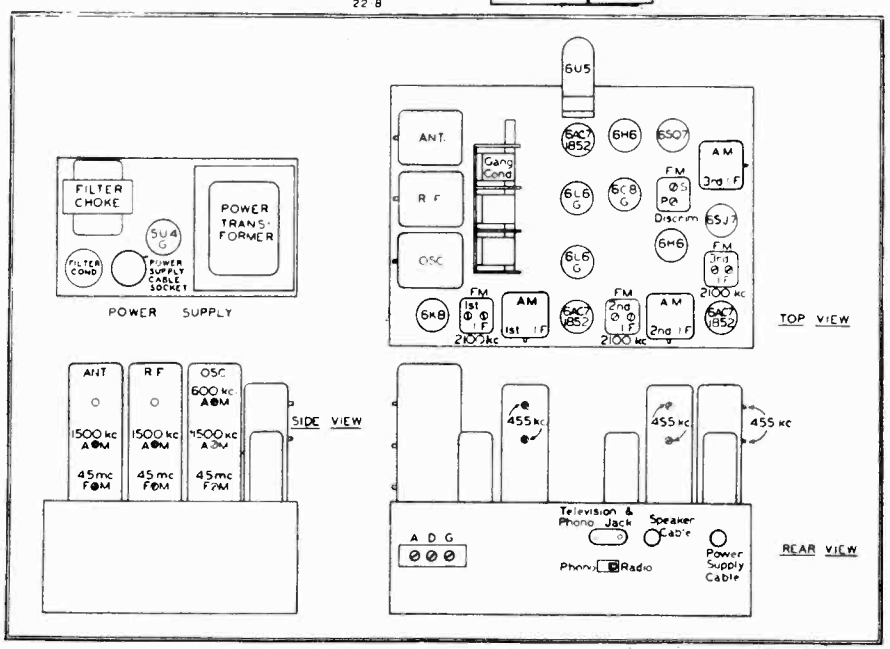
With the Radio and signal generator set up for operation at the prescribed frequency, turn the Radio volume control on full and set the signal generator attenuator so that a half scale reading is obtained on the meter. The signal in the speaker should be audible but not loud.

The shielding on the generator output lead must be connected to the Radio housing.



Partial early FM-12 Schematic.
Otherwise same as Late FM-12.





LAYOUT OF THE RECEIVER CHASSIS AND POWER SUPPLY, SHOWING TUBE LOCATIONS

SPECIFICATIONS

Voltage Rating: 110–125 volts, 50–60 cycles

Type of Circuit: Frequency modulation, superheterodyne

Tuning Range:
F-M tuning, 42 to 50 mc. — 7.14 to 6 m.
A-M tuning, 540 to 1750 kc. — 555 to 171 m.

Number and types of tubes: 12 plus tuning beacon

RF	— 6AC7/1852
Converter	— 6K8
IF	— 6AC7/1852
IF	— 6AC7/1852
Limiter	— 6SJ7
F-M Det.	— 6H6
Balance Rect.	— 6H6
A-M Det. and QAVC	— 6SQ7
AF Amp. and Phase Inv.	— 6C8G
AF Output	— 6L6G
AF Output	— 6L6G
Rectifier	— 5U4G
Tuning Beacon	— 5U5/6G6

A-M IF Frequency: 455 kc.
F-M IF Frequency: 4300 kc.

Antenna: Pilot F-M, A-M di-pole, No. 110-7

FEATURES

This Pilot Radio receiver provides static-free full-fidelity reception by the Armstrong Wide-Band Frequency Modulation System, with switch-controlled changeover to the standard broadcast band. The following special features are incorporated in the design of this receiver:

1. Interstation silencer (QAVC) for f-m tuning
2. Balance detector for accurate cathode ray beacon tuning indicator on f-m reception.
3. Push-pull audio output with inverse feedback for superior tone quality
4. Inverse feed-back tone control, providing sharper cut-off than conventional types.

Antenna: For noise-free reception it is essential to use a good di-pole antenna, properly installed with down-leads arranged to avoid noise pickup. Under present-day conditions (prior to January 1, 1941), some localities are served by two f-m stations whose frequencies are on adjacent channels (200 kilocycles separation). When this is the case interference from the stronger station may be experienced in reception from the weaker. Such interference may be reduced by loosening the mast clamps and rotating the di-pole until the most favorable position is found.

After January 1, 1941, the new frequencies assigned to f-m stations by the Federal Communications Commission will be in effect, and stations serving the same area will be separated by at least 400 kilocycles. Under these conditions interference between stations will not occur.

(5) TUBE AND VOLTAGE CHART

All voltages taken with 117-volt 60-cycle line. Band switch on FM no signal
Voltmeter resistance =300,000 ohms for readings above 30 volts; 30,000 ohms for lower readings

Tube	*Location*	*Function*	*Voltage Between Chassis and Socket Terminal*							
			1	2	3	4	5	6	7	8
1852/6AC7	Receiver Chassis	R-f amplifier	0	0	0	0	1.9	138	6(a-c)	292
1852/6AC7	" "	1st i-f amplifier	0	0	0	0	1.9	138	6(a-c)	292
1852/6AC7	" "	2nd i-f amplifier	0	0	0	0	0	106	6(a-c)	140
6K8	" "	Oscillator-converter	0	0	282	129	1.3	81	6(a-c)	3.4
6SQ7	" "	AM-second detector; AM-AVC; Interstation silencer	0	0	0	0	0	0 *	0	6(a-c)
6H6	" "	FM-discriminator	0	0	0	0	0	0	6(a-c)	0
6H6	" "	FM-balance rectifier	0	6(a-c)	0	0	0	0	0	0
6C8G	" "	1st audio amplifier; Phase inverter	0	6(a-c)	33	0	0	93	0	35
6L6G	" "	Output	0	0	292	304	0	0	6(a-c)	22
6L6G	" "	Output	0	0	292	304	0	0	6(a-c)	22
6U5	Dial Bracket	Tuning Beacon	6(a-c)	3 †	0	112	0	0	—	—
5U4G	Pwr. Supp. Chassis	Rectifier	0	346	0	305(a-c)	0	305(a-c)	0	346

Rectifier heater voltage between terminals 2 and 8 = 5 volts a-c.
*35 volts at 6SQ7 plate supply. †11 volt reading with 300,000-ohm voltmeter.

CONTROLS

The function of each control knob is indicated by lettering on the panel. From left to right the controls are as follows:

(1) Volume Control and POWER SWITCH

To put the set in operation, turn this knob to the right. After the tubes have warmed up, turn the knob further towards the right to increase the volume.

(2) Tone Control: When turned to the right this control increases the treble or high-pitched notes, producing "brilliant" quality. When turned to the left it reduces the treble and thereby emphasizes the bass register, producing "mellow" quality. This control may be adjusted in accordance with individual taste, but in general the best fidelity of reproduction is obtained with maximum brilliancy. This is particularly important on f-m, and it should be noted that a small rotation on the knob away from the extreme right produces a marked reduction in highs on a good f-m broadcast.

Attention is directed to certain differences in tone range among present-day f-m broadcasts. In general the best fidelity may be expected from an f-m broadcast utilizing live studio program material. When the f-m transmitter takes its program material from a distant studio over a wire-line network, or from ordinary phonograph records, there is usually a perceptible loss in reproduction of the extreme highs, such as the overtones of high violin notes, the "S" sounds in speech.

As the commercial use of f-m transmitters expands, in accordance with the plans of the Federal Communications Commission, special broadcasting methods and equipment, now in restricted use, will be more widely introduced. This progress will lead to fuller utilization of the potentialities of f-m, affording at all times the degree of realism and the quality of enjoyment obtainable with these special broadcasting methods and equipment.

(3) Band Switch: Turn to the *left* for f-m (Frequency Modulation) center for a-m (Amplitude Modulation), *right* for phonograph.

(4) Tuning: This control combines fast and slow tuning in a special Pilot drive mechanism, permitting quick transfer from one part of the dial to another, yet providing for fine tuning with great facility.

TUNING BEACON

Accurate tuning is extremely important on both FM and AM; careless adjustment will introduce noise and distortion. The cathode ray tuning beacon in the top center of the dial scale provides visual means to facilitate tuning. As the tuning point is approached the V-shaped shadow of the beacon becomes smaller. On very strong signals the two sides of the V-shaped sector may overlap. For correct tuning adjust to the smallest shadow or the largest overlap.

PHONO-TELEVISION SOUND

Audio Input Jacks: All three models have pin-jack terminals at the rear of the receiver chassis for connection to an external phonograph pickup, a microphone, or the audio channel of a television receiver.

SERVICE INFORMATION

The following sections include:

(1) a brief outline of the principles of frequency modulation, so far as they will assist in servicing this receiver;
(2) a description of the special features of this receiver;
(3) alignment procedure;
(4) trimmer diagram;
(5) tube and voltage chart;
(6) schematic wiring diagram.

(1) FREQUENCY-MODULATION

The Armstrong Wide-Band Frequency-Modulation system has a twofold purpose: (a) to eliminate interference from static, electrical induction, and tube noise; (b) to increase the fidelity of reproduction. To achieve these aims a new kind of signal is used, which is totally different in character from the disturbances, so that the receiver can discriminate between the two.

Under this new system the program material is impressed upon the carrier wave by changing the *frequency* of the carrier in accordance with the sound impulses instead of changing its *strength* or *amplitude*. The departure from carrier frequency, known as the "deviation," depends upon the sound intensity, and the number of times the deviation is applied and removed depends upon the pitch of the sound. The maximum deviation permitted by the Federal Communications Commission is 75 kilocycles, and this deviation corresponds to 100 per cent modulation at the transmitter.

To illustrate: suppose that the carrier frequency is 43,000 kilocycles, and that a 1,000-cycle note of maximum loudness occurs in the musical program; then the frequency of the transmitted wave will vary from 42,925 to 43,075 kilocycles and back again, and will repeat this process 1,000 times per second. Now suppose that the 1,000-cycle note becomes weaker, say 33 per cent modulation; then the transmitted wave will vary from 42,975 to 43,025 kilocycles and back again, and will repeat this process 1,000 times per second.

At the receiver, the frequency-modulated wave is converted, by the standard superheterodyne process, to a lower intermediate frequency with the same frequency modulation. (In the FM-12 receiver the intermediate frequency is 43 00 kilocycles, and a swing from 42 25 to 43 75 kilocycles would represent 100 per cent modulation.) After amplification, this IF signal is then applied to a "limiter" tube, in a circuit which is arranged to deliver *constant output regardless of changes in the amplitude of the input*. Since the static and other disturbances are primarily amplitude changes, the smoothing out of amplitude changes by the "limiter" removes the disturbing effects, but leaves the frequency modulation unaltered.

The output of the limiter is applied to a "frequency discriminator" (or second detector) which converts the frequency deviations into audio-frequency currents. These in turn are amplified and delivered to a loudspeaker.

This system makes possible the reproduction of audio frequencies up to 15,000 cycles per second. Such high-fidelity reproduction has been impracticable hitherto, for two reasons: first, a receiver designed to provide adequate selectivity between 10-kilocycle a-m broadcast channels generally cuts the sidebands representing modulation beyond about 5,000 cycles; and secondly, the noise interference lies mainly in the higher audio-frequency register.

(2) SPECIAL FEATURES OF FM-12 RECEIVER

The FM-12 chassis embodies virtually two complete receivers, utilizing the same audio system and the same RF, converter, and IF tubes for both. The IF transformers for both systems are connected in series and work with the common IF tubes, but separate second detectors are used. A band switch selects the proper antenna, RF, and oscillator tuning components, and transfers the input terminal of the audio system from one second detector to the other. Reference to the schematic diagram will show additional details of the switching arrangements.

Audio System: The audio system comprises a 6C8G twin triode, used as first audio amplifier and self-regulating phase inverter, followed by a pair of 6L6G tubes operating in push-pull, Class AB1.

Inverse Feedback: Inverse feedback is employed to improve tone quality. For this purpose a resistor network is connected across the loudspeaker voice-coil and a suitable proportion of the voice-coil voltage is fed back into the cathode of the first audio triode. This cathode feedback voltage reduces the grid-cathode voltage which is effective in producing output. The action is equivalent to a *large* reduction of amplifier gain at those frequencies at which the gain is *high*, and a *small* reduction where the gain is *low*. The gain is also reduced more on the peaks of harmonics generated in the output stage. The result is the establishment of virtually uniform gain over a wide frequency range and the reduction of harmonics.

Inverse Feedback Tone Control: Continuous tone control is provided by a novel circuit arrangement. A network consisting of a condenser and a variable resistor is connected between the plate of one of the output tubes and ground. The variable resistor forms part of the inverse feedback network described above, so that the voltage across the variable portion is fed back to the cathode of the first audio triode. This reduces the input for all frequencies above a certain value, without affecting lower frequencies. The cutoff frequency is controlled by adjustment of the variable resistor. A moderately sharp cutoff of the high audio frequencies is produced, and the action is much more satisfactory than the gradual cutoff provided by conventional tone controls.

Balance Detector: In tuning an f-m receiver it is most essential to adjust the IF precisely to the "balance frequency" of the discriminator, in order to secure freedom from noise and distortion. It is not sufficient to provide means for tuning to resonance peak, because the resonance is too broad and the peak may be considerably off the balance frequency.

The FM-12 receiver provides means for tuning easily and precisely to the balance frequency. At this frequency there is no DC potential difference between the two cathodes of the discriminator tube, and a slight mistuning in either direction gives rise to a potential difference whose polarity corresponds to the direction of mistuning. In the FM-12 receiver this effect is utilized by a separate 6H6 tube, called the "balance detector," whose cathode becomes *positive* when there is a potential difference *in either direction* between the discriminator cathodes. This *positive* potential is used to neutralize a *negative* potential developed by the signal at the limiter tube, and prevents the negative potential from closing the tuning beacon. At exact tuning, the positive potential disappears, leaving the negative potential to close the beacon. The result is a sharp tuning indication, governed by discriminator balance and not by mere resonance.

Inter-Station Silencer: When signal input is detuned or otherwise removed from an f-m receiver, the limiter ceases to function so that the entire amplifying system up to the second detector operates at full gain. Under these conditions, unless steps are taken to prevent it, the tube noise becomes objectionably loud. In the FM-12 this inter-station noise is completely suppressed by a 6SQ7 squelch tube whose plate current flows in a biasing resistor in circuit with the grid of the first audio triode. The grid of the squelch tube is in turn controlled by the same balance detector system which operates the tuning beacon, so that the squelch tube is biased to cutoff when a signal is correctly tuned in. Under these conditions the 6SQ7 plate current ceases to flow in the grid circuit of the first audio triode, permitting the latter to function normally.

The value of the interstation silencer is readily and forcefully demonstrated by removing the 6SQ7 tube when the receiver is off tune on f-m reception.

While the squelch feature is intended primarily for f-m, it also functions on a-m when a very small aerial is used.

(3) ALIGNMENT PROCEDURE

A-M Alignment: The A-M alignment of this receiver is conventional in every respect. Most skilled radio servicemen have the equipment and experience needed to perform this alignment successfully. A detailed description of the a-m alignment will not, therefore, be given here, but the following information is included:

The locations of all trimmers are shown in the trimmer chart.

The a-m intermediate frequency is 455 kilocycles.

The voice coil terminals are accessible on the speaker frame for output meter connection. The voice coil impedance is approximately 6 ohms at 400 cycles.

Should it be desired temporarily to remove the squelch feature so as to permit a-m alignment on weak inputs, this may be done by grounding the plate supply of the 6SQ7 tube (junction between 75,000-ohm and 10,000-ohm resistors on terminal strip on front apron). Since the diodes of this tube are used for a-m second detector and AVC, the tube cannot be removed as it can on f-m.

Should it be desired temporarily to remove the inverse feedback, this may be done either by shorting the 600-ohm tone control or by opening the resistor-condenser network connected in series with it across the voice coil. The former method will also remove tone control, while the latter will not.

The resistor in the inverse-feedback network above referred to is 10,000 ohms in the table model (with single speaker) and 4,000 ohms in the console and phono combination (for dual speakers). In the phono combination a 10,000-ohm resistor is switched in series with the 4,000-ohm resistor when the front phono-radio switch is thrown to phono position.

Removal of inverse feedback will increase the audio sensitivity about 2.0 times in the 10,000-ohm case, or about 2.5 times in the 4,000-ohm case.

F-M Alignment: The correct alignment of an f-m receiver, while not difficult, is an exact procedure requiring suitable equipment, an understanding of the fundamental principles involved, and some experience. *Alignment operations should not be attempted under any circumstances without these three essentials, and with them only if clearly necessary.*

Equipment for F-M Alignment: The following are the minimum requirements:

(a) Signal generator having the following frequency and output ranges: For IF alignment: Accurate calibration between 2,000 and 2,200 kilocycles; output adjustable at least between 100 and 10,000 microvolts. For RF alignment: Accurate calibration between 40 and 50 megacycles; output adjustable at least between 5 and 1,000 microvolts.

These requirements may be met either by one or by two separate signal generators. Amplitude modulation at 400–1,000 cycles is desirable to facilitate finding, but is not indispensable.

The signal generator output should be brought out through a short concentric transmission line. A .1 mfd. blocking condenser should be at all times inserted at one end of the central or high-potential conductor.

(b) Dummy antenna resistor, approximately 70 ohms, for connection between high-potential output conductor of signal generator and A terminal of receiver.

(c) D. C. milliammeter, 0–0.5 or 0–1.0 milliamperes, for measuring limiter grid current. A shunting resistor capable of increasing the range to about 0–2,000 microamperes is desirable but not essential. This meter should be connected to a pair of leads about two feet long, terminating in spring clips.

(d) D. C. microammeter having zero center with range of 100 microamperes to both right and left of center. As a substitute a single-sided meter with reversing switch may be used, but this will be much less convenient. This meter should be connected to a pair of leads about two feet long, each lead connected to a 250,000-ohm resistor, the free ends of the resistors terminating in spring clips.

(e) Resistor, 500,000 ohms, with clips for insertion between converter grid lead and grid cap.

F-M Meter Connections:

(a) Connect the limiter grid milliammeter across the 1,000-ohm resistor which is connected in series with 40,000-ohm and 16,000-ohm resistors from the grid of the 6SJ7 limiter to chassis. The positive terminal of the meter should be connected to the grounded end of the 1,000-ohm resistor, and the negative terminal to the other end.

(b) Connect the zero-center meter (through its two 250,000-ohm resistors) across the two 100,000-ohm resistors which are connected between the cathodes of the 6H6 discriminator tube. These resistors are readily identified because they are mounted end-to-end on a lug strip between the discriminator tube and the discriminator transformer.

F-M Intermediate-Frequency Alignment:

(a) Remove the converter grid cap and insert 500,000-ohm resistor between grid cap and grid lead. Connect signal generator between grid cap and chassis. Adjust signal generator to exactly 4,300 kilocycles, with IF input (signal generator output) at about 1,000 micro-volts.

(b) Now tune each of the six 2,100 kc. IF trimmers (see trimmer diagram) for maximum response in limiter grid meter. Check sensitivity by adjusting IF input until milliammeter reads 0.20 milliamperes. This should take between 150 and 250 microvolts.

(c) Next increase signal generator output to about 10,000 microvolts and adjust secondary trimmer of discriminator transformer carefully until zero-center meter reads zero.

(d) Next detune signal generator by exactly 100 kilocycles upward and note reading of zero-center meter. Detune by 100 kilocycles downward and note reading. Adjust primary trimmer of discriminator transformer and repeat this test until readings on both sides of zero are equal (approximately 48 microamperes).

F-M Radio-Frequency Alignment:

(a) Restore normal grid lead connection to grid cap of converter tube. Connect low-potential output terminal of signal generator to terminal D of receiver. Connect high-potential terminal to terminal A through a 70-ohm dummy antenna resistor.

(b) Adjust signal generator to about 1,000 microvolts output at exactly 45 megacycles. Tune receiver dial to exactly 45 megacycles. Tune f-m oscillator trimmer until limiter grid meter responds, then adjust this trimmer very carefully to give zero reading on zero-center meter. Switch signal generator off and on and watch limiter grid meter to make sure that observed signal is coming from signal generator.

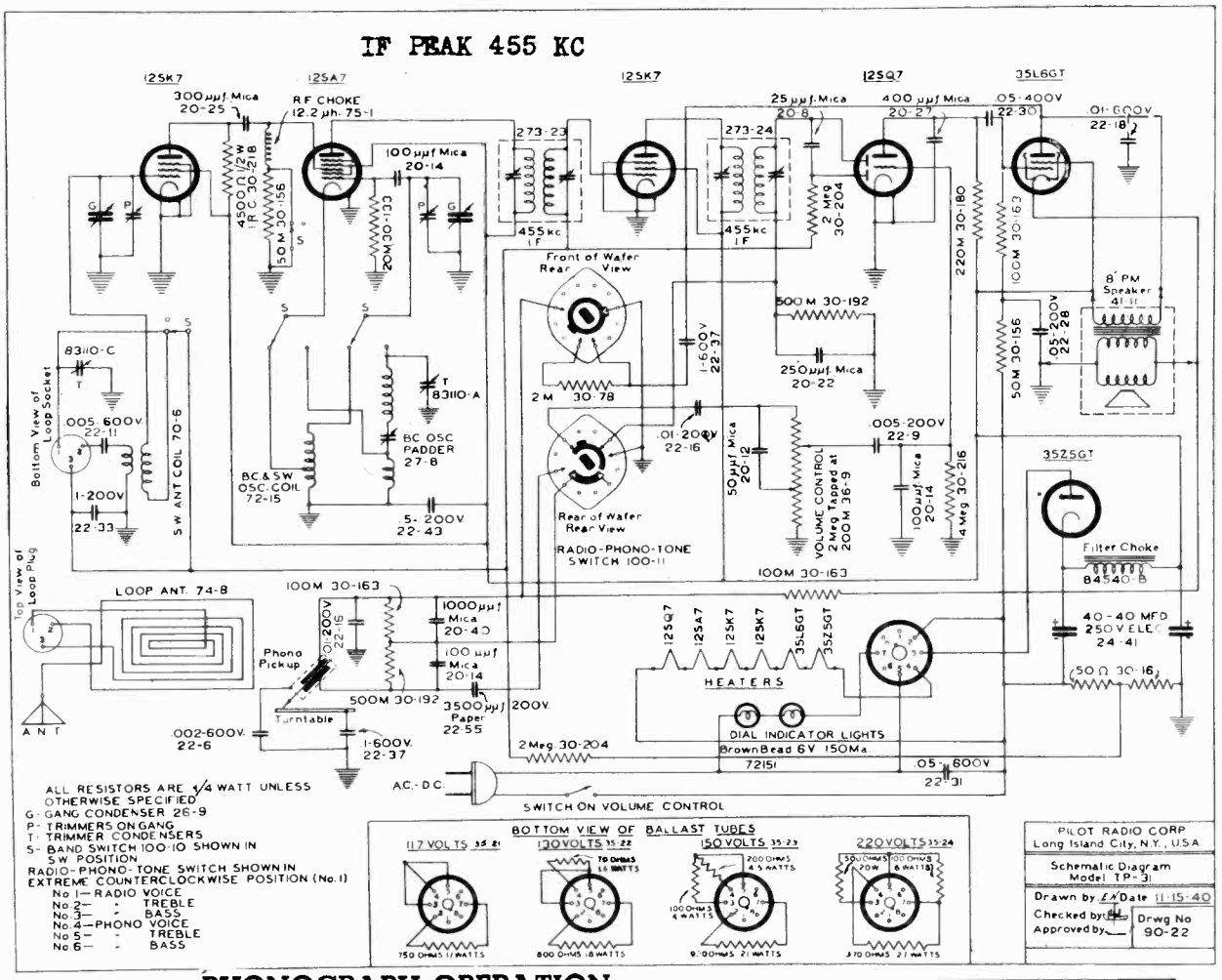
Adjust signal generator to vicinity of 40.8 megacycles, and find image frequency, which produces a somewhat weaker response in limiter grid meter. If image cannot be found near 40.8 megacycles, but appears instead near 49.2 megacycles on signal generator, then oscillator trimmer capacity is too low. In this case reset to 45 megacycles and increase oscillator trimmer capacity by turning screw counter-clockwise until a second response is found. Now adjust accurately to zero-center reading and repeat test for image response at 40.8 megacycles.

(c) Reduce signal generator output to about 50 microvolts. Tune f-m RF and antenna trimmers to maximum response on limiter grid meter.

This completes the alignment of the receiver.

PILOT RADIO CORP.

MODEL TP-31



PHONOGRAPH OPERATION

IT IS IMPORTANT THAT THE SWITCH AT THE REAR OF THE CABINET IS IN THE POSITION CORRESPONDING TO THE TYPE OF LINE CURRENT BEING USED.

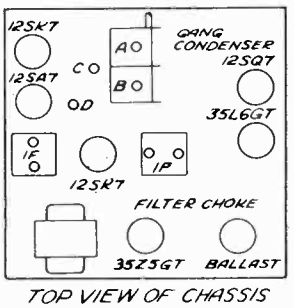
The motor is controlled by the automatic stop lever which is at the rear right side of the turntable. The lever protruding from under the turntable on the front side is the speed control. For true reproduction the speed should be adjusted to 78 revolutions per minute. Volume for both, "Phono" and "Radio" is regulated by the same control on the front of the receiver.

The tone control and phono radio switch must be in either of the three clockwise positions for phonograph operation.

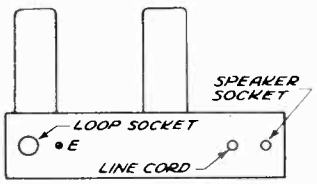
SERVICE NOTES

The screws for adjusting both the R.F. and I.F. amplifiers of this receiver, together with the frequencies at which they should be adjusted, are all pictured on the above diagram. When aligning the I.F. amplifier, the generator must be connected to the grid of the 12SK7 R.F. tube through a .1 mfd condenser. When aligning the receiver, first align the shortwave band connecting the generator to the antenna post with a 400 ohm resistor. Then align the broadcast band using a .0002 mfd. condenser.

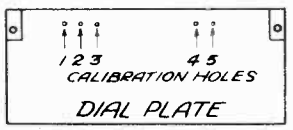
When aligning the loop, the receiver should be in the cabinet with the back in place. The adjusting condenser can be reached through the slot in the lower left hand side of the back.



TOP VIEW OF CHASSIS



REAR VIEW OF CHASSIS



DIAL PLATE

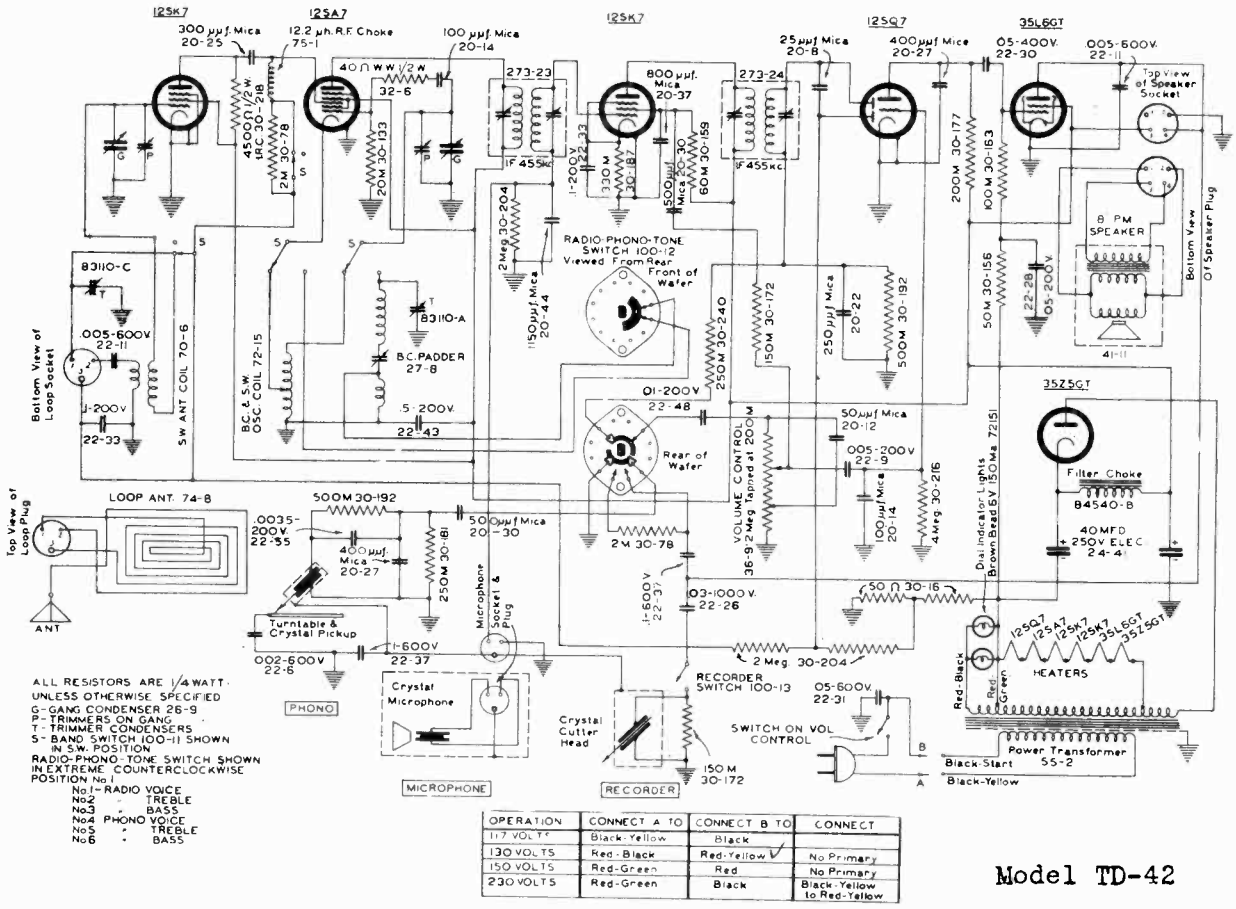
TRIMMERS - 455KC
A-ANT SW 210 MC
B-OSC SW 240MC
C-OSC BC 1400 KC
D-OSC PADDER 600KC
E-LOOP ANT 1400KC
DIAL PLATE
1-START - 535 KC
2 60 MC
3 600 MC
4 1400 KC
5 210 MC

TUNING RANGE
BROADCAST RANGE
535-1720 KC
OR 561 TO 174
METERS
SHORT WAVE BAND
5 6 TO 240 METERS
OR 53 6 TO 240
METERS OR 12 5
METERS

MODEL TD-42
MODEL 1424 Phono

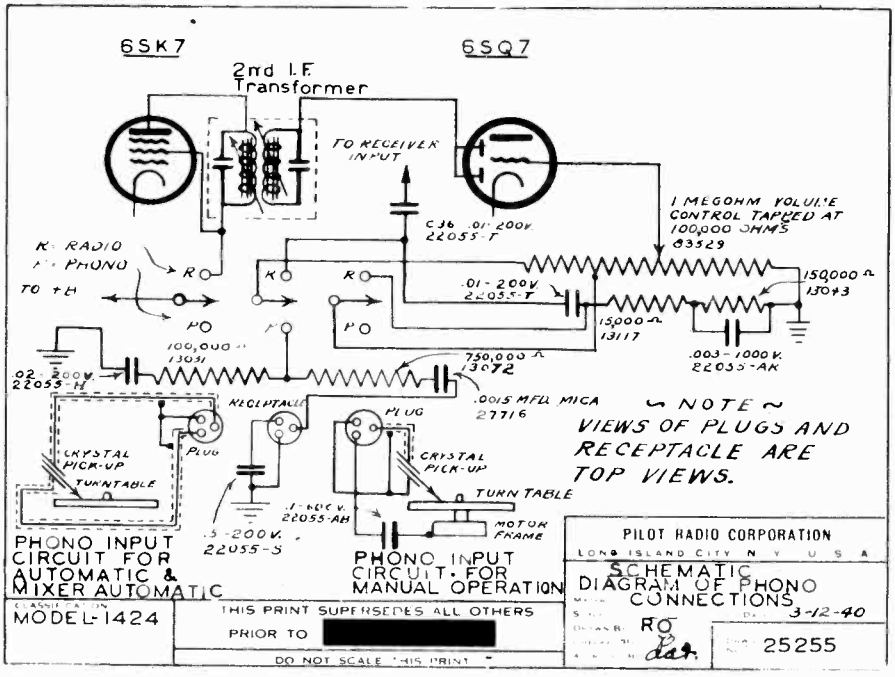
PILOT RADIO CORP.

IF PEAK 455 KC



OPERATION	CONNECT A TO	CONNECT B TO	CONNECT
117 VOLTS	Black-Yellow	Black	
130 VOLTS	Red-Black	Red-Yellow ✓	No Primary
150 VOLTS	Red-Green	Red	No Primary
230 VOLTS	Red-Green	Black	Black-Yellow to Red-Yellow

Model TD-42

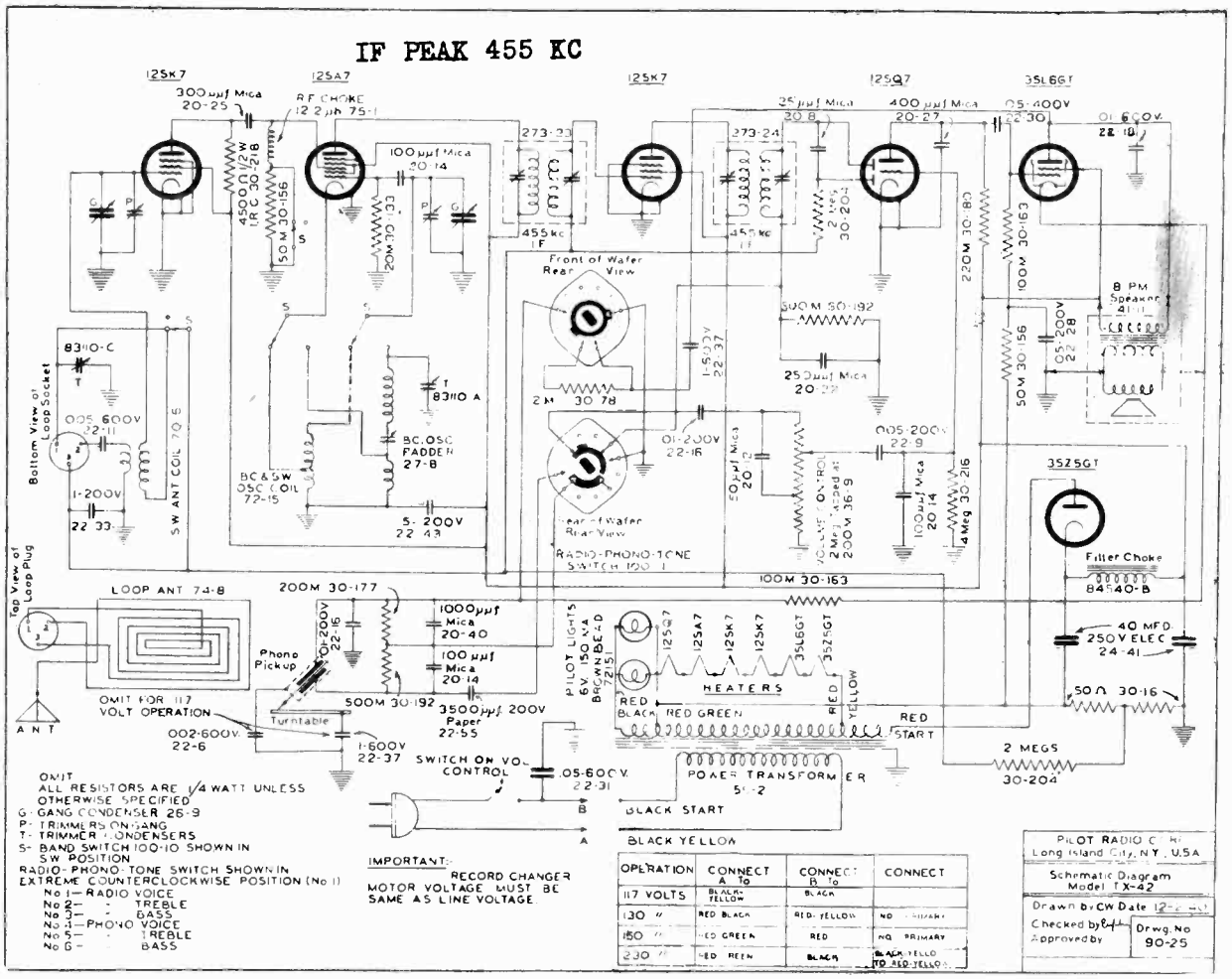


Model 1424 Phono Connection

For other Data see Index.

PILOT RADIO CORP.

MODEL TD-42
MODEL TX-42

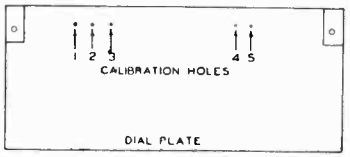


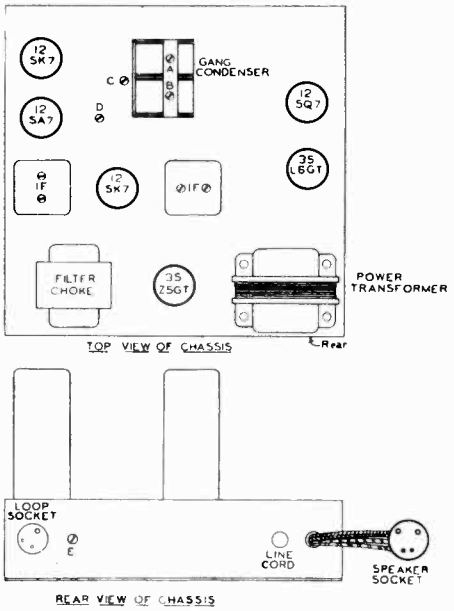
TUNING RANGE

Broadcast Band 535 to 1720 kc.; 561 to 174 meters

Short Wave Band 5.6 to 24.0 mc.; 53.6 to 12.5 meters

DIAL PLATE CALIBRATION HOLES
1- START 535 KC.
2- ------ 6.0MC
3- ------ 600 KC
4- ------ 1400KC
5- ------ 210MC





TRIMMERS
I.F. ADJUSTED AT 455 KC
A - ANTENNA SW 21.0 MC
B - OSCILLATOR SW 24.0 MC
C - OSCILLATOR BC 1400 KC
D - OSCILLATOR PADDER 600 KC
E - LOOP ANTENNA 1400 KC

SERVICE NOTES

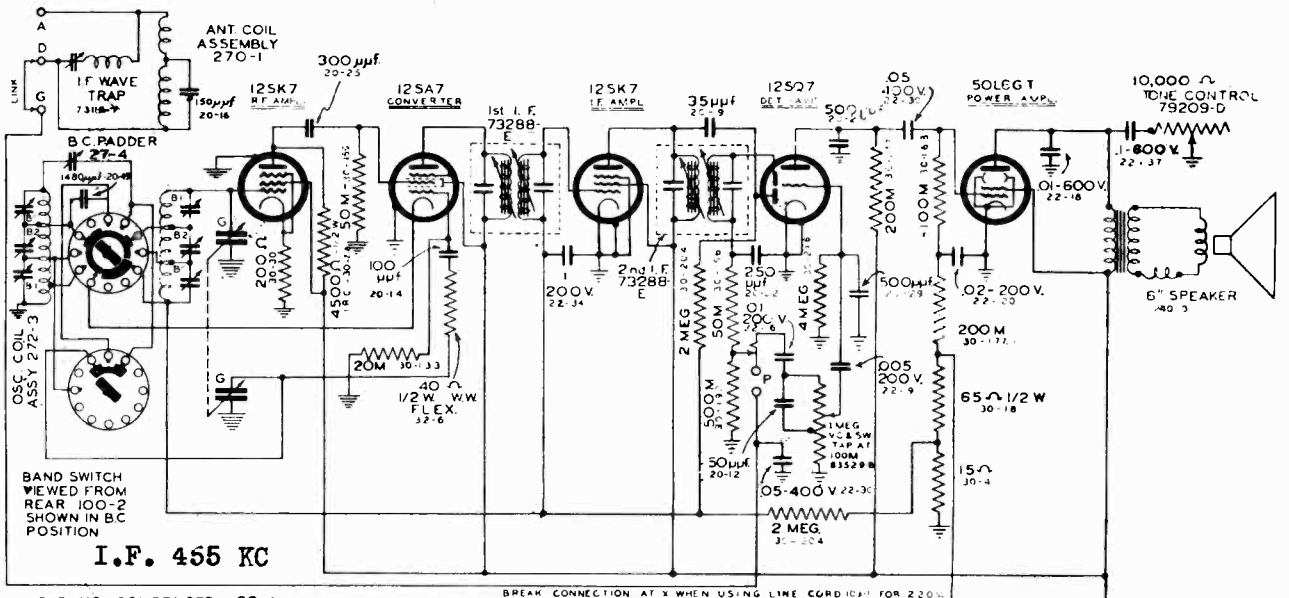
The screws for adjusting both the R.F. and I.F. amplifiers of this receiver, together with the frequencies at which they should be adjusted, are all pictured on the above diagram. When aligning the I.F. amplifier, the generator must be connected to the grid of the 12SK7 R.F. tube through a .1 mfd condenser. When aligning the receiver, first align the shortwave band connecting the generator to the antenna post with a 400 ohm resistor. Then align the broadcast band using a .0002 mfd. condenser.

When aligning the loop, the receiver should be in the cabinet with the back in place. The adjusting condenser can be reached through the slot in the lower left hand side of the back.

MODELS TD-42, TX-42
FOR GENERAL INSTRUMENTS 101 RECORD CHANGER, SEE RIDER'S "AUTOMATIC RECORD CHANGERS AND RECORDERS".

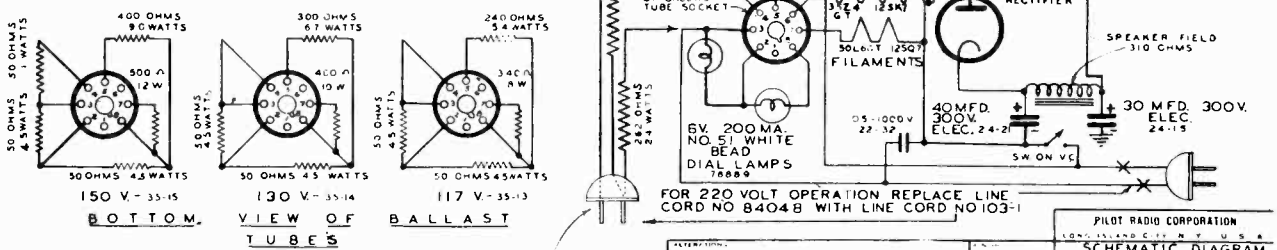
MODELS B1, T1
MODELS B2, T2 MODEL T-43

PILOT RADIO CORP.



G-GANG CONDENSER 26-4
P-PHONO TELEVISION JACK STRIP 84304-2C
I.F. 455 KC.

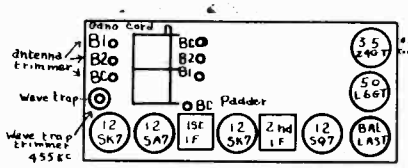
BREAK CONNECTION AT X WHEN USING LINE CORD 104-1 FOR 220V.



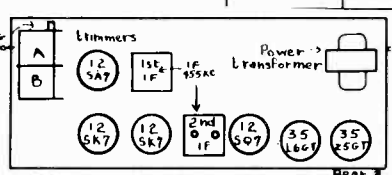
FOR 220 VOLT OPERATION USE 150 VOLT BALLAST TUBE 35-15 AND RESISTOR LINE CORD NO 103-1 CONNECTED AS SHOWN BY ARROWS

FOR 220 VOLT OPERATION REPLACE LINE CORD NO 84048 WITH LINE CORD NO 103-1

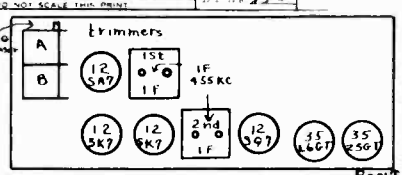
PILOT RADIO CORPORATION
SCHEMATIC DIAGRAM
T-43
8-13-40
90-11



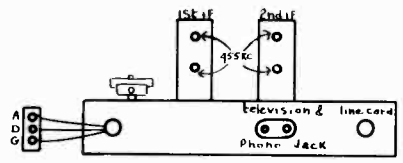
TOP VIEW OF CHASSIS



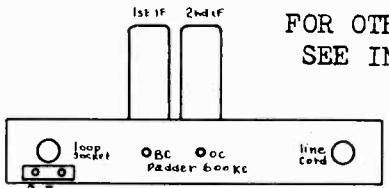
TOP VIEW OF CHASSIS



TOP VIEW OF CHASSIS

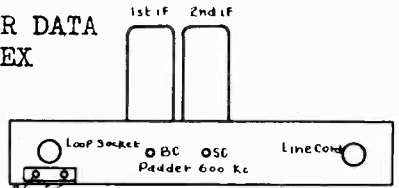


REAR VIEW OF CHASSIS



REAR VIEW OF CHASSIS

FOR OTHER DATA SEE INDEX



REAR VIEW OF CHASSIS

OSC TRIMMERS

BC-1720 KC
B1 24 MC
B2 6 MC

ANT TRIMMERS

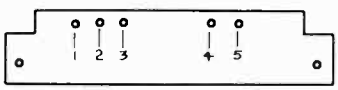
BC 1400 KC
B1 18 MC
B2 6 MC

BC PADDER-600 KC

MODEL T-43

TRIMMERS

SAME AS MODEL B1 & T1



FRONT VIEW DIAL SCALE PAN

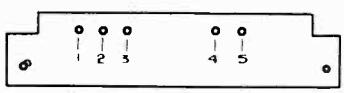
CALIBRATION HOLES

SAME AS MODEL B1 & T1

MODELS B2 & T2

TRIMMERS

A-SW-OSC 240 MC
B-SW-ANT 210 MC
C-BC-LOOP 1400 KC



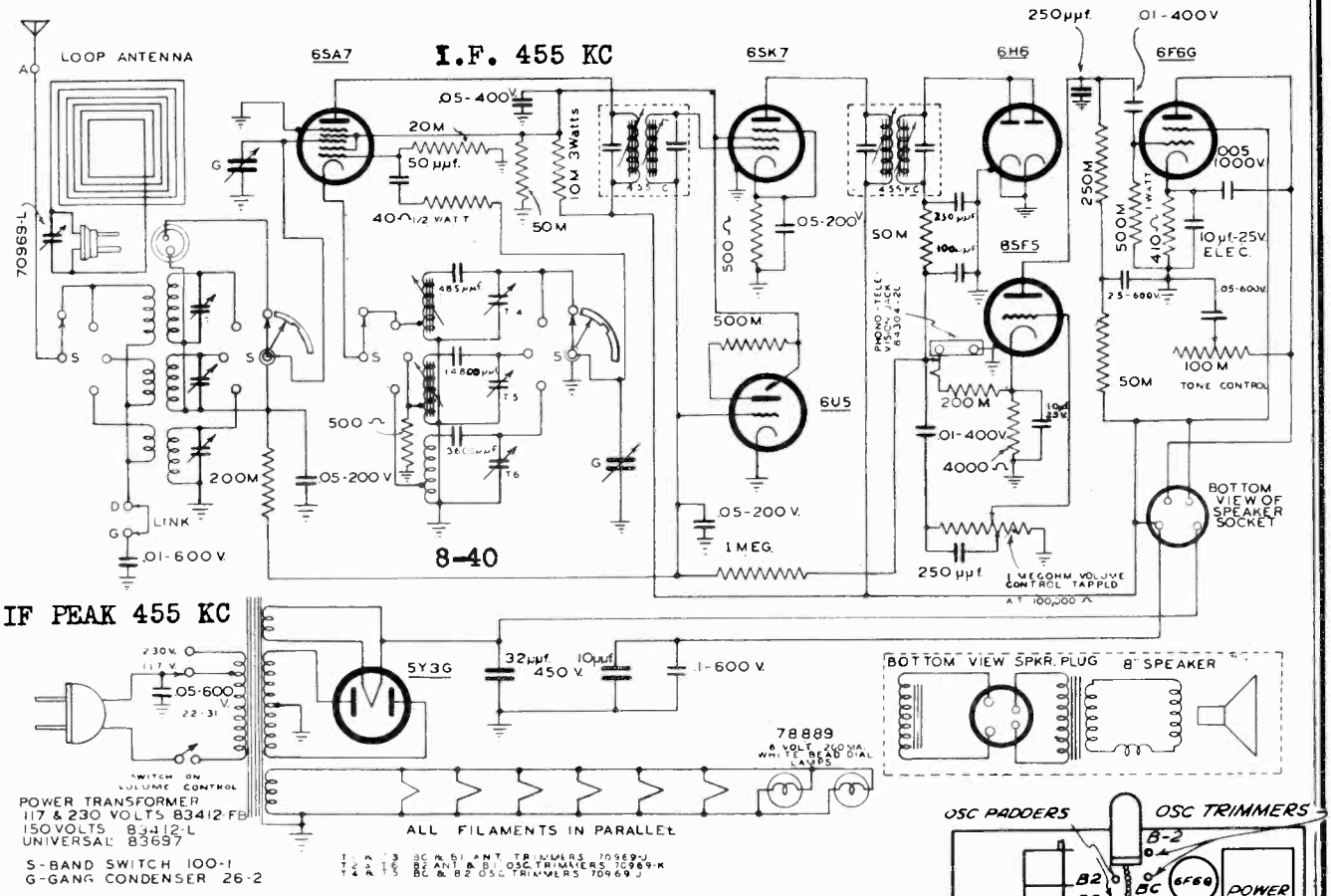
FRONT OF DIAL SCALE PAN.

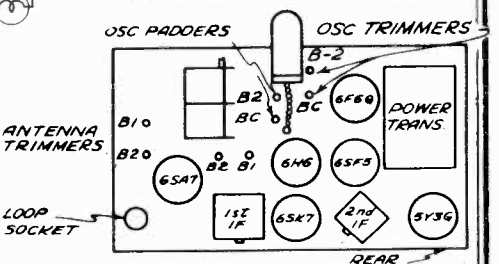
CALIBRATION HOLES

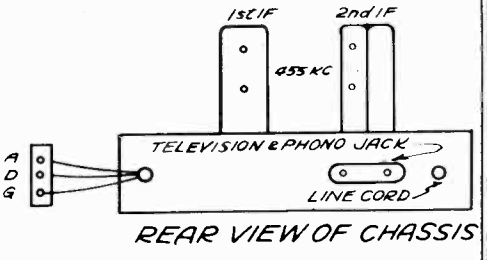
1-START 535 KC 2-6.0 MC
3-600 KC
4-1400 KC 5-21.0 MC

MODELS B1 & T1

PILOT RADIO CORP.







SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the two short wave bands use a 400 ohm carbon resistor.

ANTENNA

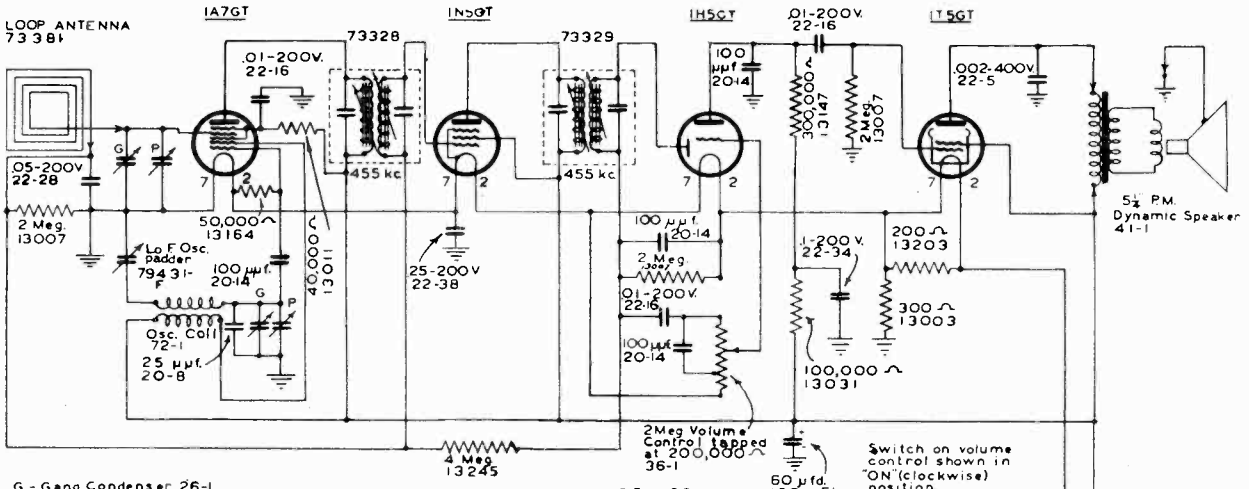
This receiver contains the latest type of self-contained loop aerial and will give excellent results even in distant localities where the signal from the broadcasting stations are faint. However, it may be necessary to turn the cabinet toward the direction of the incoming signal (since most broadcasting stations use the directional antennas), for the best reception from that particular station. For short wave or distant broadcast band reception, the use of an external antenna is required.

When using a doublet antenna, connect one lead-in wire to terminal "A" at the rear of the chassis, and the other lead-in wire to terminal "D". Remove the connecting link from terminals "D" and "G" and connect terminal "G" to a ground such as a cold water pipe or radiator. If an ordinary single wire antenna is used, connect the lead-in wire to Terminal "A" on the rear of the chassis. Leave the link between "D" and "G" terminals and connect a ground wire under terminal "G". A doublet antenna kit complete with all accessories, can be purchased from your dealer. Ask to see the "Pilot Antenna Kit".

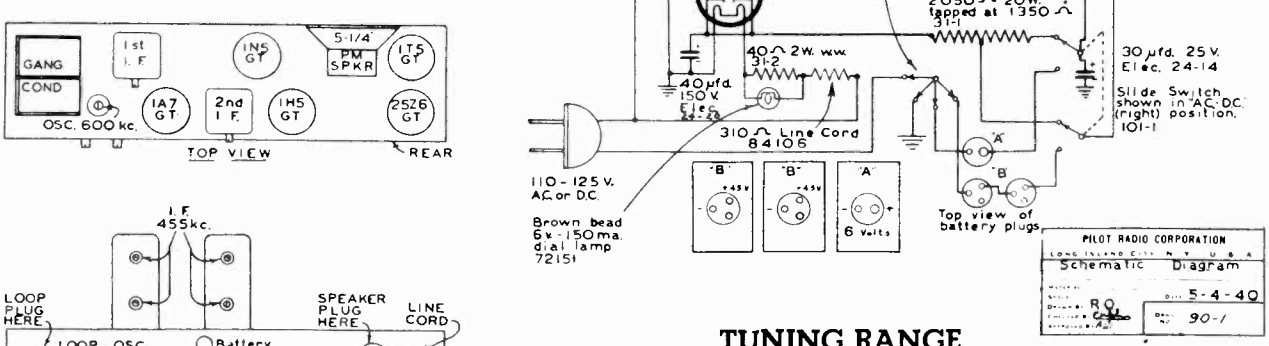
TUBE LINEUP
6SA7-CONVERTER
6SK7-I.F.
6H6-2nd Det.-AVC
6SF5-1st A.F.
6F6G-OUTPUT
5Y3G-RECTIFIER
6U5-TUNING INDICATOR
OSC PADDERS
BC-600 KC
B1-2.5 MC
B2-6 MC
ANT. TRIMMERS
BC-1500 KC
B1-22 MC
B2-6 MC

MODEL T-71

PILOT RADIO CORP.



IF PEAK 455 KC



PILOT RADIO CORPORATION
Schematic Diagram
5-4-40
90-1

TUNING RANGE

Broadcast Band: 561 to 187 meters; or 535 to 1605 kc.

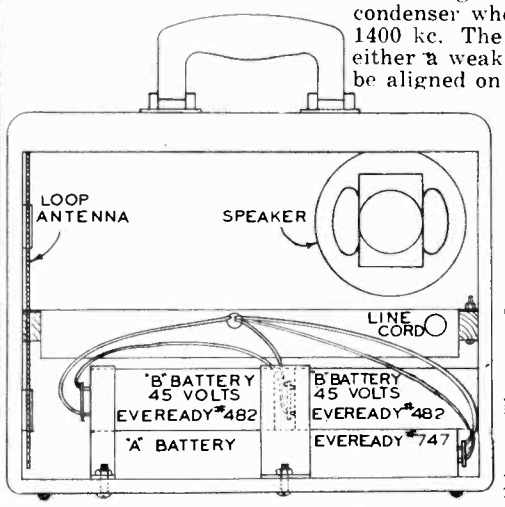
Model T-71

SERVICE NOTES

The location of the screws for adjusting the oscillator, loop and I.F. circuits is indicated above.

When aligning this receiver, the "A" and "B" batteries must be in place, and the set correctly mounted in the cabinet.

The signal generator should be connected to the grid of the 1A7GT through a .1 mfd condenser when aligning the I.F. at 455 kc and when setting the oscillator trimmer at 1400 kc. The loop antenna trimmer and the 600 kc padder should be adjusted, using either a weak station or a radiated signal from a signal generator. This receiver may be aligned on either battery or house current.



REAR VIEW OF CABINET SHOWING BATTERIES IN PLACE

BATTERY INSTALLATION

Remove the screws from the back and carefully lift off the back.

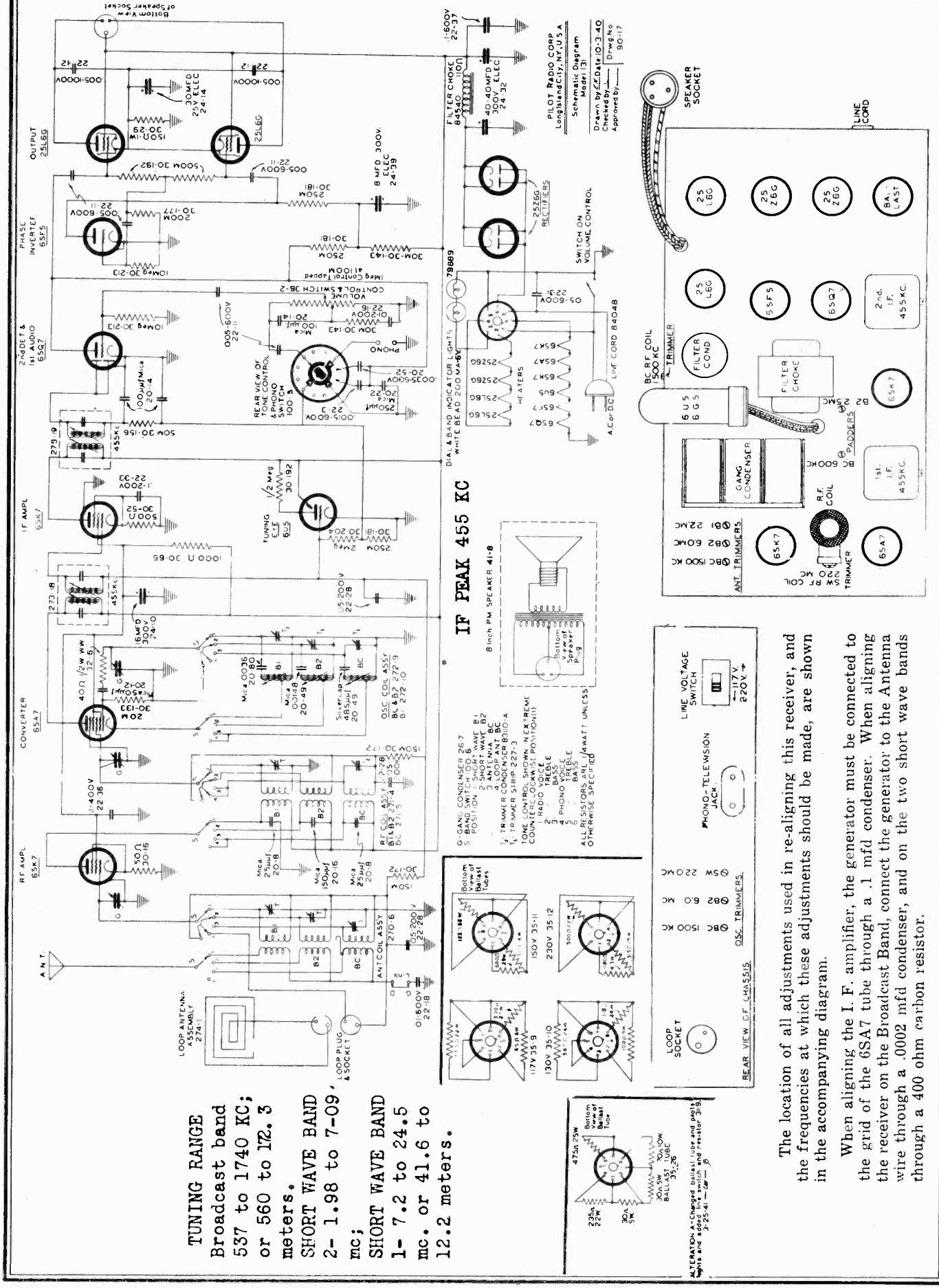
When removing the batteries, first unscrew clamps, and then remove battery plugs. Be sure not to pull on the cables, but on the plugs themselves.

Place the new "A" and "B" batteries in position shown on diagram below and replace clamps in position shown below.

The black and white cable, coming from the chassis, has a 2-prong plug which is then plugged into the double "A" battery. The red and black cable has two 3-prong plugs, both of which are plugged into the "B" batteries. It is optional which plug goes into either "B" battery.

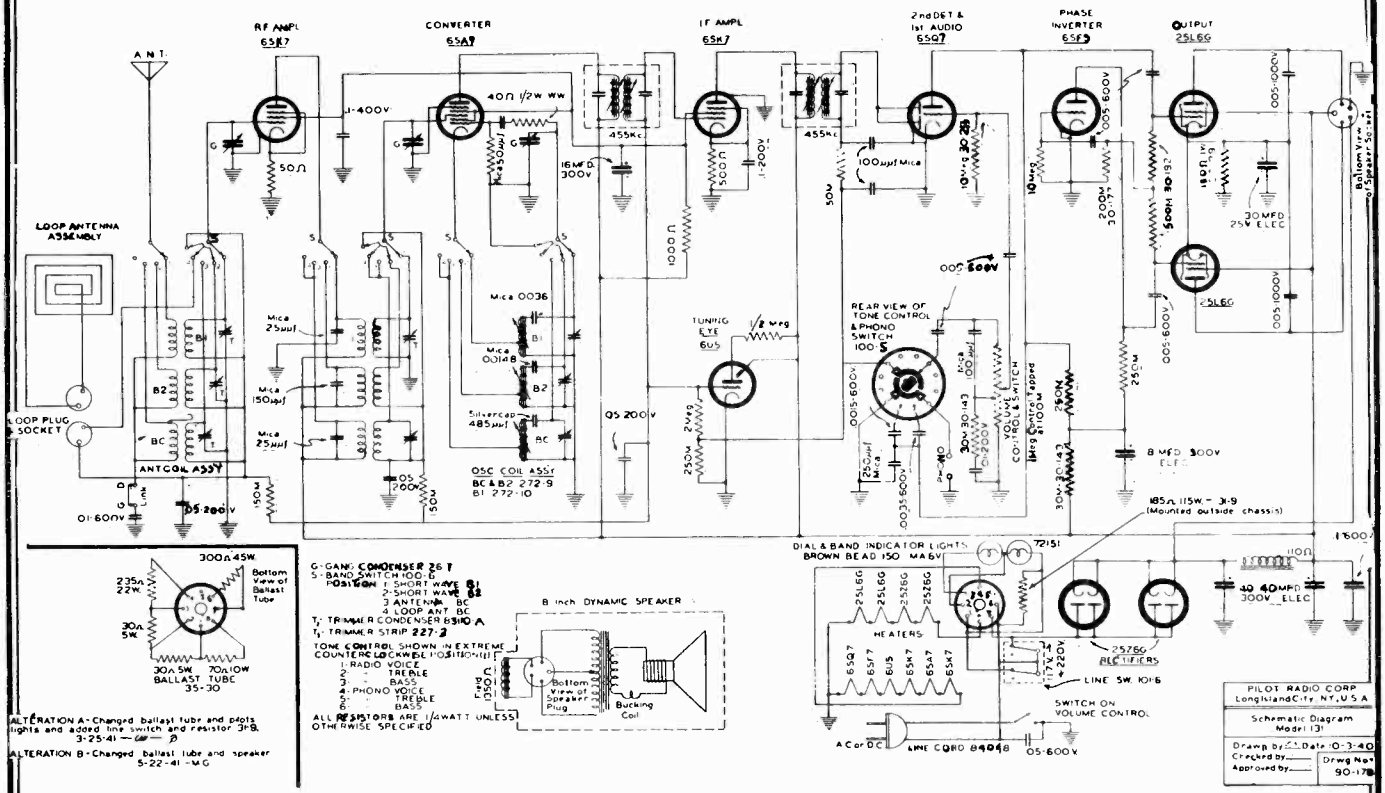
PILOT RADIO CORP.

MODELS T-131, T-135



MODEL X-131

PILOT RADIO CORP.



ALTERATION A-Changed ballast tube and pilots lights and added line switch and resistor 3-9. 3-25-41 — Car — P.

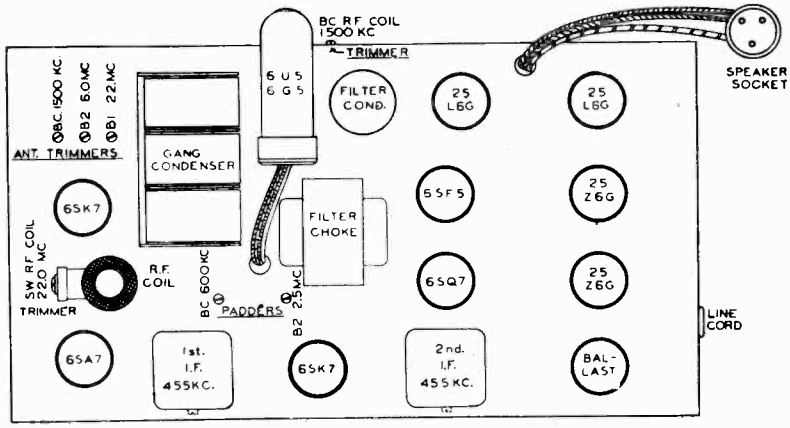
ALTERATION B-Changed ballast tube and speaker 5-22-41 - M.G.

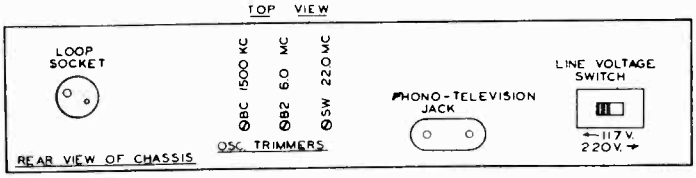
G-GANG CONDENSER 26 T
S-BAND SWITCH 100-S
POSITION 1-SHORT WAVE B1
2-SHORT WAVE B2
3-ANTENNA BC
4-LOOP ANT BC
T1-TRIMMER CONDENSER B3170 A
T2-TRIMMER STRIP 227-2

TONE CONTROL SHOWN ON EXTREME COUNTERCLOCKWISE POSITION
1-RADIO VOICE
2-TREBLE
3-BASS
4-PHONO VOICE
5-TREBLE
6-BASS

ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED

8 inch DYNAMIC SPEAKER





ANTENNA

This receiver contains the latest type of self-contained loop aerial and will give excellent results even in distant localities where the signal from the broadcasting stations are faint. However, it may be necessary to turn the cabinet toward the direction of the incoming signal (since most broadcasting stations use the directional antennas), for the best reception from that particular station. For short wave or distant broadcast band reception, the use of an external antenna is required.

When using a doublet antenna, connect one lead-in wire to terminal "A" at the rear of the chassis, and the other lead-in wire to terminal "D". Remove the connecting link from terminals "D" and "G" and connect terminal "G" to a ground such as a cold water pipe or radiator. If an ordinary single wire antenna is used, connect the lead-in wire to Terminal "A" on the rear of the chassis. Leave the link between "D" and "G" terminals and connect a ground wire under terminal "G".

POWER SUPPLY

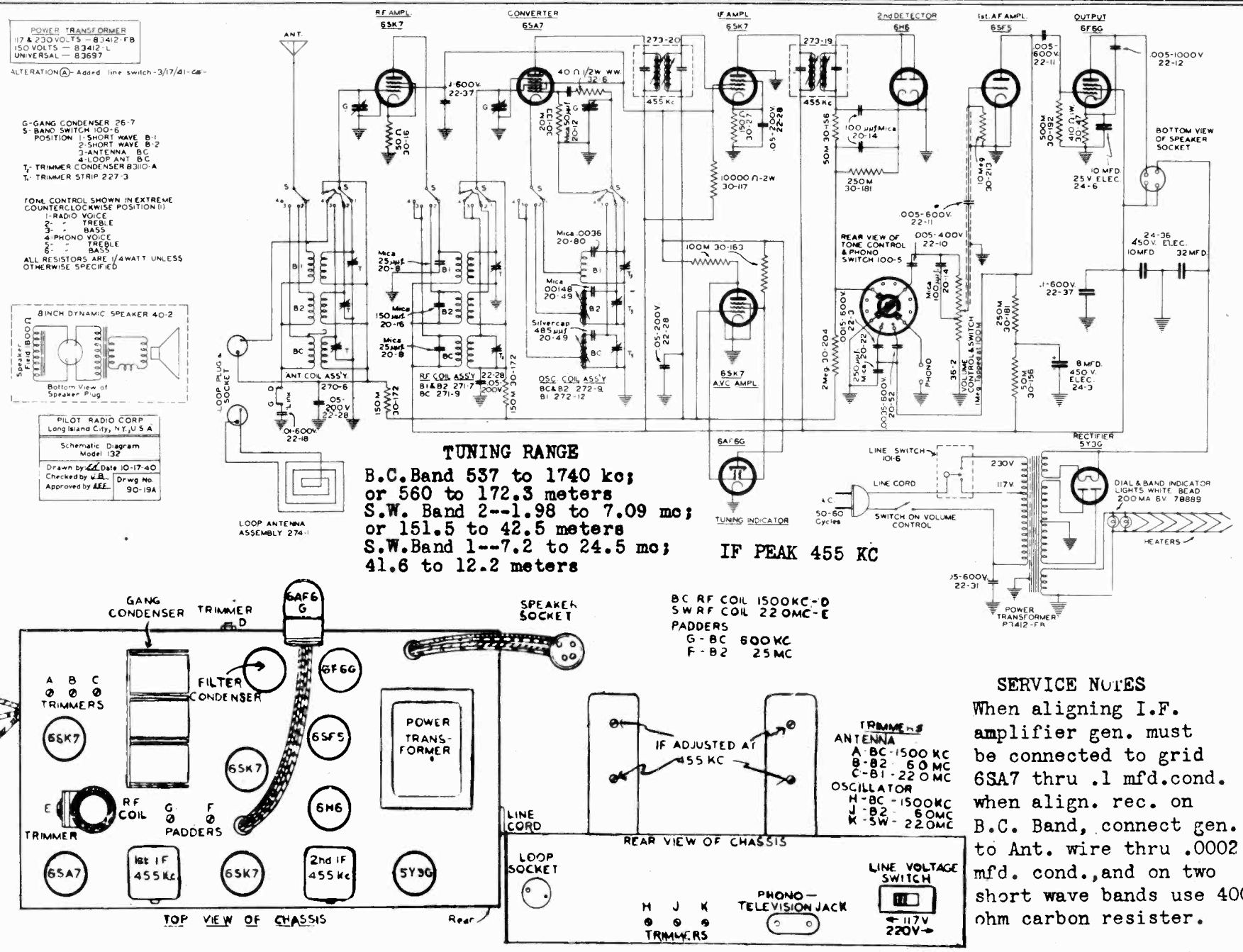
Rec. will operate on 105-125 v. or 200-240 v. as indicated on the locking plate, move switch to other position & replace plate. When operating on d.c., if rec. does not work 1 min. after turned on, reverse plug in light socket.

SERVICE NOTES

Location of adjustments in realigning receiver, and frequencies at which they are made are shown in accompanying diagram. When aligning I.F. amp. the gen. is connected to the grid of 6SA7 tube thru a .1 mfd cond. When aligning receiver on b.c. band, connect gen. to ant. wire thru a .0002 mfd cond. and on 2 s.w. bands use a 400-ohm carbon resistor.

TUNING RANGE

B.C. Band 537 to 1740 kc; or 560 to 172.3 meters
S.W. Band 2-1.98 to 7.09 mc; or 151.5 to 42.5 meters
S.W. Band 1-7.2 to 24.5 mc; 41.6 to 12.2 meters



SERVICE NOTES

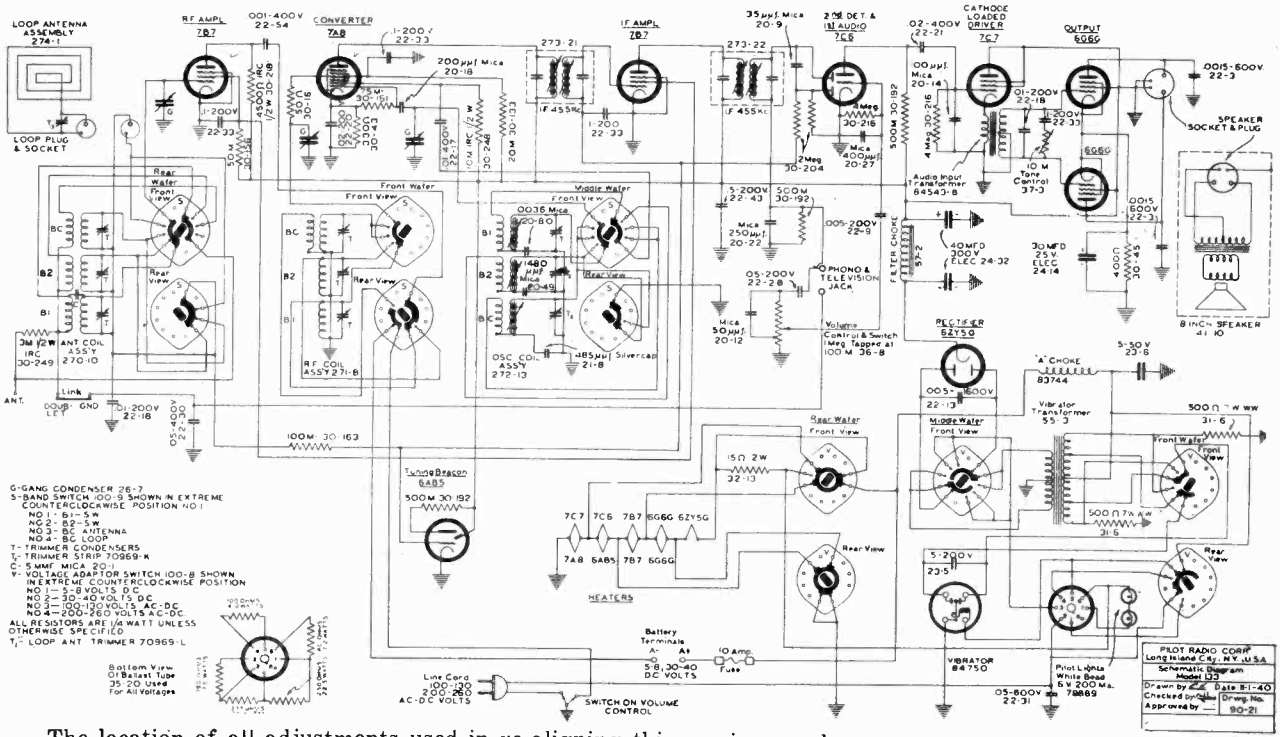
When aligning I.F. amplifier gen. must be connected to grid 6SA7 thru .1 mfd.cond. when align. rec. on B.C. Band, connect gen. to Ant. wire thru .0002 mfd. cond., and on two short wave bands use 40C ohm carbon resister.

PILOT RADIO CORP.

MODEL T-132

MODEL T-133

PILOT RADIO CORP.



G-GANG CONDENSER 26-7
S-BAND SWITCH 100-9 SHOWN IN EXTREME COUNTERCLOCKWISE POSITION NO 1
NO 1 - B1 - SW
NO 2 - B2 - SW
NO 3 - BC ANTENNA
NO 4 - BC LOOP
T - TRIMMER CONDENSERS
T_2 - TRIMMER STRIP 70969-K
C - 5 MMF MICA 20-1
V - VOLTAGE ADAPTOR SWITCH 100-8 SHOWN IN EXTREME COUNTERCLOCKWISE POSITION
NO 1 - 5-8 VOLTS D.C.
NO 2 - 30-40 VOLTS D.C.
NO 3 - 100-130 VOLTS AC-DC
NO 4 - 200-260 VOLTS AC-DC
ALL RESISTORS ARE 1/2 WATT UNLESS OTHERWISE SPECIFIED
T_1 - LOOP ANT. TRIMMER 70969-L

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 7A8 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the two short wave bands through a 400 ohm carbon resistor.

TUNING RANGE

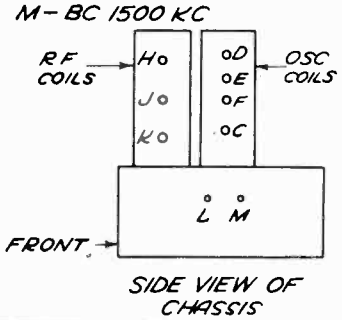
Broadcast Band 537 to 1740 kc; or 560 to 172.3 meters
Short Wave Band 2—1.98 to 7.09 mc; or 151.5 to 42.5 meters
Short Wave Band 1—7.2 to 24.5 mc; 41.6 to 12.2 meters

IF PEAK 455 KC

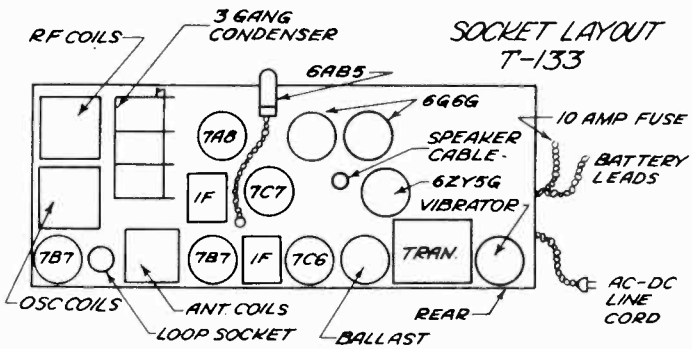
Model T-133 Receiver for

5- 8 Volt D.C.
30- 40 Volt D.C.
100-130 Volt A.C. D.C.
200-260 Volt A.C. D.C.

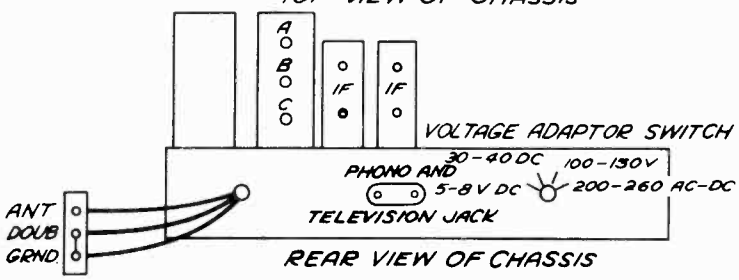
TRIMMERS
IF ADJUSTED TO 455 KC
ANTENNA:
A - BC 1300 KC
B - SW 60 MC
C - SW 220 MC
RF:
H - BC 1500 KC
J - SW 60 MC
K - SW 220 MC
OSCILLATOR:
D - BC PADDER 600 MC
E - SW PADDER 25 MC
F - SW 240 MC
G - SW 80 MC
L - SW 60 MC
M - BC 1500 KC



SIDE VIEW OF CHASSIS

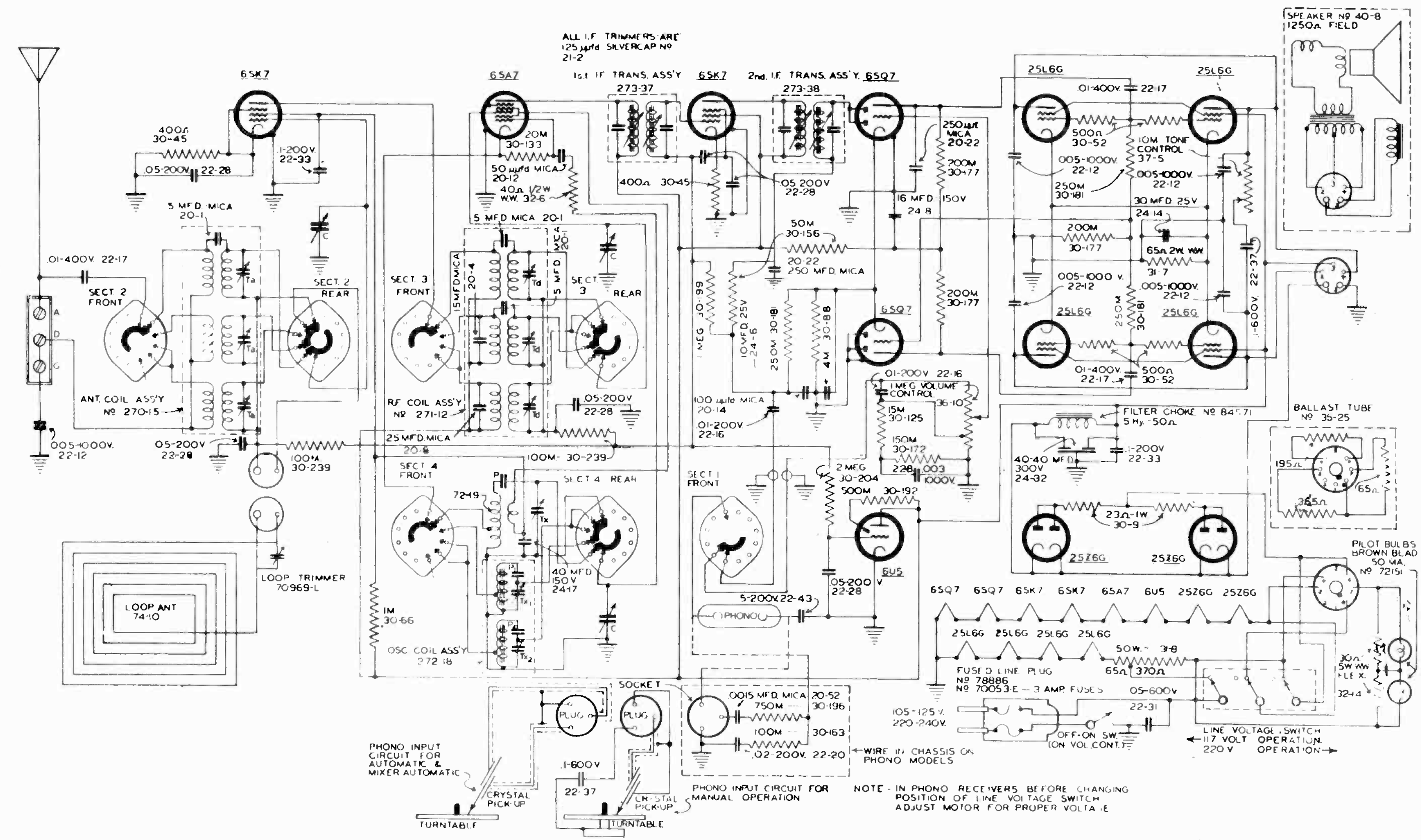


TOP VIEW OF CHASSIS



REAR VIEW OF CHASSIS

PILOT RADIO CORP.



TUNING RANGE

Broadcast Band 3:530 to 1770 kc; or 565.7 to 169.4 meters.

Short Wave Band 2:3.20 to 9.85 mc; or 93.69 to 30.44 meters.

Short Wave Band 1:8.85 to 29.0 mc; or 33.88 to 10.34 meters.

I.F. PEAK: 455 KC

C -	2640	3 GANG CONDENSER
P -	20-79	.00038 MFD MICA PADDER COND
P_1	20-53	.0016 " " " "
P_2	21-7	450 " SILVERCAP " "
T_a -	72283-A	ANTENNA TRIMMER "
T_d -	72283-A	DETECTOR "
T_x -	8310-B	OSCILLATOR " "
T_{x1} -	72283-A	" " "
T_{x2} -	72283-A	" " "

ALL RESISTORS 1/4 WATT UNLESS OTHERWISE SPECIFIED
M = THOUSANDS

BAND SWITCH VIEWED FROM FRONT OF CHASSIS, SHOWN IN SW-1 POSITION
BAND SWITCH Nº 100-14A.
I.F. FREQUENCY IS 455 KC

FOR OTHER DATA SEE INDEX

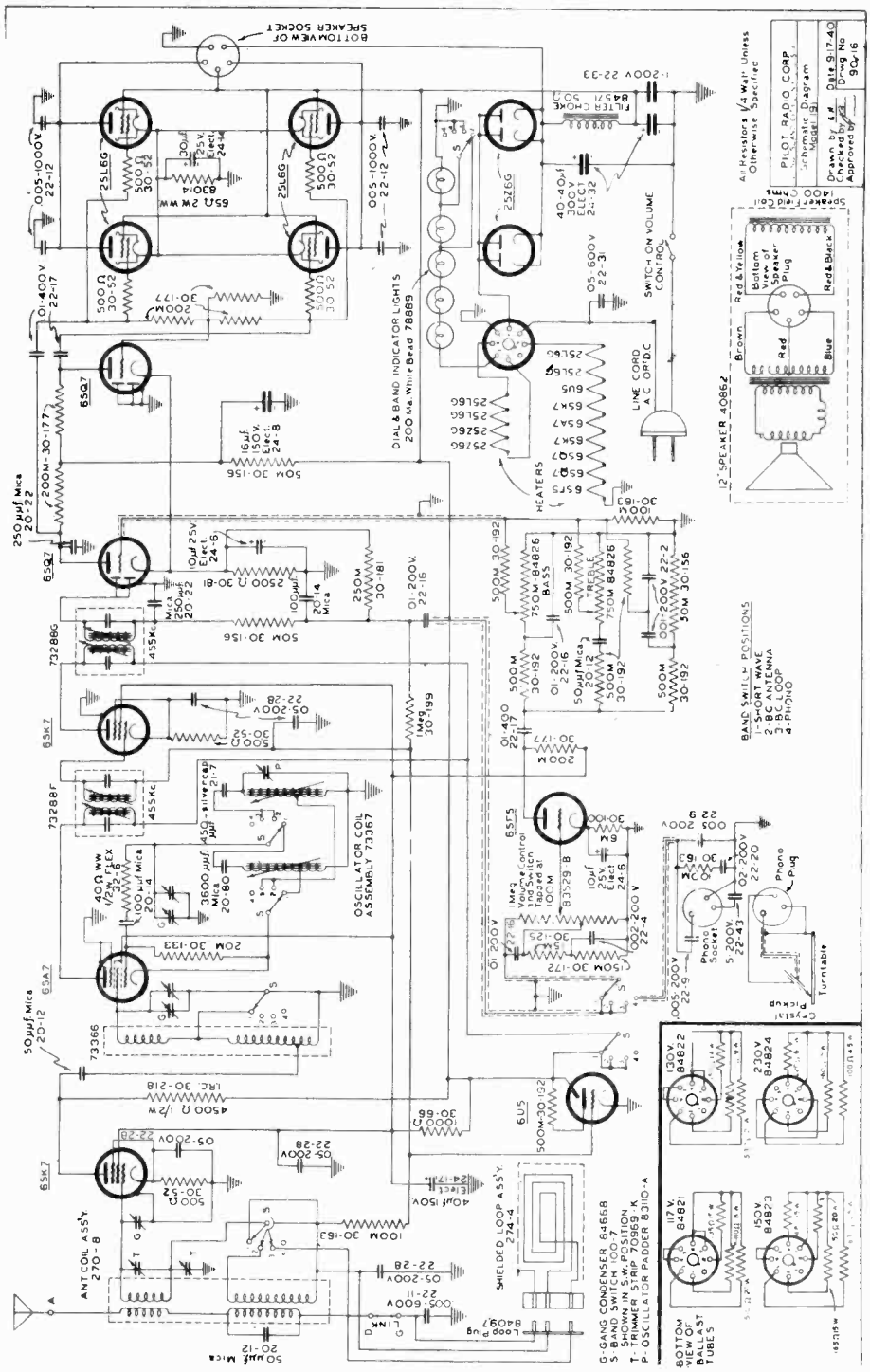
SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the two short wave bands use a 400 ohm carbon resistor.

MODELS 193,194
Late

PILOT RADIO CORP.



SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .002 mfd condenser, and on the two short wave bands use a 400 ohm carbon resistor.

TUNING-RANGE

BROADCAST-BAND

535 to 1720 kc.
or
561 to 174 meters

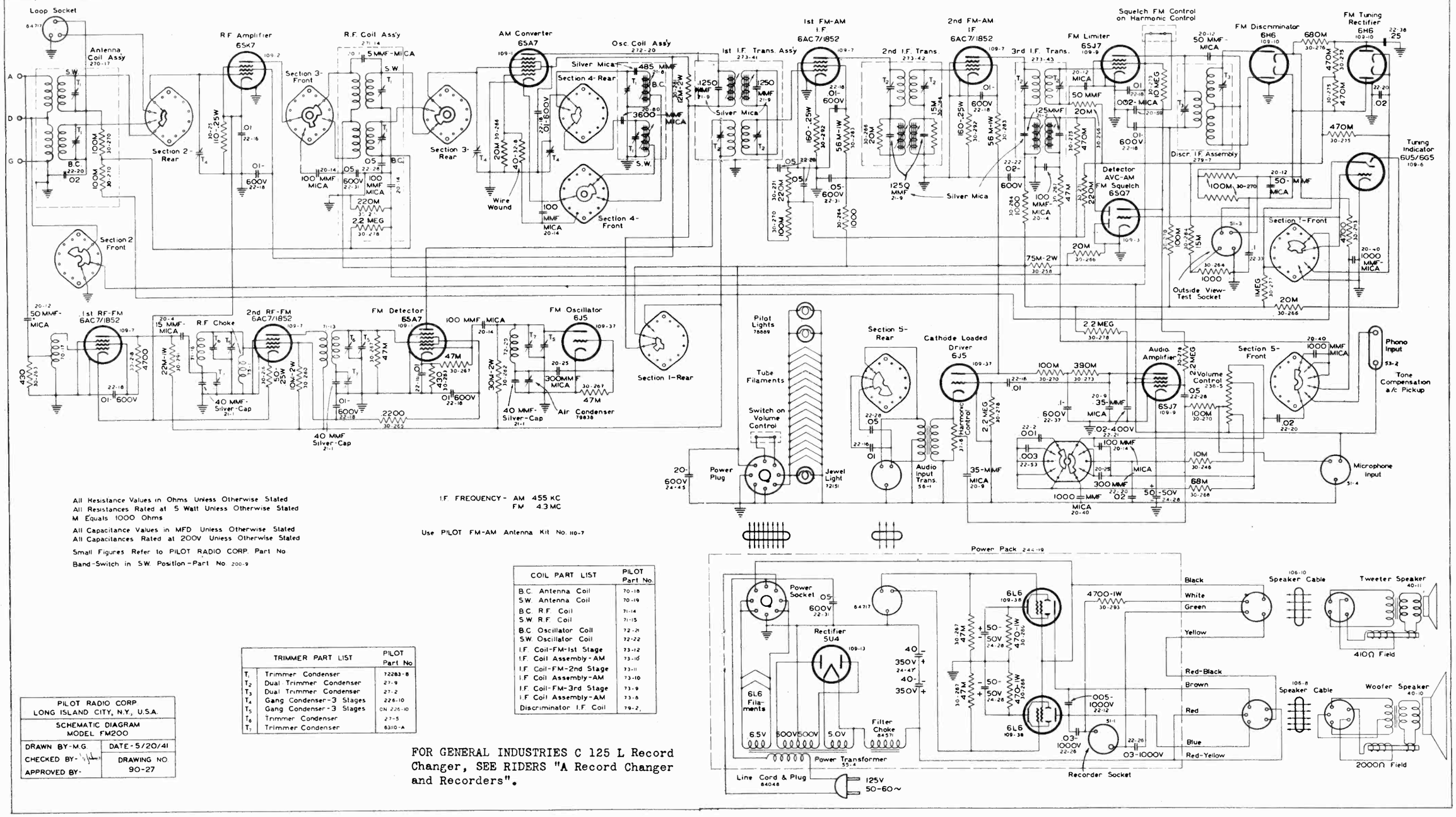
SHORT WAVE BAND

5-6 to 19.8 kc
or
53.6 to 15.2
meters

- - - - - - - - -

This pilot Super-heterodyne Receiver has 12 tubes and a Cathode Ray Tuning Beacon, and operates on either an alternating or Direct Current power supply.

PILOT RADIO CORP.



All Resistance Values in Ohms Unless Otherwise Stated
All Resistances Rated at 5 Watt Unless Otherwise Stated
M Equals 1000 Ohms

All Capacitance Values in MFD Unless Otherwise Stated
All Capacitances Rated at 200V Unless Otherwise Stated

Small Figures Refer to PILOT RADIO CORP. Part No.

Band-Switch in S.W. Position-Part No. 200-9

I.F. FREQUENCY- AM 455 KC
FM 4.3 MC

Use PILOT FM-AM Antenna Kit No. 110-7

COIL PART LIST	PILOT Part No.
B.C. Antenna Coil	70-18
S.W. Antenna Coil	70-19
B.C. R.F. Coil	71-14
S.W. R.F. Coil	71-15
B.C. Oscillator Coil	72-21
S.W. Oscillator Coil	72-22
I.F. Coil-FM-1st Stage	73-12
I.F. Coil Assembly-AM	73-16
I.F. Coil-FM-2nd Stage	73-11
I.F. Coil Assembly-AM	73-10
I.F. Coil-FM-3rd Stage	73-9
I.F. Coil Assembly-AM	73-8
Discriminator I.F. Coil	79-2

TRIMMER PART LIST		PILOT Part No.
T_1	Trimmer Condenser	72283-B
T_2	Dual Trimmer Condenser	27-9
T_3	Dual Trimmer Condenser	27-2
T_4	Gang Condenser-3 Stages	226-10
T_5	Gang Condenser-3 Stages	ON 226-10
T_6	Trimmer Condenser	27-5
T_7	Trimmer Condenser	63110-A

PILOT RADIO CORP LONG ISLAND CITY, N.Y., U.S.A.	
SCHEMATIC DIAGRAM MODEL FM200	
DRAWN BY-M.G.	DATE-5/20/41
CHECKED BY-	DRAWING NO. 90-27
APPROVED BY-	

FOR GENERAL INDUSTRIES C 125 L Record Changer, SEE RIDERS "A Record Changer and Recorders".

SPECIFICATIONS

Voltage Rating - 110-125 volts, 50-60 cycles AC

Combination Frequency Modulated and Broadcast and shortwave amplitude modulated receiver - provision for microphone and phono pickup or television converter provided.

NUMBER OF TUBES AND TYPES

FM -	RF #1	- 6AC7/1852
FM -	RF #2	- 6AC7/1852
FM -	detector	- 6SA7
FM -	oscillator	- 6J5
AM -	RF	- 6SK7
AM -	converter	- 6SA7
FM-AM	1st I.F. 4.3 mc - 455 kc	- 6AC7/1852
FM-AM	2nd I.F. 4.3 mc - 455 kc	- 6AC7/1852
FM -	4.3 limiter	- 6SJ7
FM -	detector	- 6H6
FM -	tuning rectifier	- 6H6
AM -	detector & FM QAVC	- 6SQ7
FM-AM	Voltage Amplifier	- 6SJ7
FM-AM	Cathode loaded driver	- 6J5
FM-AM	Push Pull AB2 amp.	- 6L6
FM-AM	" " " "	- 6L6
Rectifier		- 5U4G
Tuning Beacon		- 6U5/6G5

FEATURES

This Pilot dual superheterodyne using two tuned R.F. stages for FM and one tuned R.F. for AM, provides static-free full-fidelity reception by the Armstrong wide-band Frequency Modulated system as well as superior reception of the AM broadcast and shortwave bands. One dial and one set of controls are used for all services. Five controls are provided from left to right; they are:

1. The volume control with low-level bass and treble compensation.

2. Tone Color control which provides adjustable bass and treble compensation at higher audio levels. The knob for the tone color control operates a pointer which indicates on the dial scale the tone color positions, which are:

   a. Bass - This position provides a high bass & lowered treble tone
   b. Music - high bass & high treble tone
   c. Voice - lowered bass & lowered treble tone
   d. Treble - lowered bass & high treble tone

The amount of bass and treble compensation increases as the volume is lowered in order to retain the balance of tones so often lost at lower volumes. This is done to compensate for the audio discrimination effect of the average human hearing system which varies with sound intensity and tone.

Individual tastes and programs as well as the location of the receiver will require different settings of the Tone Color Control for maximum pleasantness of reception. This should be used in conjunction with

3. The Harmonic Control & QAVC switch: This control provides a very sharp cut-off of the higher audio frequencies and operates in an inverse feed-back circuit.

It will usually be desirable to keep this control at less than maximum setting when listening to recorded and live programs on AM and phono. It's effect can readily be realized on an FM studio program where maximum setting permits music instruments to be easily recognized. For such service, it will be found that reducing the harmonics will tend to cause, violins and saxaphones, for example, to sound similar - both being capable of making the same fundamental tones. The harmonics which distinguish the various instruments can be regulated by this control.

It must be remembered that unwanted hiss, etc., due to records should be removed with this control, the setting depending upon the quality of the record, the better quality records permitting a wider range of audio frequencies.

Rotating the harmonic control to the extreme left until a click is heard cuts out the QAVC on F.M. and this position is meant to be used on very weak F.M. signals. These must be tuned very carefully as the tuning beacon cannot function properly on very small signals. The higher harmonics are automatically removed in order to reduce external noises introduced with extremely low signals. The tuning buttons should not be set on any station which can only be received without the QAVC.

4. Band Selector: This control selects the type of service desired. The knob for the Band Selector operates a pointer which indicates on the dial scale the Band Selector positions which are:

   a. Short Wave - A.M.
   b. Broadcast A.M. external Antenna
   c. Broadcast A.M. internal loop antenna
   d. F.M. external antenna
   e. Phono-Television accessories

In the phono-models the phono pickup is built in and connected in this position.

A Television adapter connected to the pin-jacks provided at the rear of the chassis will permit the user to use the same high quality audio system and dual loudspeakers for Television Sound, and this can be controlled with the Service Selector.

5. Tuning Control: This control operates the FM-AM, broadcast and shortwave, and should be rotated very carefully to provide maximum reception. Careless tuning will not permit the automatic volume control to function properly and distortion and poor tone will result.

OPERATION OF PUSHBUTTONS

This set is provided with eight push buttons which mechanically operate the dual 3-gang tuning condenser. These may be set on AM and FM in any combination, that is, 5 for AM, 3 for FM, etc.

To set up these buttons pull off the bakelite caps and loosen the locking screw. Tune in the stations with the tuning knob and push the flat piece of the control all the way in. Then tighten the locking screw. A careful check with the tuning eye should immediately ascertain the exactness of the setting. An identifying station tab should then be inserted above the button in the space provided. It is easily possible to set up the buttons on AM or FM in this manner and extra care used in their set-up will amply reward the listener.

On very weak signals it may be necessary to retune the station very slightly with the tuning knob - It is recommended, however, that the left buttons be set on AM locals and the right buttons be set on FM locals.

Slight misadjustments due to continuous use will cause little effect on the tone as this FM-AM I.F. system is expressly designed for push-button use.

ANTENNA

A good antenna system cannot be overemphasized and should the receiver be used in the locality of any vertically polarized FM transmitter, best reception from that station at a slight sacrifice of the reception of the usual horizontally polarized transmitters can be secured by tilting the dipole to about a 45° angle. The whole array should then be rotated for best average reception of all the local stations.

Maximum pickup from a given transmitter is usually secured when the broadside of the dipole antenna faces the transmitter and is in line of sight of said transmitter.

The Pilot FM-AM antenna, #110-7, is recommended for use with this receiver. This antenna is shipped in Kit form and consists of a dipole with supporting mast, shielded transmission line, and special couplers at both ends of the transmission line, which provide automatically for operation on either the FM or AM bands. Detailed instructions are furnished with the antenna.

SERVICE NOTES

This receiver has been correctly aligned at the factory and no further adjustments to either the trimmers or iron cores is recommended.

The minimum requirements for satisfactory adjustment of the trimmers, etc. are:

1. 0 to 1 milliampere meter, preferably with an extra 5 milliampere shunt resistor.
2. Zero center. 0 to 200 microamperes galvanometer and two 100,000 ohm resistors.
3. Rectifier type output meter of approximately 0 to 2 volts R.M.S.
4. 65 ohm FM dummy antenna
   400 ohm shortwave dummy antenna
   200 mmfd. AM dummy antenna
   .1 mfd. I.F. dummy

5. Accurately calibrated signal generator capable of supplying 0.5 to 100,000 microvolts at the following frequencies, which constitute the order for adjusting and balancing the receiver:

   a. 455 kc — I.F.'s and wave trap
   b. 4.3 mc — I.F.'s and discriminator
   c. 600 kc — oscillator
   d. 1500 kc — antenna, R.F. and osc. and loop
   e. 600 kc — osc. rock-in
   f. 1500 kc — osc.
   g. 6 mc — osc.
   h. 18 mc — osc.
   i. 15 mc — ant. R.F.
   j. 43 mc — osc. 2nd R.F. & 1st R.F.
   k. 48 mc — osc. 2nd R.F. & 1st R.F.
   L. repeat 43 & 48 mc adjustments and slightly rock-in variable

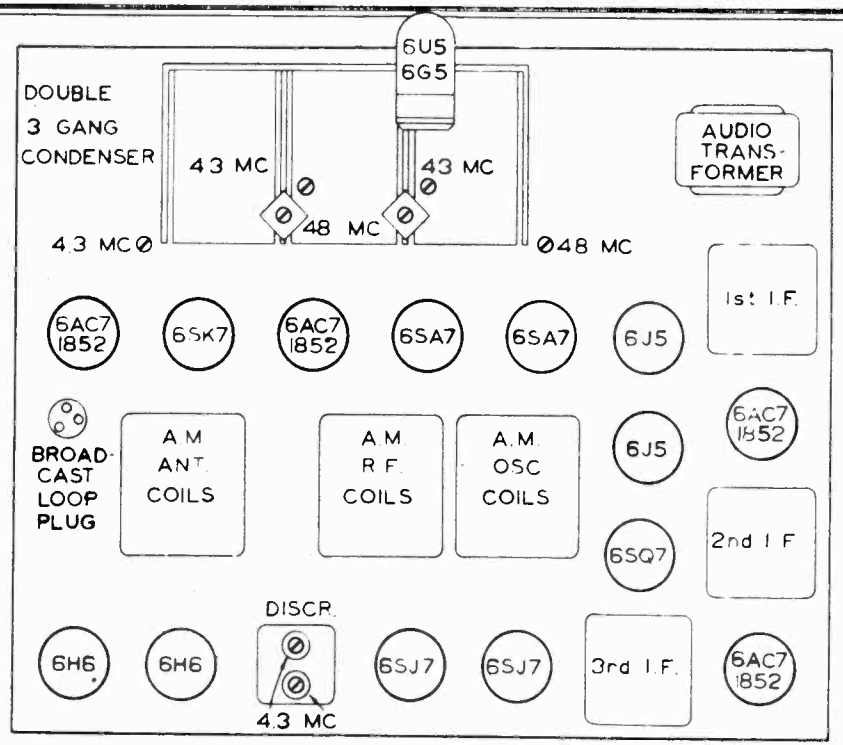
The antenna circuit has no adjustments for FM and is expressly designed for the Pilot FM-AM dipole antenna #110-7.

The zero center galvanometer is used to set the discriminator secondary trimmer and the FM oscillator trimmer and padder.

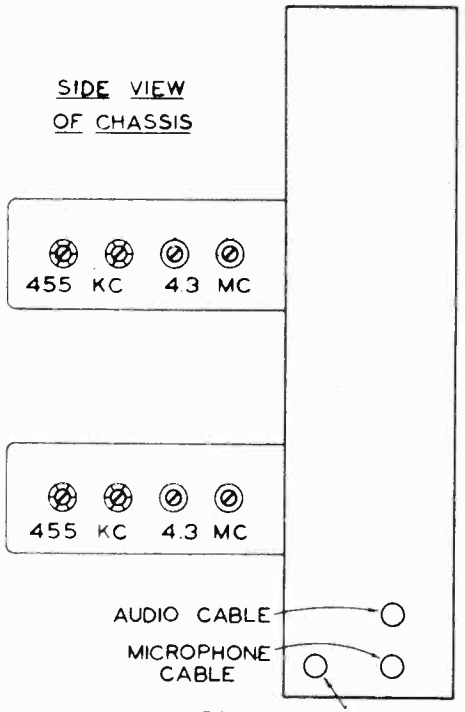
The 0 to 1 milliampere meter for 4.3 mc I.F.& FM R.F. trimmers and padders.

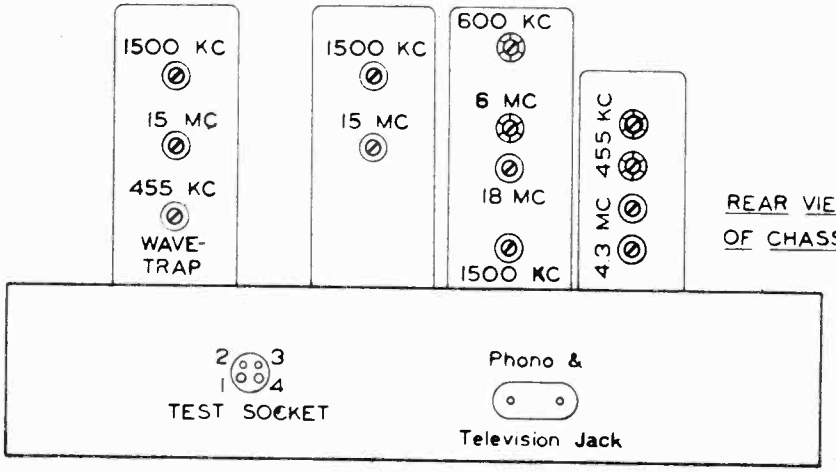
The AC output meter across the voice coil and only for A.M. adjustments.

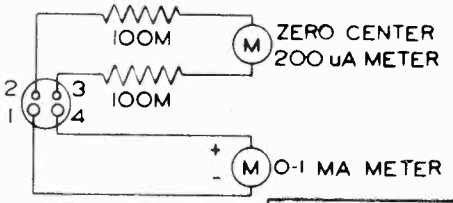
The volume control should be on full for all final AM adjustments.



TOP VIEW OF CHASSIS







TEST CIRCUIT

PILOT RADIO CORPORATION
LONG ISLAND CITY N Y U S A
TRIMMER LAYOUT
Date 4-19-41
Dwg. No. 91-22

TUNING RANGE

FM: 41.8 to 50.3 mc

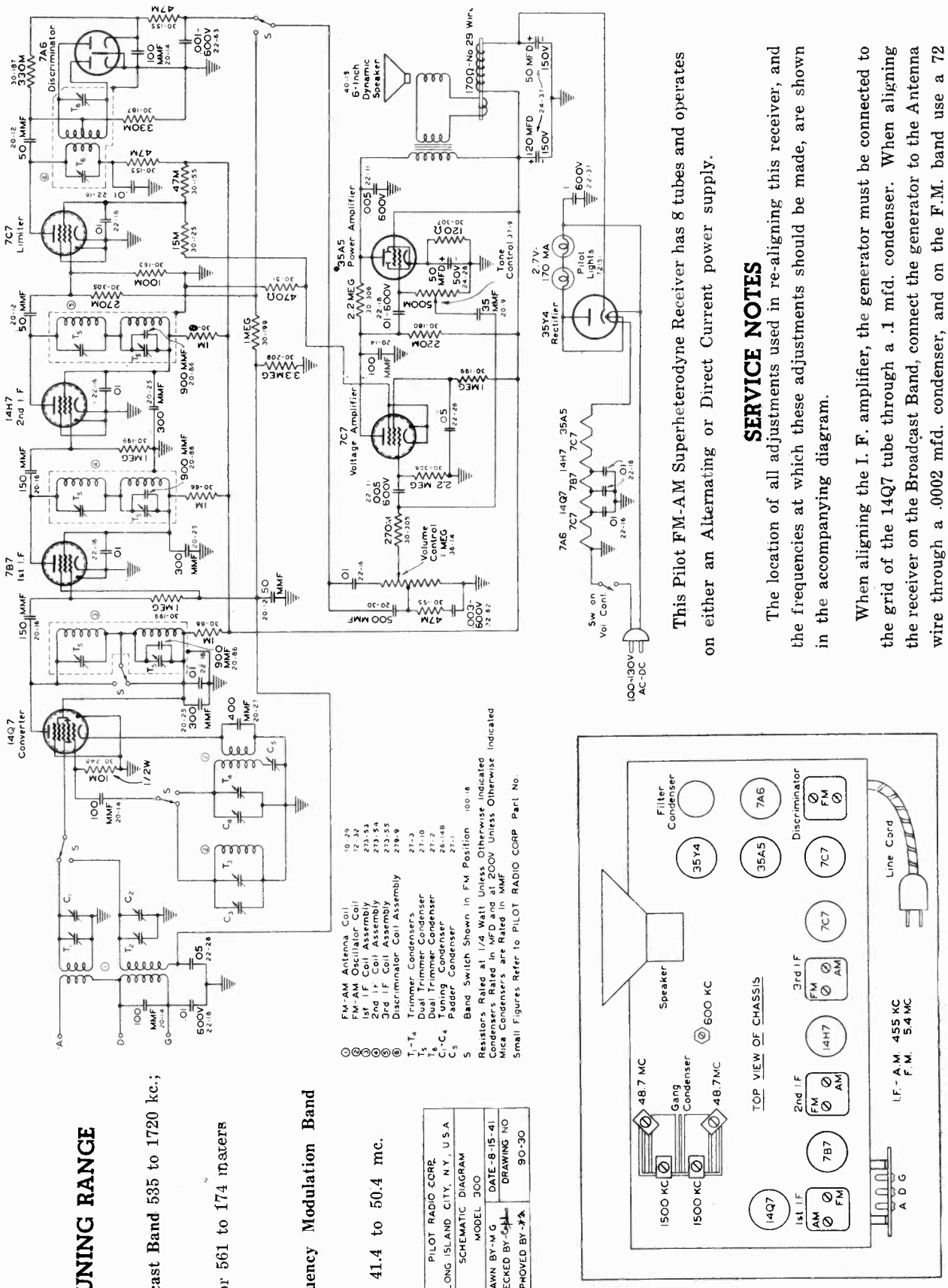
AM: Broadcast - 535 to 1720 kc or 561 to 174 m.
Shortwave - 5.6 to 19.8 mc or 53.6 to 15.2 m.

PILOT RADIO CORP.

MODEL FM-200

MODEL 300

PILOT RADIO CORP.



TUNING RANGE

Broadcast Band 535 to 1720 kc.;

or 561 to 174 meters

Frequency Modulation Band

41.4 to 50.4 mc.

This Pilot FM-AM Superheterodyne Receiver has 8 tubes and operates on either an Alternating or Direct Current power supply.

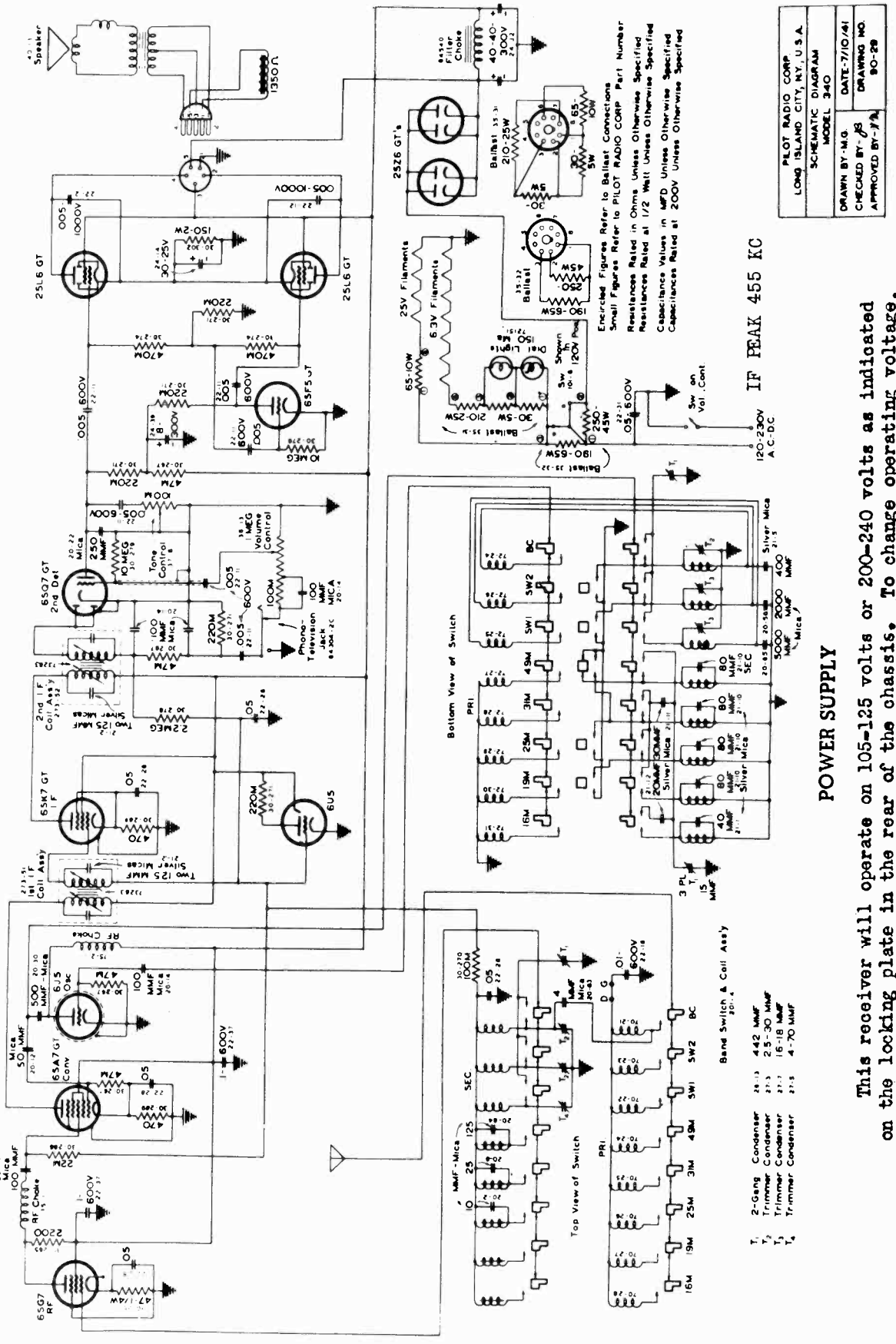
SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 14Q7 tube through a .1 mfd. condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd. condenser, and on the F.M. band use a 72 ohm carbon resistor.

MODEL 340

PILOT RADIO CORP.



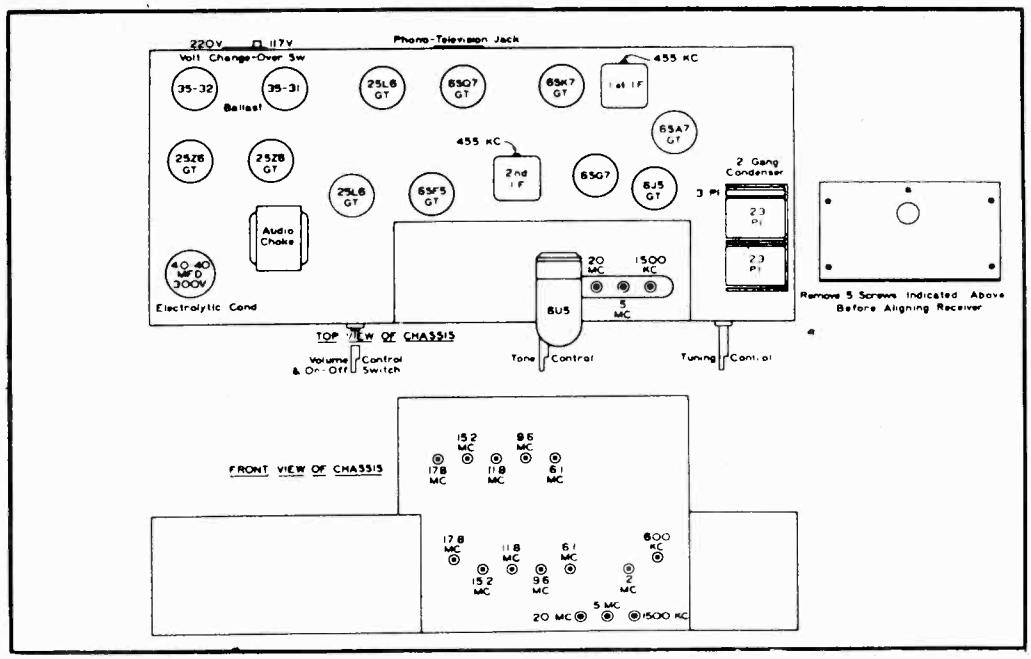
POWER SUPPLY

This receiver will operate on 105-125 volts or 200-240 volts as indicated on the locking plate in the rear of the chassis. To change operating voltage, remove locking plate, move switch to other position and replace plate.

When operating on direct current, if the receiver does not work about one minute after being turned on, reverse the plug in the light socket.

MODEL 340

PILOT RADIO CORP.



When aligning the I.F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the seven short wave bands through a 400 ohm carbon resistor.

In general it is not recommended to re-align the bandspread coils unless it is definitely necessary. If re-aligning is found to be necessary, take off the dial pan be removing the five screws, as indicated on the diagram.

First adjust the oscillator iron core to make the pointer correspond with the calibration mark. Then adjust the antenna iron core for maximum output. The signal generator must be accurate within 5 kc on each band, and the use of a calibrating crystal oscillator is recommended. Otherwise a broadcast signal of known frequency may be used.

In this receiver the oscillator frequency is higher than the signal frequency on the broadcast band and lower on the seven other bands.

This Pilot Superheterodyne Receiver has 10 tubes and a Cathode Ray Tuning Beacon, and operates on either an Alternating or Direct Current power supply.

A.C.-D.C. Receiver

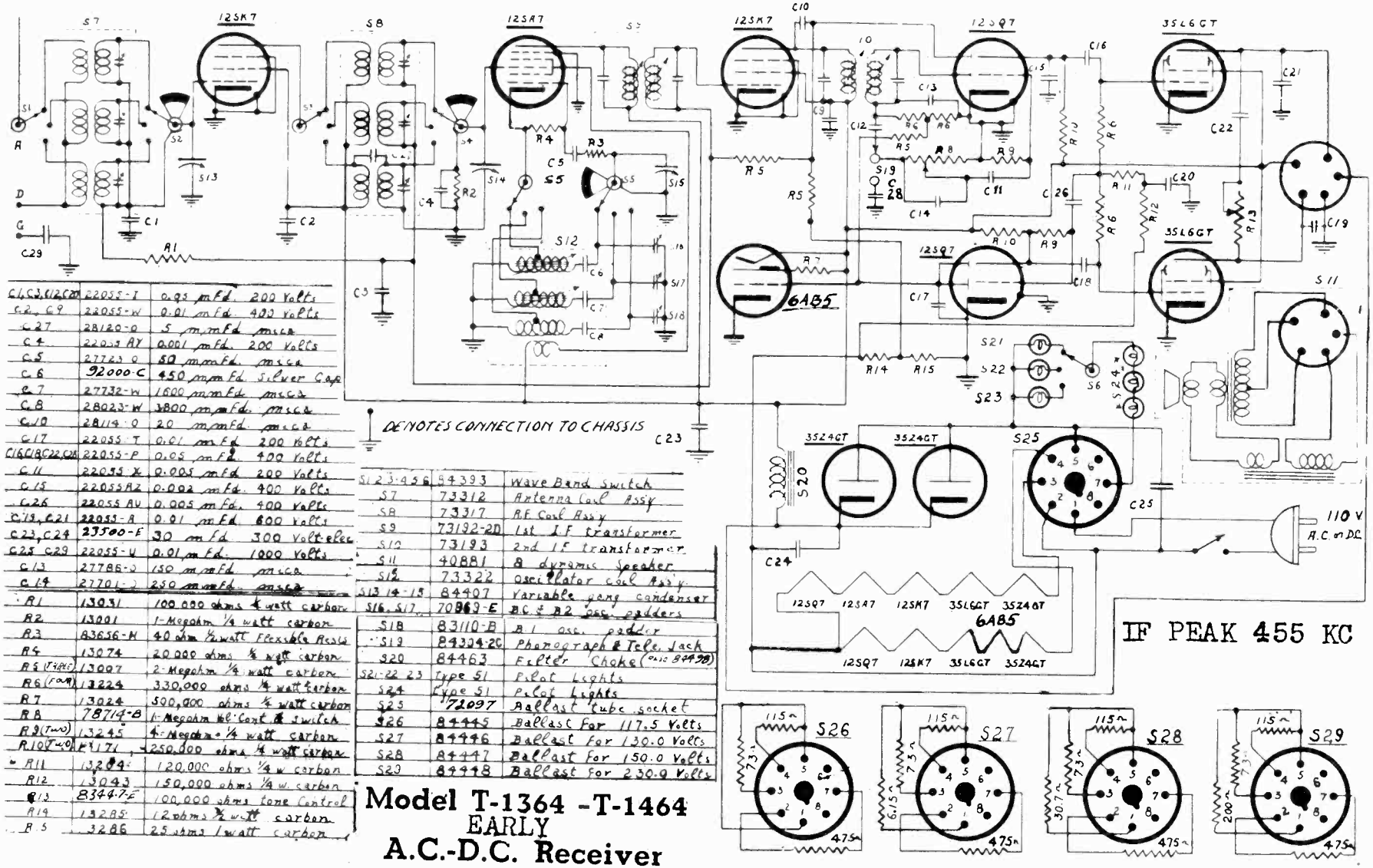
TUNING RANGE

Broadcast Band	-	535 to 1730 kc or 560 to 173 meters
Short Wave Band 2	-	1.75 to 5.85 mc or 171 to 51 meters
Short Wave Band 1	-	7.0 to 22.0 mc or 43 to 13.6 meters
49 meter Band	-	5.9 to 6.22 mc.
31 meter Band	-	9.5 to 9.7 mc.
25 meter Band	-	11.68 to 11.92 mc.
19 meter Band	-	15.06 to 15.38 mc.
16 meter Band	-	17.62 to 17.98 mc.

The location of all adjustments used in re-aligning this receiver, and the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

PILOT RADIO CORP.

MODELS T-1364, T-1464
Early



C1,C2,C12,C28	22055-J	0.05 mfd. 200 Volts
C3, C9	22055-W	0.01 mfd. 400 Volts
C27	28120-0	5 mmfd. mica
C4	22053 AY	0.001 mfd. 200 Volts
C5	27723 0	50 mmfd. mica
C6	92000-C	450 mmfd. Silver Cap
C7	27732-W	1600 mmfd. mica
C8	28023-W	3800 mmfd. mica
C10	28114 0	20 mmfd. mica
C17	22055 T	0.01 mfd. 200 Volts
C16,C18,C22,C26	22055-P	0.05 mfd. 400 Volts
C11	22055 X	0.005 mfd. 200 Volts
C15	22055 AZ	0.002 mfd. 400 Volts
C26	22055 AV	0.005 mfd. 400 Volts
C19, C21	22055-A	0.01 mfd. 600 Volts
C23, C24	23500-E	30 mfd. 300 Volt elec.
C25 C29	22055-V	0.01 mfd. 1000 Volts
C13	27786-2	150 mmfd. mica
C14	27701-2	250 mmfd. mica
R1	13031	100,000 ohms ½ watt carbon
R2	13001	1-Megohm ½ watt carbon
R3	83656-H	40 ohm ½ watt Flexible Resis
R4	13074	20,000 ohms ½ watt carbon
R5 (Triple)	13007	2-Megohm ½ watt carbon
R6 (Comp)	13224	330,000 ohms ½ watt carbon
R7	13024	500,000 ohms ½ watt carbon
R8	78714-B	1-Megohm Vol. Cont. & Switch
R9 (Two)	13245	4-Megohm ½ watt carbon
R10 (Two)	13171	250,000 ohms ½ watt carbon
R11	13284	120,000 ohms ½ w carbon
R12	13043	150,000 ohms ½ w. carbon
R13	8344-F	100,000 ohms Tone Control
R14	13285	12 ohms ½ watt carbon
R15	3286	25 ohms 1 watt carbon

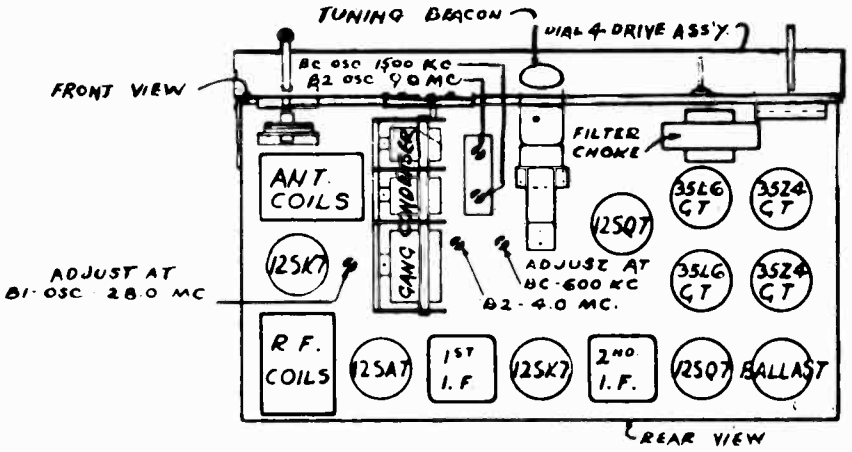
S1,2,3,4,5,6	84393	Wave Band Switch
S7	73312	Antenna Coil Assy
S8	73317	R.F. Coil Assy
S9	73192-2D	1st I.F. transformer
S10	73193	2nd I.F. transformer
S11	40881	8 dynamic Speaker
S12	73322	Oscillator Coil Assy.
S13,14,15	84407	Variable gang condenser
S16, S17,	70869-E	B.C. & B2 pad. padders
S18	83110-B	B.1 osc. padder
S19	84324-2C	Phonograph & Tele. Jack
S20	84463	Filter Choke (also 84438)
S21-22-23	Type 51	Pilot Lights
S24	Type 51	Pilot Lights
S25	72097	Ballast tube socket
S26	84445	Ballast for 117.5 Volts
S27	84446	Ballast for 130.0 Volts
S28	84447	Ballast for 150.0 Volts
S29	84448	Ballast for 230.0 Volts

Model T-1364 -T-1464
EARLY
A.C.-D.C. Receiver

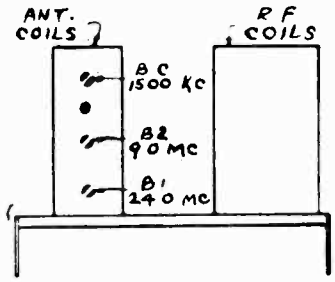
Models 1364, T-1464
Early
Model 1424 Series

PILOT RADIO CORP.

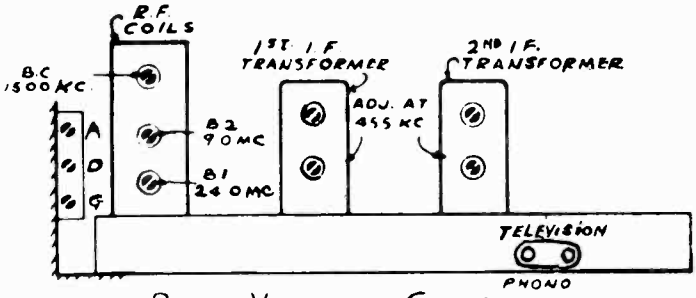
For other data
See index.



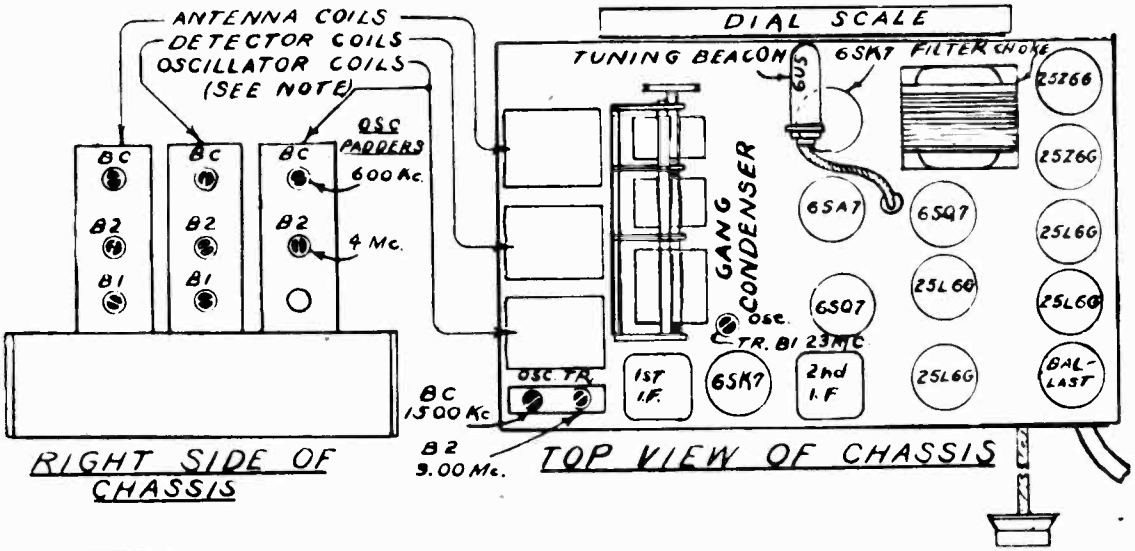
TOP VIEW OF CHASSIS



LEFT SIDE OF CHASSIS

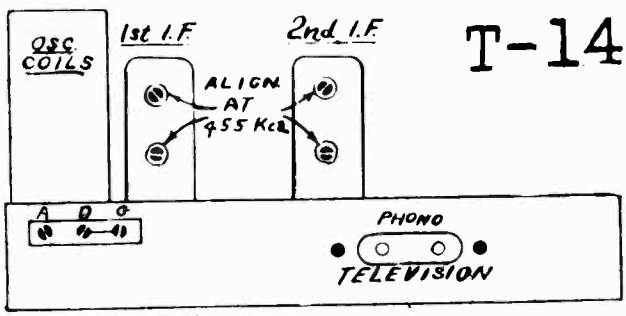


REAR VIEW OF CHASSIS



RIGHT SIDE OF CHASSIS

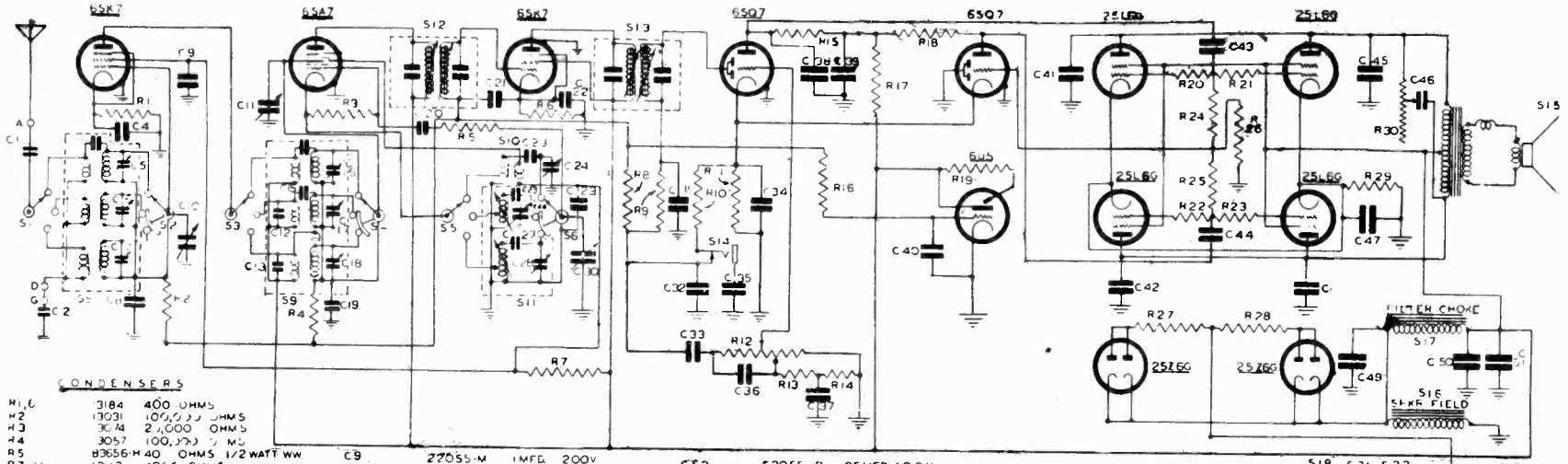
TOP VIEW OF CHASSIS



REAR VIEW OF CHASSIS

T-1424

NOTE
ALIGN ON ANT. & DET.
BC at 1500 Kc.
B2 at 9.00 Mc.
B1 at 23.00 Mc.



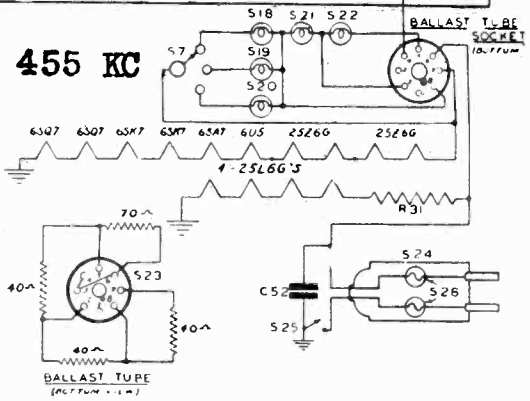
CONDENSERS

R1,6	13184	400 OHMS	
R2	13031	100,000 OHMS	
R3	3074	2,000 OHMS	
R4	3057	100,000 OHMS	
R5	83656-H	40 OHMS 1/2 WATT WW	
R7,11	13113	4000 OHMS	
R8	13001	1 MEGOHM	
R9,17	13164	50,000 OHMS	
R10,24,25	13171	250,000 OHMS	
R12	83529	1 MEGOHM VOL CONTROL	
R13	13117	15,000 OHMS	
R14	13043	150,000 OHMS	
R15,18,22	13191	200,000 OHMS	
R16	13007	2 MEGOHMS	
R19	13024	500,000 OHMS	
R20,21,22,23	13012	500 OHMS	
R27,28	13168	23 OHMS 1 WATT	
R29	83014	65 OHMS 2 WATT VITREOUS	
R30	79209	10,000 OHM TONE CONTROL	
R31	83038	50 OHM 10 WATT VITREOUS	
ALL RESISTORS ARE 1/4 WATT UNLESS OTHERWISE SPECIFIED			
C1,43,44	22055-W	.01 MFD. 400 V.	
C2A1,42	22055-R	.005 MFD. 1000V	
C3,14,15	28121-0	5 MMFD MICA	
C4,8,19	22055-1	.05 MFD. 200 V.	
C5,6, 7		ANTENNA TRIMMERS	
C9	22055-M	1MFD. 200V	
C10,11,30	84416	3 GANG CONDENSER	
C12	28101	15 MMFD MICA	
C13	27736	25MMFD MICA	
C16,17,18		DETECTOR TRIMMERS	
C20	27723-Q	50 MMFD. MICA	
C21,22,40	22055-1	.05 MFD. 200 V	
C23	28023-W	.0038 MFD. MICA	
C24	83110-B	OSCILLATOR TRIMMER	
C25	27732	.0016MFD. MICA	
C27	92000-C	450 MMFD SILVER-CAP	
C29	23500-JX	40 MFD. 150 WV ELEC.	
C31, 38	27701	250 MMFD MICA	
C32	28016-Q	100 MMFD. MICA	
C33, 36	22055-T	.01 MFD. 200 V.	
C34	23500-B	10 MFD. 25 WV ELEC.	
C35	22055-S	.5 MFD. 200 V.	
C37	22055-AR	.003 MFD. 1000V.	
C39	23500-A	16 MFD. 150 WV.	
C45, 48	22055-R	.005 MFD. 1000 V.	
C46	22055-AB	1 MFD. 600V.	
C47	23500-G	30 MFD. 25 WV. ELEC.	
C49, 50	23600-B	40-40 MFD. 300 V. ELEC.	
C51	22055-M	.1 MFD. 200V.	
C52	22055-P	.05MFD.400V. TRIMMER ASSY	
C26, 28			

MISCELLANEOUS

S1 TO 7	84393-B	HAND SWITCH
S8	73312-C	ANT COIL & CAN ASSY
S9	73317-C	DET COIL & CAN ASSY
S10	73324-B	BI OSCILLATOR COIL ASSY
S11	73344	BC & BI OSC COIL ASSY
S12	73192-2U	1st I.F TRANSFORMER ASSY
S13	73193	2nd I.F. TRANSFORMER ASSY
S14	54304-C	PHONO & TELEVISION JACK
S15 16	40861	10 inch SPEAKER 1400 OHMS
S17	84571	FILTER CHOKE 5 Henrys 50MA
S18,19,20	71282	.25AMP PILOT LAMP BLUE BEAD
S21,22	72151	.15AMP PILOT LAMP BROWN BEAD
S23	R1973	117 VOLT BALLAST TUBE
S24	78886	FUSED LINE PLUG
S25	R3523	SWITCH-VOLUME CONTROL
S26	70053-E	3 AMP FUSES

IF PEAK 455 KC

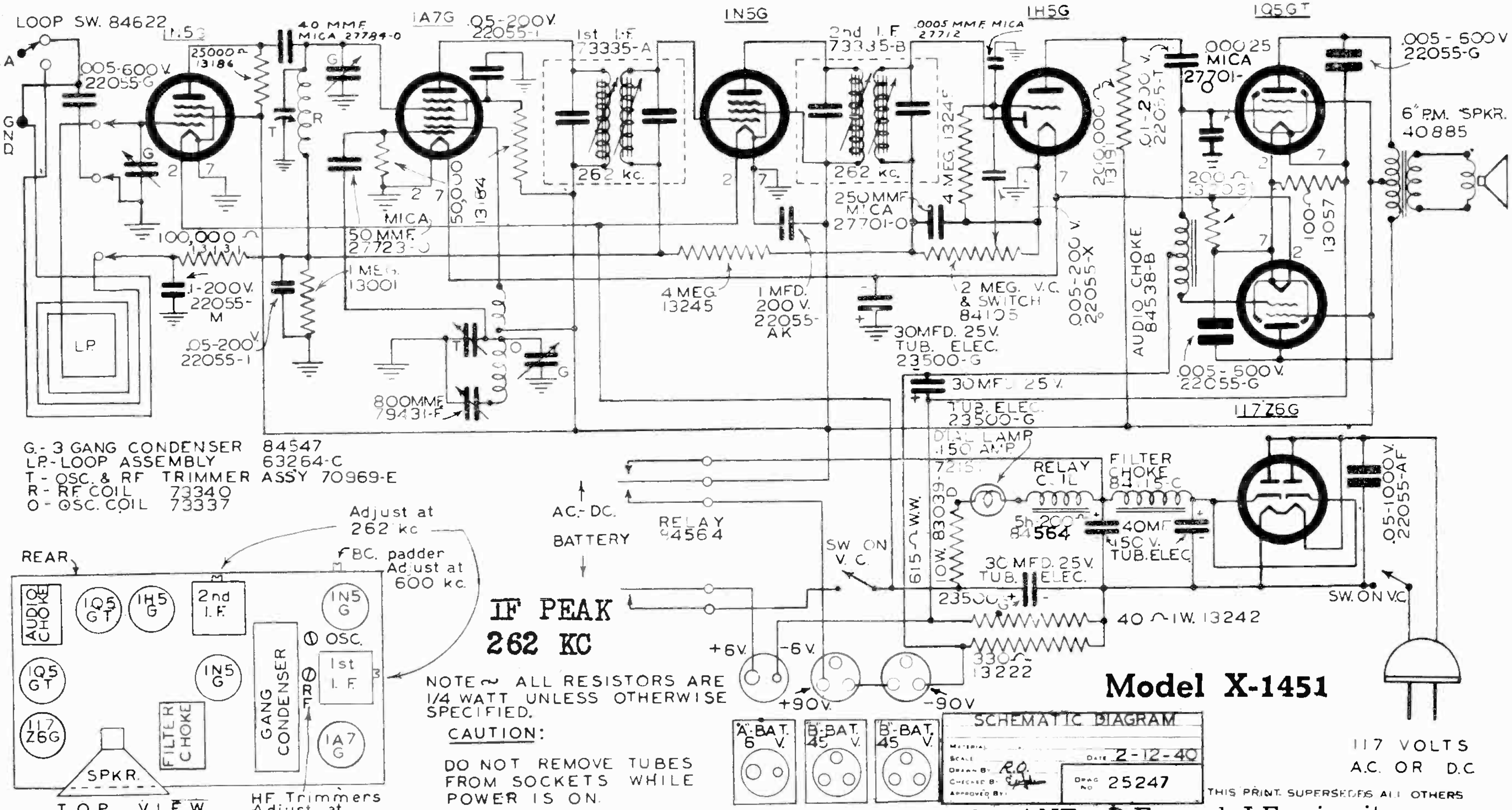


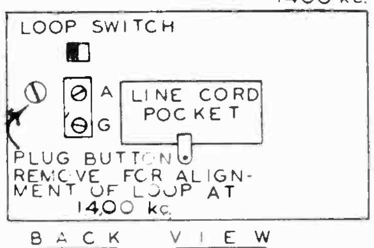
When aligning the I. F. amplifier, the generator must be connected to the grid of the 12SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the two short wave bands use a 400 ohm carbon resistor.

Model T-1424

MODEL X-1451

PILOT RADIO CORP

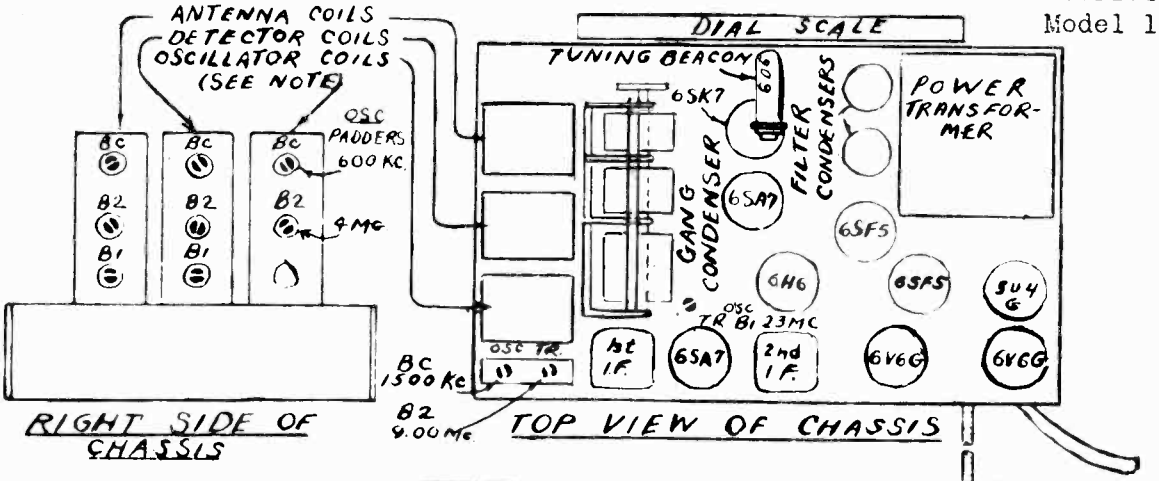




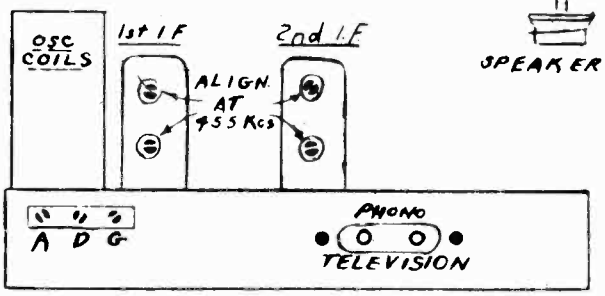
The location of the screws for adjusting the ANT., R.F., and I.F. circuits are illustrated above. The I.F. amplifier may be aligned with the chassis out of the cabinet, but with the loop antenna plugged in. For the I.F. alignment the signal generator must be connected to the grid of the 1A7G tube through a .1 mfd. condenser. The R.F. trimmers should also be peaked for maximum with the chassis out of the cabinet. When aligning the ANT. trimmers the "A" and "B" batteries must be in place, the loop antenna and receiver correctly mounted in the cabinet. The receiver may be aligned on either battery or house current. When the receiver is aligned on the Broadcast Band connect the generator to the Antenna just on the back through a .0002 mfd. condenser.

PILOT RADIO CORP

Model 1424
Series
Model 173

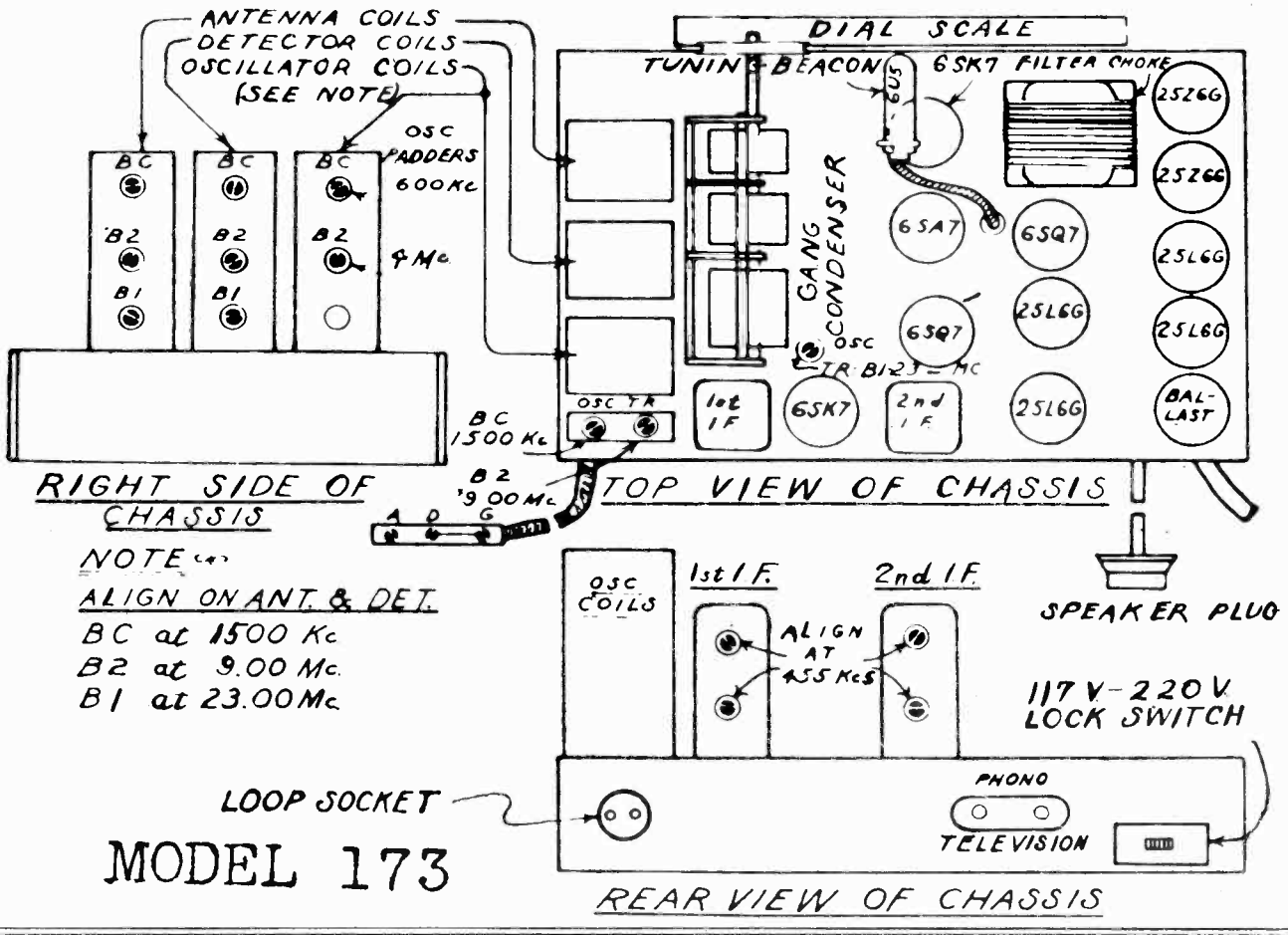


NOTE:
ALIGN ON ANT. & DET.
BC at 1500 Kc.
B2 at 9.00 Mc.
B1 at 23.00 Mc.



T-1524

FOR OTHER DATA,
SEE INDEX

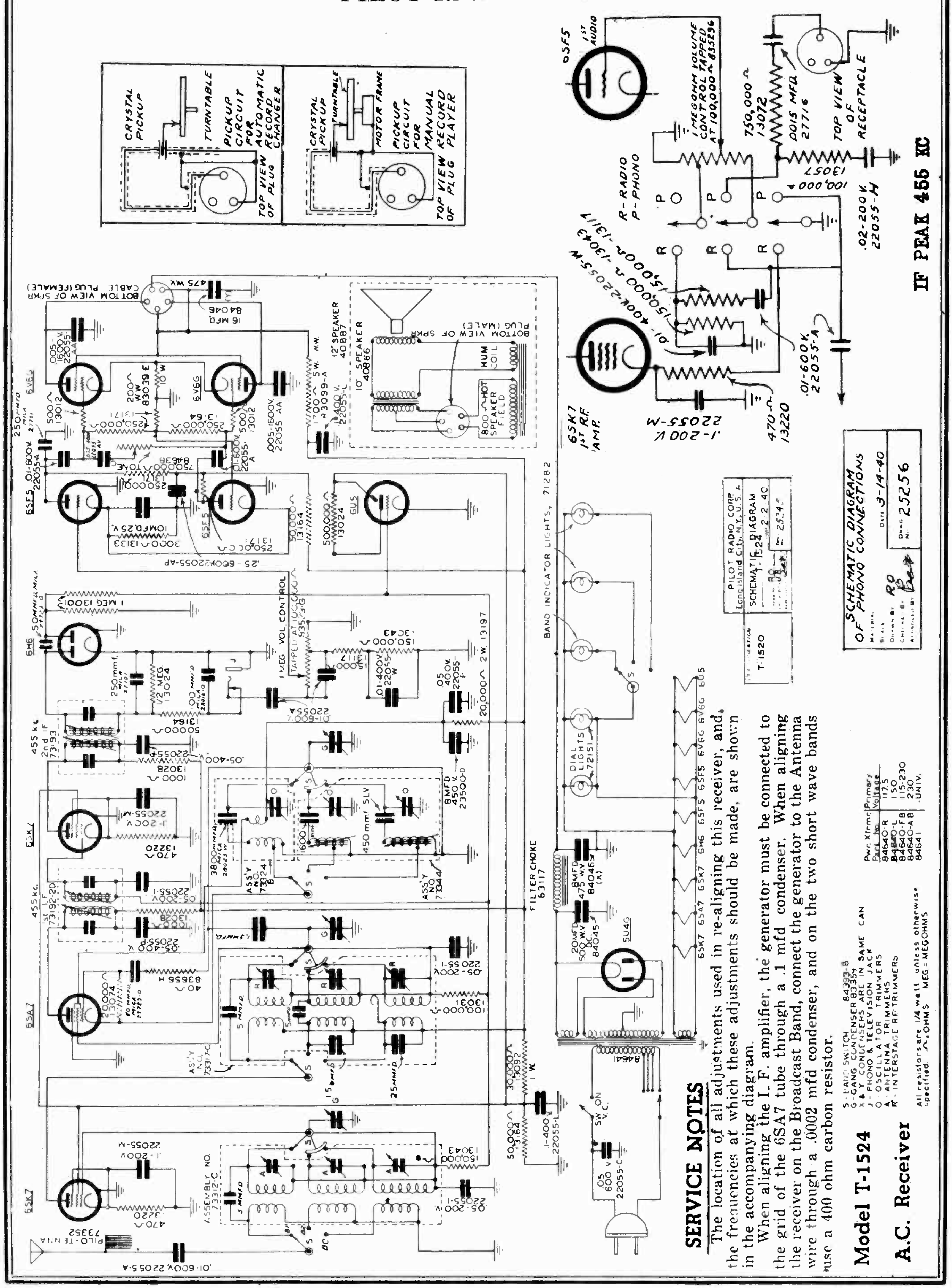


NOTE:
ALIGN ON ANT. & DET.
BC at 1500 Kc
B2 at 9.00 Mc.
B1 at 23.00 Mc.

MODEL 173

Model 1524 Series

PILOT RADIO CORP.



SERVICE NOTES

The location of all adjustments used in re-aligning this receiver, and, the frequencies at which these adjustments should be made, are shown in the accompanying diagram.

When aligning the I. F. amplifier, the generator must be connected to the grid of the 6SA7 tube through a .1 mfd condenser. When aligning the receiver on the Broadcast Band, connect the generator to the Antenna wire through a .0002 mfd condenser, and on the two short wave bands use a 400 ohm carbon resistor.

Model T-1524

A.C. Receiver

S - BAND SWITCH 84393-B
G - GANG CONDENSER 83359
X & Y CONDENSERS ARE IN SAME CAN
J - PHONO & TELEVISION JACK
O - OSCILLATOR TRIMMERS
A - ANTENNA TRIMMERS
R - INTERSTAGE RF TRIMMERS

Pwr. Xfrmr. Part No.	Primary Voltage
84640-R	117.5
84640-L	150
84640-FB	115-230
84640-AB	230
84641	UNIV.

All resistors are 1/4 watt unless otherwise specified. Ω = OHMS MEG = MEGOHMS

RCA MFG. CO., INC.

MODEL "MAGIC WAVE" ANTENNA

MAGIC WAVE ANTENNA WITH DISTRIBUTION TRANSFORMER

METHOD OF USING THE MAGIC WAVE ANTENNA TO FEED UP TO FOUR RECEIVERS THROUGH A STOCK NO. 9814 DISTRIBUTION TRANSFORMER. IF MORE THAN FOUR RECEIVERS ARE TO BE USED, THE ANTENNA SHOULD BE MODIFIED AS SHOWN IN FIG. 2.

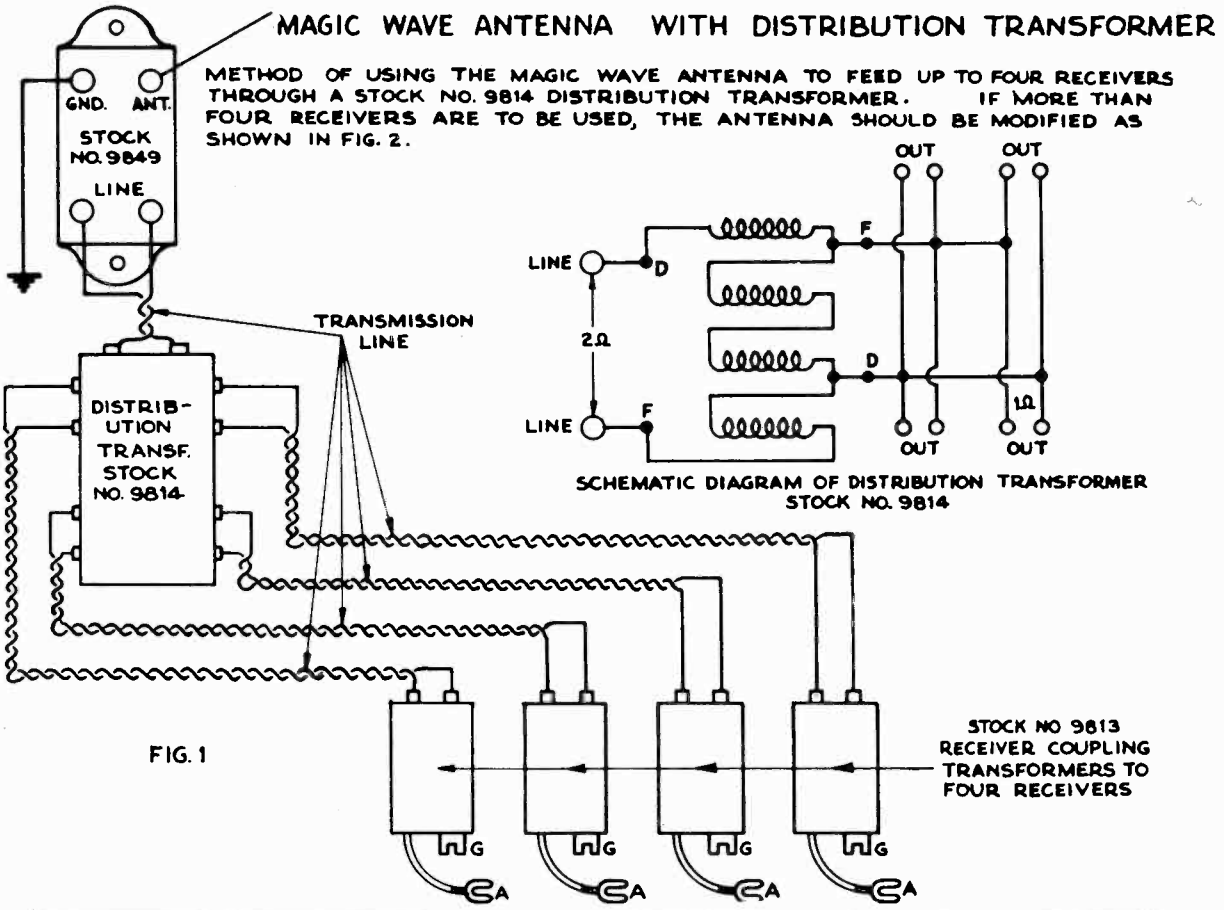
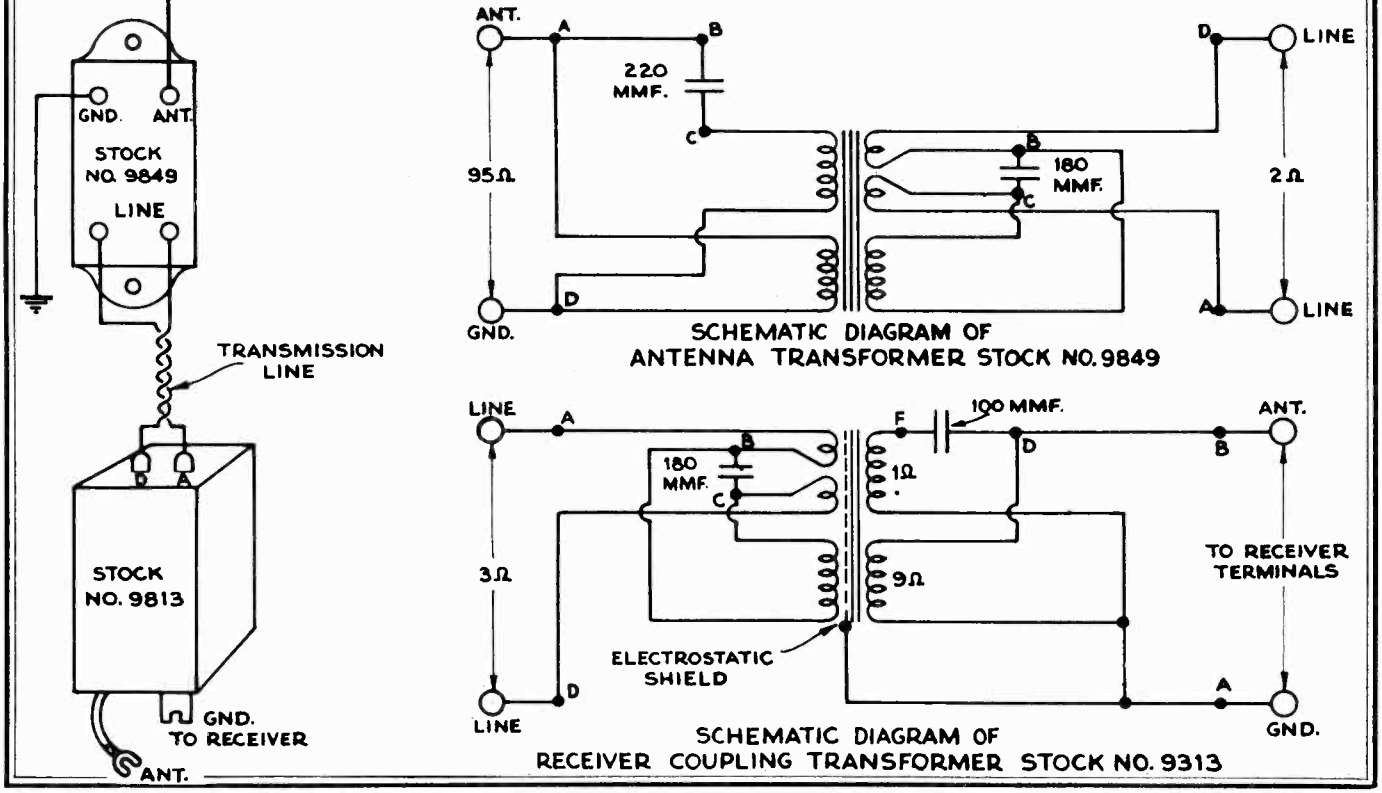


FIG. 1

SCHEMATIC DIAGRAM OF DISTRIBUTION TRANSFORMER STOCK NO. 9814

MAGIC WAVE ANTENNA SYSTEM STOCK NO. 9812



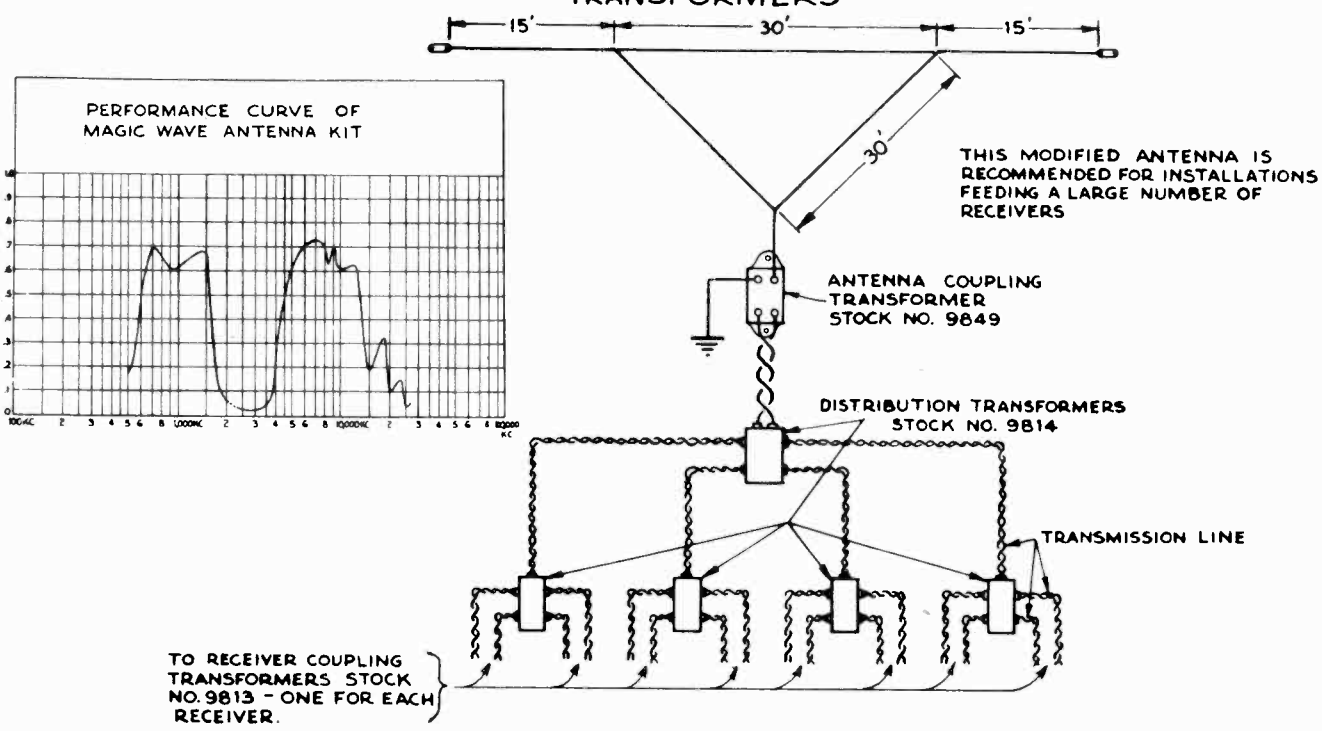
SCHEMATIC DIAGRAM OF ANTENNA TRANSFORMER STOCK NO. 9849

SCHEMATIC DIAGRAM OF RECEIVER COUPLING TRANSFORMER STOCK NO. 9313

MODEL "MAGIC WAVE" ANTENNA

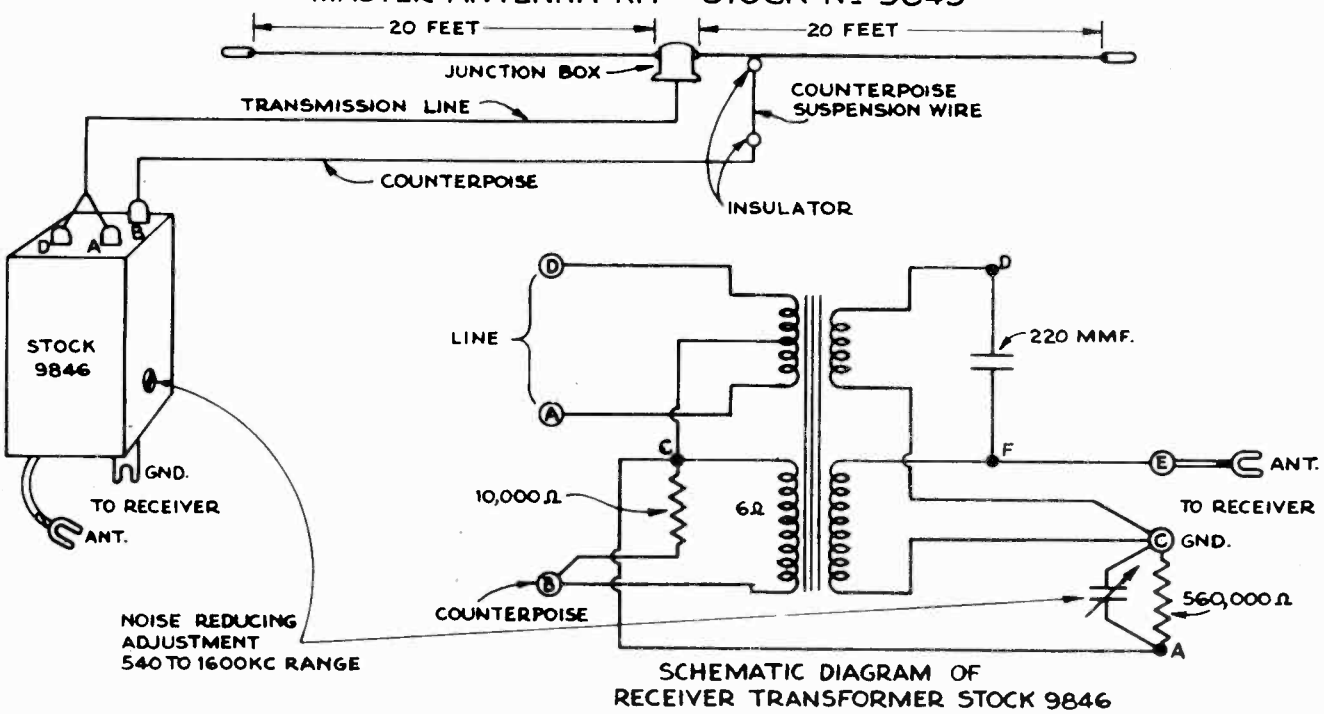
RCA MFG. CO., INC.

FIG. 2 MODIFIED MAGIC WAVE ANTENNA AS USED WITH 2 TO 5 DISTRIBUTION TRANSFORMERS



THE ABOVE DIAGRAM SHOWS THE INSTALLATION OF FIVE DISTRIBUTION TRANSFORMERS PROVIDING FOR THE OPERATION OF UP TO SIXTEEN RECEIVERS. TRANSMISSION LINES MAY BE RUN IN METAL CONDUIT IF DESIRED ALTHOUGH THIS IS NOT NECESSARY. TWO OR MORE LINES MAY BE RUN IN THE SAME CONDUIT BUT NOT WITH OTHER ELECTRICAL WIRING.

MASTER ANTENNA KIT STOCK Nº 9845



SCHEMATIC DIAGRAM OF RECEIVER TRANSFORMER STOCK 9846

COUNTERPOISE SHOULD BE ONE HALF THE LENGTH OF THE TRANSMISSION LINE PLUS 10 FEET EXAMPLE:- IF THE TRANSMISSION LINE IS 40 FEET LONG, THE COUNTERPOISE WILL BE 20+10 OR 30 FEET LONG.

RCA MFG. CO., INC.

MODEL "Magic Tone"
Cell Pickup Kit

Installation of the new Magic Tone Cell contained in this kit offers an opportunity for improving record reproduction from radio-phonographs or other record playing devices. Its design provides reduced "needle" chatter and surface noise, plus the additional feature of converting the pickup to a permanent sapphire point type completely eliminating the changing and use of needles, and crystal breakage at the time of needle change. It is particularly designed for installation in RCA Victrolas and Record Players manufactured during 1938 and later, with practically no exceptions and slight changes. See Table page 3.

Electrical Characteristics.—

Output 1½ volts at 400 cycles approximately.
Impedance 200,000 ohms at 400 cycles approximately.
Frequency characteristics. See Figure 1.

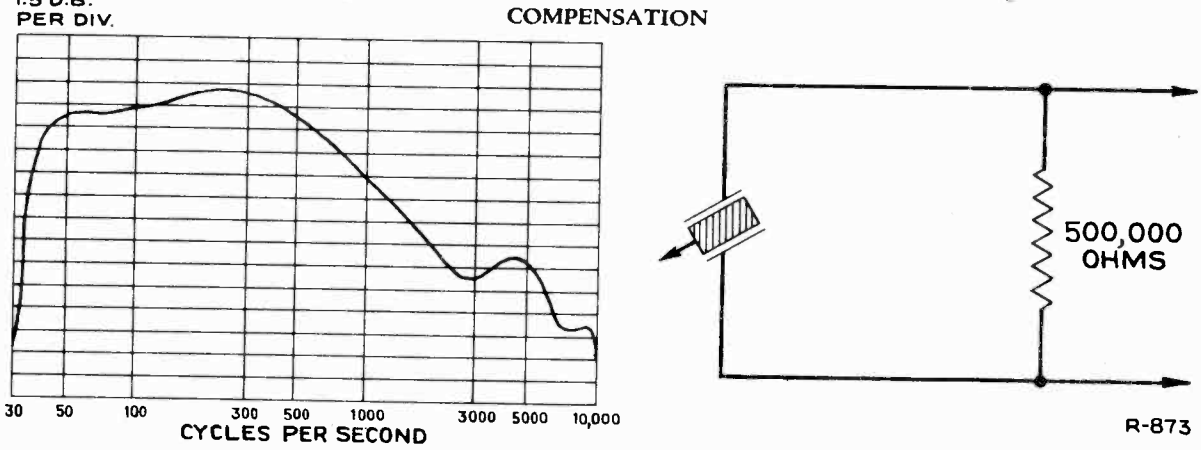


Figure 1—Typical Circuit and Curve

The kit consists of:

1 RCA Victor Magic Tone Cell with Flexible Tone Bridge and Jewel-Lite Scanner assembled complete in cartridge form.
4 Mounting Screws.
2 Spacers.
1 Mounting Plate.
4 Washers.
1 Plug Button.

INSTALLATION

The following illustrations show different types of pickup arms with the new Magic Tone Cell installed.

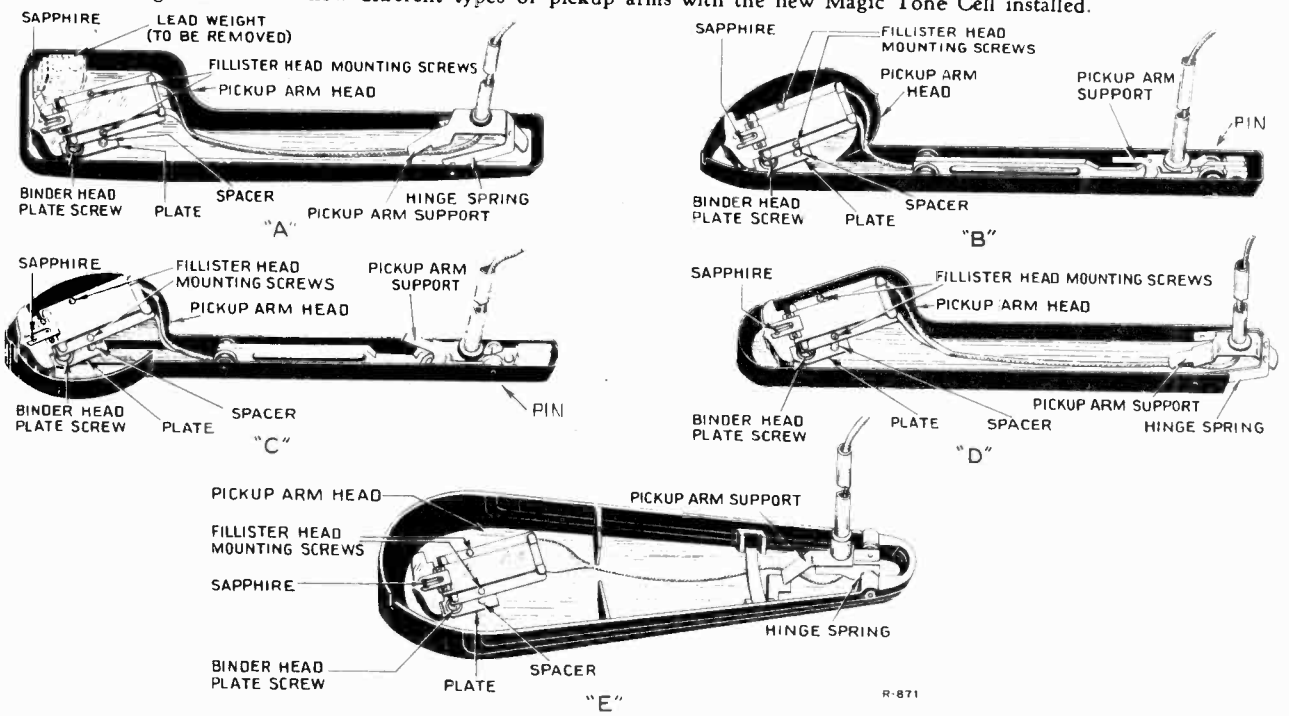


Figure 2—Pickup Arms—Underneath View with Supports

MODEL "Magic Tone Cell Pickup Kit

RCA MFG. CO., INC.

To make the installation:

1. See that the power control on the phonograph is turned off.

2. Loosen the pickup arm at its base mounting so that it can be lifted complete and turned over. The pickup arm may be removed from its location in the cabinet to the extent permitted by the connecting wires. The support remains attached to the motorboard.

   The arms A, D and E, Figure 2, may be disengaged from their supporting pivots by compressing the two hinge springs at the rear of the arms.

   Remove the pickup arms B and C by pushing out the pin at the rear of the arm. Then pull the pickup forward off the pickup arm support.

3. With pickup arm turned over in a convenient position, unsolder the two leads and loosen the two screws holding the present pickup cartridge in the pickup arm head. Then remove the cartridge complete leaving the loose leads clamped in the arm.

   The arm A, Figure 2 may contain a lead weight which will obstruct ready installation of the new pickup cartridge. The weight may be removed by (a) scoring the bracket at its bend with diagonal cutters and bending until it breaks or (b) drilling several small holes in the bracket at the bend and bending until it breaks. **It is preferable and recommended to use a new arm, Stock No. 9951, List Price $0.90.**

4. Place the plate, supplied in the kit, in the pickup arm head with the two irregularly shaped holes in the plate matching with the screw holes in the arm. Attach the plate loosely in position with the two short binder head screws supplied in the kit, placing a washer above and below the plate on each screw.

5. Solder the two leads to the strip terminals on the Magic Tone Cell, being sure that the shield lead is attached to the ground terminal—the one on the right when viewed facing the front end, sapphire downwards—See Figures 2 and 3.

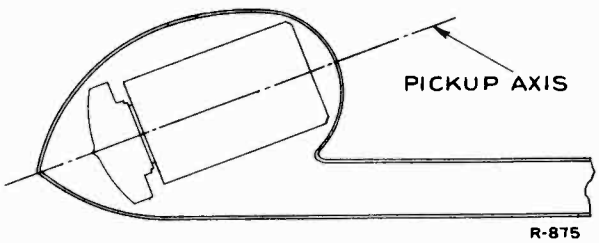


Figure 4—Pickup Axis

The soldering operation must be performed as quickly as possible so as not to heat the crystal.

6. Place the Magic Tone Cell in position, sapphire outward, with screw holes matched with the correct pair of threaded holes in the plate. Before fastening the Magic Tone Cell to the mounting plate, hold it in position and adjust the plate so as to permit mounting with playing point position, pickup axis and tracking the same as for the cartridge removed.

   Tighten up the plate screws and then assemble the Magic Tone Cell in place using the two long fillister head screws supplied, placing the spacers on the screws between the cartridge and the mounting plate.

   Note: Be careful not to bend the sapphire support wire, and be sure that the lead connections do not short to the arm, spacers or plate.

7. On pickup with a comparatively large hole on top for needle insertion, insert the plug button, supplied in the kit, securely in the hole.

8. Carefully reassemble the pickup arm and check its movement, making any necessary adjustments for correct operation as indicated in later paragraphs.

   In case adjustment for "set down" and "height" is necessary it may be advisable to refer to service notes for the particular record player.

   It may be necessary to weaken the tension on the feed-in spring on some mechanisms, in order to prevent the pickup from kicking-in too hard at the beginning of each record. Reduce tension by lengthening the spring or in most cases cut and remove the spring.

   On certain phonographs it may be desirable to adjust the compensation in the audio circuit for best record reproduction.

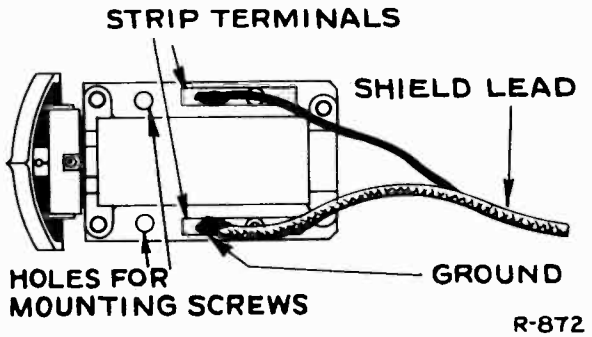


Figure 3—Magic Tone Cell (Sapphire Downwards)

RCA MFG. CO., INC.

MODEL "Magic Tone Cell Pickup Kit

COMPENSATION

Table of typical RCA Models with suggested changes for greatest volume and best fidelity

Model	Electrical Adjustments
U-9	Change R14 to 220,000 ohms Change C17 to .005 mfd.
U-25	Remove R9. Short out R10. Connect C13 from high side of phono input to tap on volume control.
U-40	Change R18 to 120,000 ohms Change R16 to 22,000 ohms Change C9 to .005 mfd.
U-42	Change R18 to 68,000 ohms Change R16 to 18,000 ohms Change C9 to .007 mfd.
U-43	Change R18 to 220,000 ohms Change C9 to .005 mfd.
U-44	Change R24 to 15,000 ohms Change R25 to 150,000 ohms Change C49 to .005 mfd.
U-123	No changes required.
U-125	Remove R9. Short cut R10. Connect C12 from high side of phono input to tap on volume control.
U-130	Remove R46
R-98	Change R2 to 27,000 ohms Change C1 to .025 mfd.
V-100	Change R14 to 180,000 ohms Change C17 to .005 mfd.
V-170	Change R21 to 220,000 ohms Change C48 to .005 mfd.
V-200	Change R4 to 82,000 ohms Change R5 to 180,000 ohms Change R6 to 270,000 ohms Change C25 to .005 mfd.
V-205 V-405	Change R7 to 120,000 ohms Change R8 to 270,000 ohms Change R9 to 220,000 ohms Change R31 to 15,000 ohms Change C34 to .005 mfd.

Mechanical Adjustments

On all models the sapphire height above the motorboard should be checked. The sapphire point must enter the record groove and bear properly on the record. It must not strike or scrape on the motorboard as it may be damaged.

Swing out the pickup over the motorboard and adjust the sapphire height by carefully bending the pickup arm support bracket so that the sapphire point is 1/8 inch above the motorboard. The pickup should then operate properly throughout the playing cycle for both automatic and manual playing.

Any other necessary mechanical adjustments should be made in accordance with the Service Notes for the particular model.

TESTS."—Page four.

The information on the above key models will serve as a guide to cover the installation on other RCA Models of 1938 and later manufacture.

General Information on Compensation for Pickup Circuits

1. The pickup should be terminated or loaded in accordance with the information given in the preceding table.
2. Decreasing shunt resistance across pickup circuit decreases bass response and increasing shunt resistance across pickup circuit increases bass response.
3. Examples of compensation adjustments.

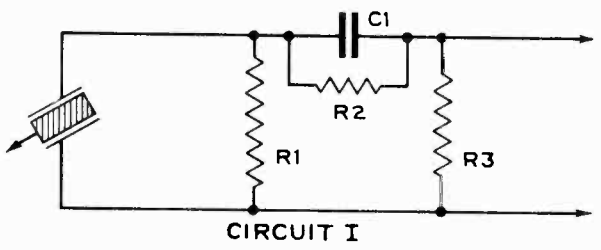


Figure 5—Pickup Circuit

Circuit I—Increasing R1 increases low frequency response. Increasing C1 increases high frequency response. Increasing value of R3 with respect to total value of R2 plus R3 increases the output.

MODEL "Magic Tone Cell Pickup Kit

RCA MFG. CO., INC.

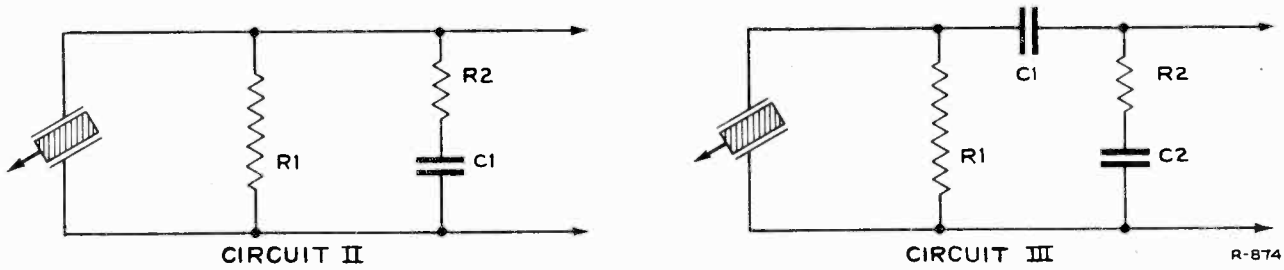


Figure 6—Pickup Circuits

Circuit II—Increasing R1 increases low frequency response.
Increasing R2 increases high frequency response.
Decreasing C1 increases output.

Circuit III—Increasing R1 increases low frequency response.
Increasing R2 increases high frequency response.
Increasing value of C1 with respect to total value of C1 plus C2 increases the output.

Operating Tests

1. **Mechanical**—The pickup should be tested for its complete operating performance. On record changing instruments both a full stack of records and a single record should be used in the test.

   Checks should be made for:—

   a. Correct landing on 10 inch and 12 inch records.

   b. Correct tripping on 10 inch and 12 inch records.

   c. Correct elevation of pickup arm.

   d. See that neither sapphire guard nor rear end of pickup tends to "drag" on the record when a full stock of records is being used. Seat pickup deeper into arm if necessary.

   Refer to the service notes for the particular model in all cases requiring readjustment.

2. **Electrical—It should be remembered that the output of the Magic Tone Cell is inherently lower than that of former crystal pickups, thus involving a lower reserve volume. The volume control on the instrument must therefore be further advanced than before, and the full volume position may occasionally be necessary. The best operating position should be checked on several records.**

   a. **Hum**—In cases of excessive hum, examine to see that shielding is intact and receiver circuits are normal. Make any necessary corrections.

   b. **Rumble or Howl**—Excessive rumble or howl may be remedied by examining motor and motorboard mountings for flexibility and making any necessary corrections or improvements.

Replacement of Sapphire Stock No. 38449

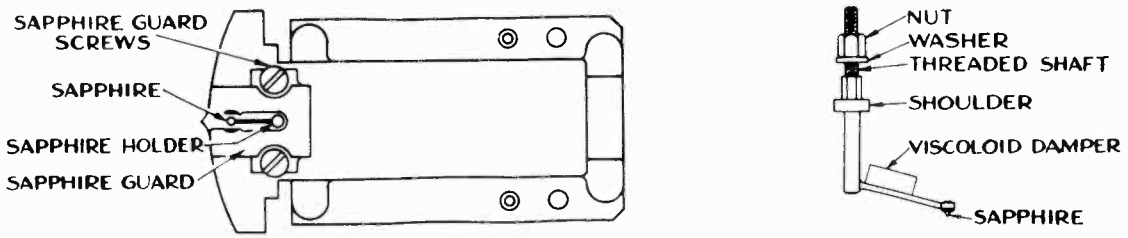


Figure 7—Magic Tone Cell Showing Sapphire

Caution—Never bend the sapphire support wire.

The nut on the sapphire holder assembly is locked by a light cement (such as Glyptal). Extreme care should be used when loosening the nut so that the twisting motion does not break the crystal.

Remove the two screws holding the sapphire guard in place and take the guard off. Remove the small nut and washer on the threaded shaft of the sapphire holder and push the shaft through the hole in the viscoloid until the sapphire holder assembly comes free.

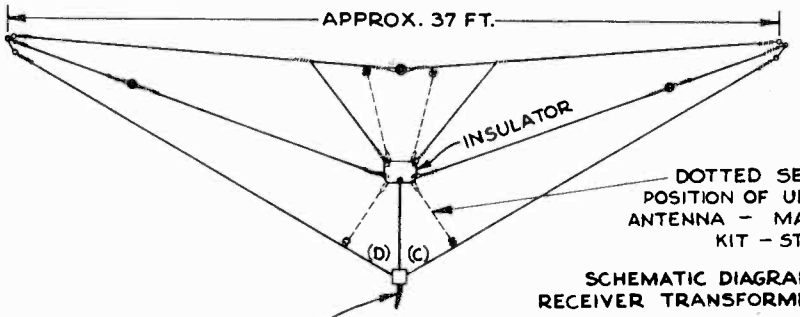
Insert threaded shaft of replacement sapphire holder through viscoloid and replace the washer and nut. Make sure that the flat sides of the shaft are firmly in place in the clamp and then tighten the nut very carefully so as not to strip the threads nor break the crystal. Replace the sapphire guard, positioning it by means of the oversize screw slots. Make certain that the sapphire and its supporting wire are centered in the guard. Tighten the guard screws.

Before using, check to see that the sapphire projects far enough beyond the guard so that the guard will not strike the record. If necessary, bend the guard a little. Apply a drop of light cement (such as Glyptal) to the sapphire nut holder.

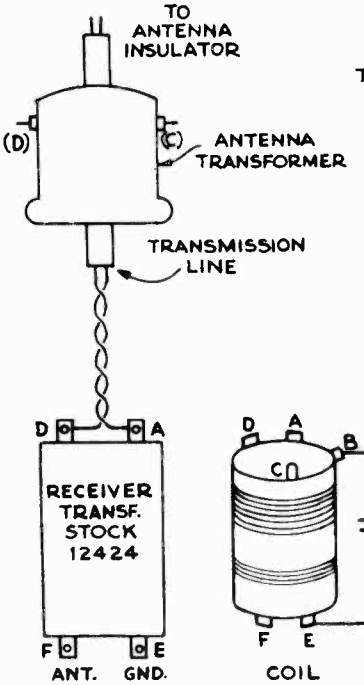
MODEL "Spider-Web" Antenna NOTES, CHANGES

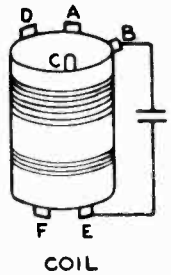
RCA MFG. CO., INC.

SPIDER-WEB ANTENNA STOCK No. 9689



DOTTED SECTION SHOWS POSITION OF ULTRA SHORT-WAVE ANTENNA – MADE UP OF AUXILIARY KIT – STOCK NO. 9689





RP-158, RP-160

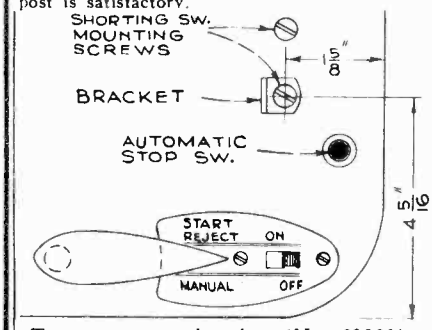
Tone Arm Stop Bracket:

On 2nd production RP-158 and RP-160, a stop bracket has been added to the top of the motorboard to restrain the tone arm. It is mounted by means of the same screw, lockwasher, and nut used to mount the pickup shorting switch. Where difficulty is experienced with excessive movement of the tone arm on 1st production mechanisms, this bracket may be added as shown. The bracket is Stock No. 39832.

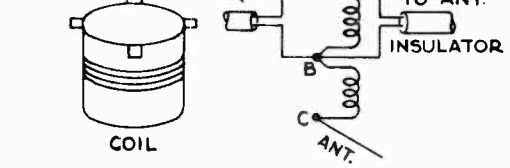
RP-158, -160

To Repeat One Record:

When checking RP-158 and -160 record changers for landing and tripping action, it is possible to play one record repeatedly by simply placing a weight on the rear record post. A small pipe nipple that fits over the top of the post is satisfactory.



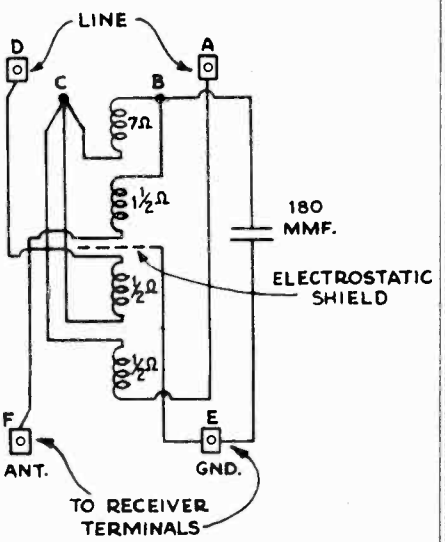
Tone-arm stop bracket (No. 39832) position on RP-158, -160.



SCHEMATIC DIAGRAM OF ANTENNA TRANSFORMER

THE EFFECTIVE RANGE OF ANTENNA IS FROM 140 TO 23,000 KC (4 BANDS) THE ULTRA HIGH FREQUENCY BAND (23 TO 70 MC) MAY BE COVERED BY THE ADDITION OF AUXILIARY KIT STOCK NO. 9689

SCHEMATIC DIAGRAM OF RECEIVER TRANSFORMER STOCK 12424

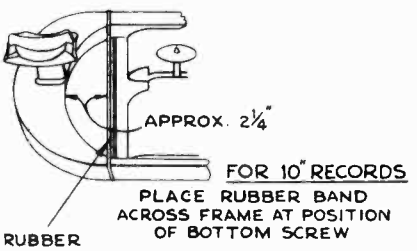


RP-158, RP-162

Change in Reject Lever and Button:

2nd production of RP-158 and RP-162 automatic record changers have a reject lever arrangement as shown in accompanying sketch.

Stock No.	Description	List Price
39755	Button—Reject button	.15
39756	Lever—Reject lever and stud	.25
39757	Lever—Reject button right angle lever	.10



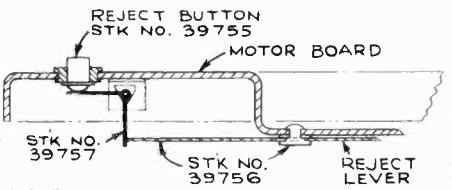
RP-151 RECORD CHANGER

To Play One Record Continuously:

It is possible to play one record continuously on the RP-151 by stretching a 3½-in. or 4-in. rubber band across the mechanism, as shown, to prevent the record dropping through the motorboard.

The continuous playing of a record in this manner is handy when the record changer is being serviced, especially after the separator knives have been checked and tested, and it is desired to allow the changer to run on the shop bench without attention.

Revised reject button and lever in RP-158, -162.



RP-160

Tone Arm Return Lever Spring:

The tone arm return lever spring is listed as Stock No. 39599. The correct number is 39038.

V-215, V-221

Speaker RL-70N-6:

On 2nd Production of V-215 and V-221, the speaker is changed from RL-70M-2 to RL-70N-6. The replacement parts are identical.

A rubber band stretched across the motorboard as shown permits continuous playing of one record on RP-151 record changer during service checking of the mechanism.

CHANGES
NOTES, DATA

RCA MFG. CO., INC.

"KNOCKED-DOWN" VOICE COIL AND CONE

Installation Instructions:

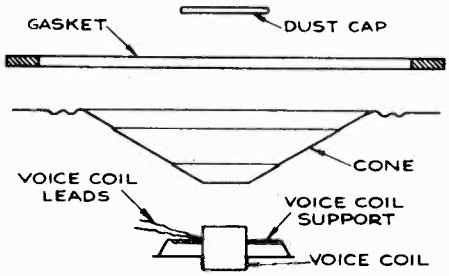
To simplify cone replacement in certain speakers, the cone and voice coil are supplied as two separate units: (1) The voice coil and support, (2) The cone diaphragm.

General Procedure

(a) Cement voice-coil support to the speaker, using centering gauge or speaker shims.
(b) Solder voice-coil leads.
(c) Put cone in place, cementing around rim of speaker frame.
(d) Cement junction of cone and voice coil.

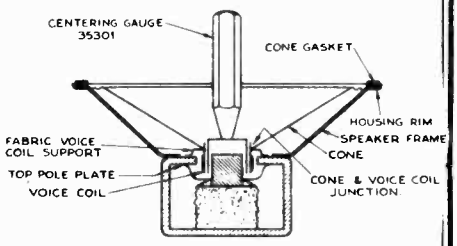
Detailed Instructions

(a) Remove old cone and voice coil. Protect air gap with scotch tape. Clean off all paper and cement.
(b) Apply a ring of cement (Duco Household) on top plate.
(c) Insert centering gauge in new voice coil, handle first, from the winding end.
(d) Remove scotch tape from gap. Insert voice coil and gauge in gap with leads in correct position for soldering. Press rim of voice coil support into the cement.
(e) Solder the voice coil leads to terminals, allowing sufficient slack to permit free motion of the cone. Dress leads in plane of motion, clear of cone and housing.
(f) Apply a ring of cement around the rim of speaker frame. Place cone down over voice coil and press cone rim tight to speaker frame.



Certain replacement cones are supplied "knocked-down" in two pieces—(1) The voice coil and centering support. (2) The cone diaphragm.

(g) Allow cement to dry on cone rim and voice-coil support. Then run a ring of cement around the junction of the cone and voice coil, being careful the cement does not run inside voice coil.
(h) After cement at junction has dried, remove gauge, using a rotary motion.
(i) Cement large cardboard gasket in place. Set the speaker in inverted position on a flat surface until gasket is dry. Cement dust cap on cone center.



When installing "knocked-down" speaker cone, the junction of the cone and the voice coil is cemented last.

ABSORPTION WAVE TRAP

For Loop Receivers:

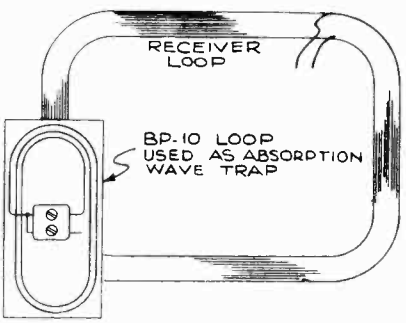
Interference and cross modulation due to the presence of a strong local broadcast station is seldom experienced on loop-type receivers because the signal pickup is much less on a loop than on an antenna.

However in rare cases where such interference is encountered, it can generally be eliminated by using an absorption-type wave trap, loosely coupled to the loop on the receiver, as shown in accompanying sketch, and tuned to the frequency of the interfering station.

A good absorption trap can be made with a small loop like that used in Model BP-10 "Personal" radio. Fasten a two-section mica trimmer (salvaged from a discarded IF transformer) on the small loop. Connect the trimmer across the terminals of the small loop. Use one trimmer, or both in parallel, depending on whether the interfering station is at the high or low end of the broadcast band.

Tune the receiver to the frequency of the interfering station, place the trap near the receiver loop, and adjust the trap trimmer(s) to resonance, indicated by a sharp dip in signal strength. Use smaller or larger capacity trimmers if required to reach resonance.

Check to see if the particular interference effects have been eliminated. Adjust the position of the trap to secure closer coupling if necessary to further increase signal absorption. Avoid over coupling. Fasten the trap in the desired position on the receiver loop.



On a loop receiver, interference from a strong local broadcast station can be reduced by using an absorption loop, tuned to the interfering station, and loosely coupled to the receiver loop.

VOICE COIL IMPEDANCE

And DC Resistance:

In servicing RCA radio loudspeakers, it is helpful to know that the DC resistance of the voice coil is approximately 10 percent less than the impedance at 400 cycles.

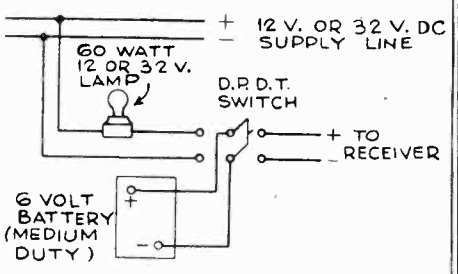
For example, a speaker with a rated voice-coil impedance of 2.2 ohms at 400 cycles will measure about 2 ohms DC resistance.

Radio storage battery can be charged on a DC farm-lighting outfit.

RECHARGING 6V BATTERY

On 12V or 32V DC Supply:

A 12-volt or 32-volt DC farm-lighting supply can be used to recharge a 6-volt radio storage battery. The recommended circuit is shown herewith. The charging rate may be increased or decreased by using a higher or lower wattage lamp.



BATTERY COMPLEMENT

For RCA Portable Models

MODEL	BATTERIES	EVEREADY No. *
BP-10 (RC-544)	1 1.5 volt "A" 1 67.5 volt "B"	No. 950 No. 467
15BP Series (RC-527, 527-A)	1 1.5 volt "A" 2 45 volt "B"	No. 743 No. 482
25BP (RC-527-D, 1020)	1 1.5 volt "A" 2 45 volt "B"	No. 743 No. 482
26BP (RC-559)	2 4.5 volt "A" 2 45 volt "B"	No. 746 No. 482
BP-55, -56, -85 (RC-455)	1 6 volt "A" 2 45 volt "B"	No. 747 No. 482
94BP (RC-407)	1 1.5 volt "A" 2 45 volt "B"	No. 742 No. 762
94BP (RC-407-B)	1 1.5 volt "A" 2 45 volt "B"	No. 742 No. 762
	1 1.5 volt "A" 2 45 volt "B"	No. 745 No. 482 or 727
	1 1.5 volt "A" 2 45 volt "B"	No. 741, 742, 743 No. 482 or 727
94BP-4 (RC-410)	1 1.5 volt "A" 2 45 volt "B"	No. 742 No. 762

* Or equivalent.

RCA SCHEMATICS

Switch Positions:

Practically all of the larger RCA receivers have decals on the cabinet (or other means) to indicate the function of each position on the more complicated switches. In cases where only the chassis is brought in for service, the corresponding information about controls is given in a knob drawing printed in the Service Note.

For example, the accompanying schematic shows the radio-phono-tone control switch circuit in Model V-135, drawn as usual in the extreme counter-clockwise position. The knob view shows the function of each position:

(1) "Off" (counter-clockwise).

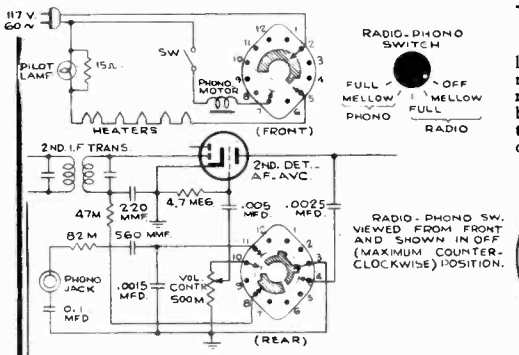
(2) Radio—mellow tone.

(3) Radio—full tone.

(4) Phono—mellow tone.

(5) Phono—full tone (clockwise).

As a general rule, on RCA receivers clockwise rotation of a control produces an increase. Thus on a range switch, the lowest-frequency band is counter-clockwise, and the highest-frequency band is clockwise. On tone controls, the narrowest audio range or deepest tone is counter-clockwise. The widest audio range or highest tone is clockwise.



In RCA Service Note schematics, wafer switches are shown in extreme counter-clockwise position, and the drawing of control knobs gives sequence and function of switch positions.

Installing No. 38204 Antenna Loop in BP-10 Where Loop is Held with Snap Fasteners:

A. Remove the defective loop and its flat molded cover by prying out the two snap fasteners.

B. Spread white paint or ink on the surface of the two bosses in lid.

C. Place the new loop and cover in correct position inside the lid and press down so the paint will transfer on to the loop cover.

D. Drill holes (.242-inch, No. C drill) in the flat loop cover at the exact center of each paint mark. Countersink each hole (approximately 3/64-inch) on loop side, so that the flat cover will set flush with the top of the bosses.

E. Fasten the loop and cover to the lid with the two snap fasteners supplied.

Installing No. 38204 Antenna Loop in BP-10 Where Loop is Riveted in Lid:

A. Drill the riveted ends of the rivets, and knock the rivets out, being careful not to damage the molded lid. Remove the defective loop and its flat molded cover.

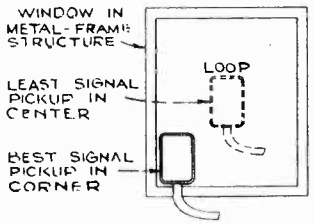
B. Place the new loop and cover in correct position inside the lid. Use the two rivet holes in the lid as a guide to drill corresponding holes in the loop cover.

C. Fasten the loop assembly to the lid with the two rivets supplied.

BEST LOOP PICKUP

In Corner of Window:

In a metal-framed structure, such as a car, train, plane, or steel building, best signal pickup is usually obtained by placing the loop in one corner of the window instead of in the center. The center of the glass space is usually a null for signal. This fact should be kept in mind when using the extension loop on a portable radio, as there is a natural tendency to fasten the loop in the center of the window.

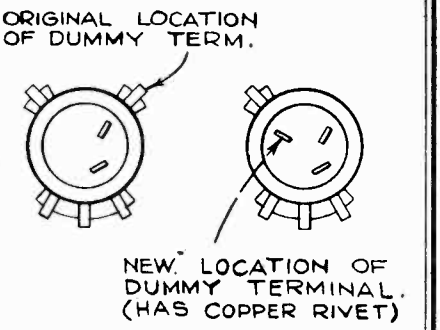


For best signal pickup, the extension loop on a portable set should be placed in corner of window.

DUMMY TERMINAL

On Replacement Volume Controls:

On certain replacement volume controls, the location of the "dummy" terminal is changed as shown in accompanying sketch.

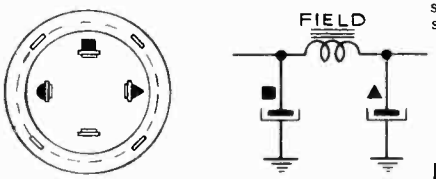


Change in location of dummy terminal on certain replacement volume controls.

ELECTROLYTIC CAPACITORS

Terminal Identification:

On certain types of multiple-section electrolytics, the terminals are identified by small markings (triangle, half-round, or square). The marks are either cut-outs or mouldings in the base. Corresponding marks are shown adjacent to the electrolytic symbols in the schematic diagrams.



In some electrolytic capacitors, the terminals are identified by half-round, triangular, and square markings. Corresponding marks are shown adjacent to the symbols in the schematic.

QU7, QU-51, -52, -55, -56

Tone Arm Pressure Spring:

When replacing the tone arm, or the magnetic pickup head, check the needle pressure which should be approximately 3½ ounces. Alter the counter-balance spring in arm to obtain the correct pressure, or install a new spring. Two springs (65 turns and 75 turns) are supplied under Stock No. 38213. Use the spring that most nearly gives the correct pressure and then remove turns, or stretch the spring, as required, for final adjustment.

BP-10

Loop and Moulded Lid:

Stock No. 38204 antenna loop with undrilled flat molded cover, and/or Stock No. 38211 molded lid with bosses for snap fasteners, can be used in any Model BP-10 where the antenna loop is secured in place with rivets, or with snap fasteners.

Installing Stk. No. 38211 Molded Lid in BP-10 Where Loop is Riveted in Lid:

A. Snip the two hinge pins and pull the pins out of the hinges, to permit removal of the defective lid.

B. Drill the riveted end of the rivets and knock them out, being careful not to damage the flat loop cover. Remove the loop and its cover from the lid.

C. Spread white paint or ink on the surface of the two bosses in the Stock No. 38211 lid.

D. Place the original loop with its flat cover in correct position inside the Stock No. 38211 lid and press down so the paint will transfer to the loop cover.

E. Drill holes (.242 inch, No. C drill) in the flat loop cover at the exact center of each paint mark. Countersink each hole (approximately 3/64-inch) on loop side, so that the flat loop cover will set flush with the top of the bosses.

F. Fasten the loop and cover to the No. 38211 lid with the two snap fasteners supplied.

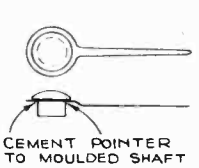
G. Assemble the lid and loop to the chrome panel, using the hinge pins and springs furnished with No. 38211 lid.

6X2, 24BT-1, -2

Loose Dial Pointer:

Expansion and contraction due to temperature changes may cause the metal dial pointer to become loose on the moulded button shaft.

This condition has been corrected in production by fastening the pointer with "Du Pont Household Cement" as shown.



Loose dial pointer can be repaired with Du Pont Household Cement.

CHANGES
NOTES, DATA

RCA MFG. CO., INC.

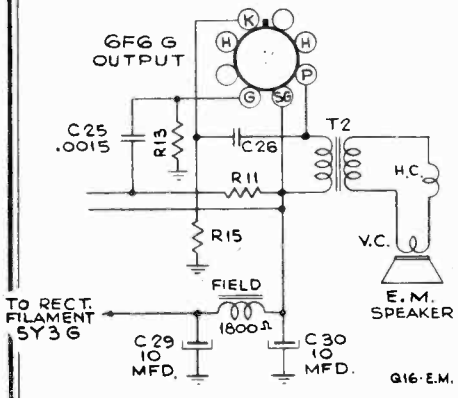
Q16E (RC-561-C)

Service Data:

Model Q16E is similar to Model Q16, except that it has an EM speaker, as shown in accompanying sketch, and the following parts are different:

Stock No.	Description	Unit List Price
12896	Capacitor—15 mmfd., moulded mica	$ .35
33806	Capacitor—.0015 mfd.	.25
32342	Capacitor—Electrolytic, comprising 2 sections of 10 mfd., 450 volts each	1.20
38409	Control—Tone control	1.00
34761	Resistor—10 ohms, ½ watt	.20
30492	Resistor—22,000 ohms, ½ watt	.20
30652	Resistor—1 meg., ½ watt	.20
30649	Resistor—2.2 meg., ½ watt	.20
32911	Transformer—Power transformer—105-120 volts, 50-60 cycle	4.10
32852	Transformer—Power transformer—110-220 volts, 50-60 cycle	4.50
2917	Washer—"C" washer to hold tuning shaft	.03
	SPEAKER ASSEMBLIES (RL-79C-1)	
31825	Cap—Dust cap	.02
32903	Coil—Field coil—1,800 ohms	1.25
38392	Cone—Cone complete with voice coil	1.25
5118	Plug—3-prong male plug for speaker	.25
32905	Transformer—Output transformer	1.35

Note.—If the stamping on speaker in instrument does not agree with above speaker number, order replacement parts by referring to model number of instrument, number stamped on speaker, and full description of part required.



Speaker connections in Model Q16E (RC-561-C).

26BP

Alignment:

The RF, detector, and oscillator adjustments in Model 26BP are easily accessible when the chassis is mounted in the cabinet. Consequently the regular dial may he used for reference during alignment. In the event that only the chassis is brought in for service, the accompanying full-size dial reproduction can be used as a substitute for the regular dial.

Q12

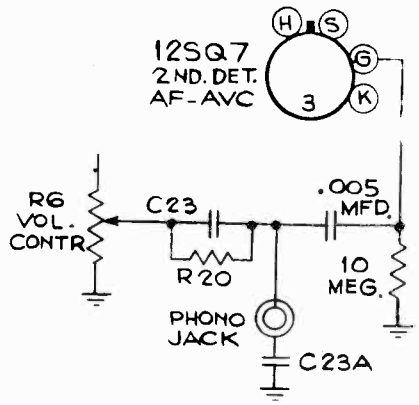
Correction in Service Data:

The RL-86A-3 speaker is incorrectly listed as a PM type. This should be listed as an EM speaker with 450-ohm field coil.

16X4

RF Plate Load Resistor:

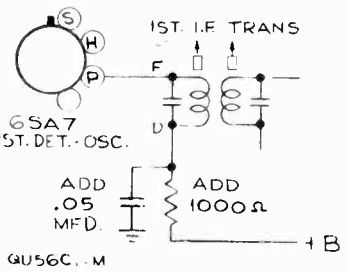
In some production, the load resistor in the plate circuit of the RF tube is changed from 3,900 to 2,200 ohms.



QU56C, QU56M

Instability:

Development of appreciable RF impedance in the electrolytic filter capacitor creates common coupling and may cause IF oscillation. To eliminate this possibility, an RC filter is connected in the +B lead of the 1st-detector plate circuit, as shown in accompanyng sketch.



In Q56-C, -M, an RC filter is added in the 1st-detector plate circuit.

When Model Q17 is used on 110-volt DC supply, the 1st-audio grid circuit should be changed as shown above to prevent distortion due to incorrect bias.

Q17

Distortion on 110-V DC Operation:

Distortion at all volume levels when Model Q17 is operated on 110-volt DC supply is caused by incorrect bias on the 12SQ7 control grid. This condition can be eliminated by changing to the circuit shown in accompanying sketch.

28X5

Insufficient Push-Button Range:

In Model 28X5 if the push-buttons have insufficient range, realign IF at exactly 455 kc. If this does not correct the trouble, replace the main oscillator coil Stock No. 38685 and realign the set. The correct coil has no number stamping; do not use coil stamped 95106-501.

Q44

.05 Mfd. Capacitor:

Change Stock No. 32787 to No. 4886.

QU51C, QU51M, QU55

Voice-Coil Impedance:

The voice coil impedance of the RL-70N-1, RL-70N-3, and RL-71A-4 is incorrectly listed as 15 ohms in the Service Data. The correct impedance is 2.2 ohms at 400 cycles.

STOCK No. 160 CRO

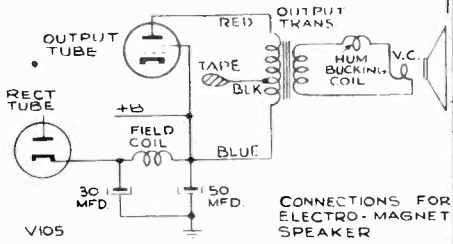
Vertical "Bounce":

The 160 oscillograph has extremely good low-frequency response, passing a 4-cycle square wave with good fidelity. It is possible to encounter instances in which a line-voltage meter, due to its inertia will indicate little or no variation of voltage, whereas the oscillograph will exhibit noticeable vertical "bounce" due to line-voltage fluctuations.

If a customer desires to retain the normal low-frequency response of the 160 and has a power line which varies in voltage appreciably, it is necessary to provide voltage regulation, such as TMV-173 voltage regulator. However, if the extreme response of the 160 is superfluous for the particular application in mind it can readily be reduced, affording a reduction of the "bounce" to an unobjectionable value. This is accomplished by removing the present coupling condenser, C-20, and substituting a 0.05 mfd. 400-volt condenser. The response is then down a few percent with a 15-cycle sine-wave input.

(The 160B incorporates filtering circuits to eliminate vertical "bounce.")

For applications in which it is desired to connect directly to the cathode ray tube deflecting plates, such as the observation of a modulated RF envelope from a transmitter, it is possible to completely eliminate the vertical "bounce" by merely disconnecting either side of the coupling capacitor, C-23.



Connections for RL-86A-3 EM speaker in Model V-105.

V-105

Using EM Speaker Replacement:

RL-86A-3 "EM" speaker can be used as a replacement for RL-81B-4 PM speaker in Model V-105 by wiring in the field coil and output transformer as shown in accompanying diagram. The original output transformer can be used by taping up the hlack (tap) lead.

In this particular model, it is necessary to solder a jumper across contacts 8 and 9 on the front section of the radio-phono switch. This keeps the 1st-detector and IF tubes in operation when the switch is in "phono" position, and thus maintains sufficient current through the field coil for adequate excitation.

The customer should be instructed to tune the set to a quiet point on the dial to prevent radio break-through on phono.

RCA MFG. CO., INC.

CHANGES NOTES, DATA

55 60 70 80 100 120 140 160

Model 26BP full-size dial reproduction. This can be used for reference during alignment.

CV-112, CV-112X

Electrolytic Capacitor:

These AC power units are described in "Supplementary Information No. 4 and No. 5." The Stock Number of the electrolytic capacitor should be changed from No. 30873 to No. 39846.

STOCK No. 154 BFO

Alignment:

The instruction book for Stock No. 154 beat-frequency oscillator specifies 350 kc for the fixed oscillator frequency. In some production, a frequency of approximately 343 kc is used in order to secure correct dial calibration.

Also, in figure 11 of this instruction book, the trimmer numbers C10 and C3 are reversed. They are shown correctly in figure 9.

158 AND 160-B CRO

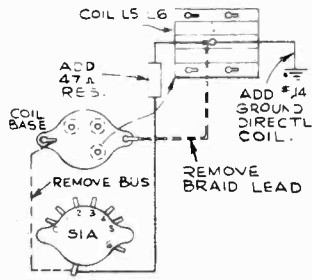
Filter Circuit Change:

In some 1st Production of Stock No. 158 and 160-B cathode ray oscillographs, numbered in the 2,000 series, the .1 mfd 1st-filter capacitor may short due to starting-voltage surge. To prevent recurrence, replace the 27,000 ohm input filter resistor (R38 in 158, R33 in 160) with a 120,000 ohm 1 watt resistor, Stock No. 13483. This change should be made when the shorted .1 mfd capacitor is replaced.

167, 167A TEST OSCILLATOR

Dead Spots on HF Band:

Dead spots or failure to oscillate on the high-frequency band in the Stock No. 167 or 167A test oscillator may be corrected by inserting a 47-ohm ½-watt resistor, and making slight changes as shown in accompanying sketch.



Change in Stock No. 167, 167A test oscillator to eliminate dead spots, or failure to oscillate, on HF band.

MODEL vs "RP" NUMBERS

The automatic record changer mechanism in certain models is designated by an "RP" number, as follows:

RCA Model Number	"RP" Number
QU5	RP-145E
VA-15	RP-152
U-40	RP-139A, 145
U-42	RP-139A, 145
U-43	RP-139A, 145
U-44	RP-139A, 145
U-45	RP-139A, 145
QU51-C	RP-145E
QU51-M	RP-152R
QU52-C	RP-152S
QU52-M	RP-152R
V-135	RP-162

CONVERSION KIT No. 9889

For Television Alignment Oscillator:

This kit is used to convert No. 159 oscillator to include 59-67 mc in place of 43-51 mc.

Parts supplied in this kit consist of: 1 escutcheon; 1 coil complete with core and bracket; 1 switch contact; and necessary screws, nuts, and washers for mounting.

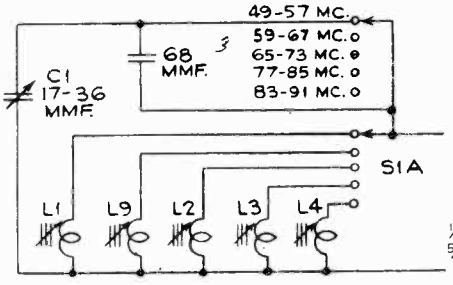
Revision procedure is as follows:

(a) Cut lead from C1 to S1A.
(b) Cut lead from L1 to S1B.
(c) Cut lead between old 44-50 mc and 50-56 mc taps on S1A.
(d) Mount extra contact on S1A preceding old 44-50 mc position.
(e) Connect extra contact lead to L1.
(f) Drill and tap 6-32 hole in center of sweep condenser stator bar nearest front panel.
(g) Mount new 59-67 mc coil L9.
(h) Connect lower L9 lead (nearest bracket end) to common coil bus near L5.
(i) Connect tap L9 lead to former L1 switch contact on S1B.
(j) Connect C1 to former 44-50 mc contact on S1A.
(k) Mount escutcheon.

Make the following changes to the instruction book IB-32011:

Page 8—Delete adjustment No. 5. Add adjustment 6A, symbol L9, description 60-66 mc band tuning: set the center of the sweep range to 63 mc.

Page 14—Change schematic as shown in accompanying sketch.



To accommodate deletion of the original No. 1 channel (44-50 mc), and addition of the new No. 2 channel (60-66 mc), kit No. 9889 is available to convert Stock No. 159 television alignment oscillator.

RCA VICTROLA MECHANISM DATA

V-170	RP-152
V-175	RP-158
V-200	RP-152A
V-201	RP-152A
VHR-202	RP-155
V-205	RP-152B
V-205A	RP-153
VHR-207	RP-155
V-209	RP-158
V-210	RP-158
V-215	RP-160
V-219	RP-160A
V-221	RP-160B
V-225	RP-151
V-300	RP-152J
V-301	RP-153
V-302	RP-153
VHR-307	RP-155
V-405	RP-152J
VHR-407	RP-155

"RP" vs STOCK NUMBERS

In service data for radio-phono combinations, the automatic record changer mechanism is usually described in a separate service note. In such cases, the mechanism is identified by an "RP" number. Certain of these mechanisms are also marketed under RCA "Stock Numbers." Corresponding "RP" and Stock Numbers are listed below. For service data on any given Stock Number of mechanism, refer to the corresponding "RP" service note.

RP No.	Stock No.
RP-139B	9865
RP-139C	9865
RP-145A	9865A
RP-151	9933
RP-152C	9909
RP-152M	9909D
RP-155A	9910
RP-158	9930
RP-160	9931
RP-162	9932

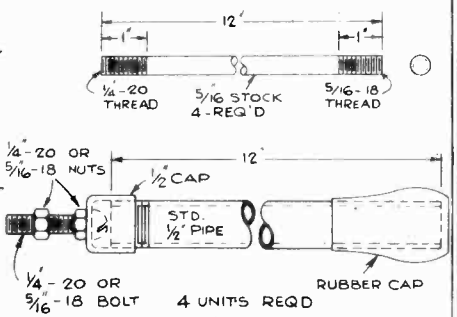
CABINET MUST BE LEVEL

For Correct Landing and Feed-in:

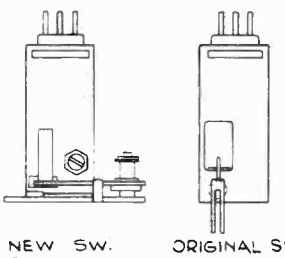
V-215 and V-221 "roll-out" record changers are designed to operate WHEN THE CABINET IS LEVEL. The changer is automatically tilted forward 3 degrees when in the cabinet. Always make landing and feed-in adjustments under these conditions.

In V-215 and -221, an adjustment is located on each of the rear legs to permit fore-and-aft leveling. If the changer does not roll out correctly when the cabinet is level, inspect the rubber-tired rollers and the guides.

V-219, -225, and all other models in which the changer is fastened in cabinet, are designed to operate WHEN THE CHANGER AND CABINET ARE LEVEL. Always make landing and feed-in adjustments under these conditions.



Legs can be used to support a record changer in level position at a convenient height above work table. The legs can be made from threaded rod, or from pipe fittings, as shown above.



Original and new motor switch for automatic shut-off in manual operation on RP-152D and RP-153.

CHANGES
NOTES, DATA

RCA MFG. CO., INC.

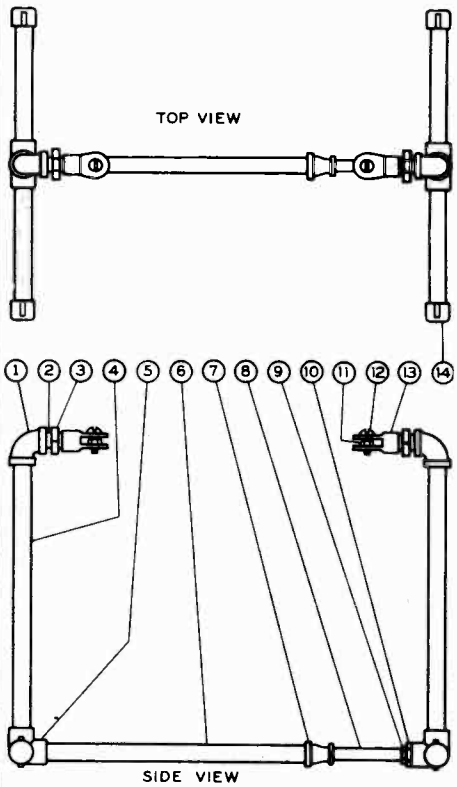
HOLDER FOR RECORD CHANGER

Essential in Servicing:

In servicing an automatic record changer, it is essential to have some kind of a holder or stand to support the mechanism in a level position at a convenient height above the work table to permit easy access to all parts under the motorboard.

Adjustable stands can be purchased, or assembled from pipe fittings as shown in the accompanying sketch.

The simplest and cheapest type of holder is made by using legs that screw into the motorboard-mounting-screw sockets. Such legs can be made from pipe fittings or from threaded rods as shown in the sketches. One end of each leg has a ¼-20 thread to accommodate most RCA changers, and the other end has a 5/16-18 thread to accommodate the RP-151 mechanism.



An adjustable holder for automatic record changer mechanisms can be made from pipe fittings as shown above.

RP-152D, -153, QU7

Automatic Motor Switch:

Some models of RCA automatic record changers incorporate a switch that acts to shut off the motor when the pickup needle is 1⅜ inches from the spindle, and also when the pickup is moved out to its rest position.

The original switch, Stock No. 36529, is superseded by an improved switch, Stock No. 38995. When installing the new switch, remove the angle bracket that is used between the motor board and the original switch.

VHR-202, -207, -307, -407

Crystal Pickup is No. 37158

In the Service Data for these home-recording models, the pickup cartridge is incorrectly listed as No. 33905. The correct Stock Number is 37158. This correction should also be noted in the tabulation on page 5 of "Supplementary Information No. 5."

DO NOT TOUCH THIS TONE ARM

when playing either one or more records automatically, to avoid possibility of disturbing Automatic Adjustment. Just Push a Button—There's Your Record Program.

The label reproduced above is fastened to the record changer in Models V-215, -219, -221, and -225.

These mechanisms are designed for completely automatic operation on a stack of records or on a single record.

Customers should be instructed to use the START-REJECT button and not to handle the tone arm.

The following parts are required for the record-changer holder shown above. These parts can be obtained in hardware or plumbing shops.

Drawing Number	Description	Quantity
1	½-in. ell	2
2	½-in. all-thread nipple	2
3	½-in. gas-pipe locknut	2
4	½-in. x 15-in. pipe	2
5	½-in. 4-way ell on side outlet tee	2
6	½-in. x 14-in. pipe	1
7 (optional)	½-in. x ⅜-in. reducer	1
8	½-in. x 15-in. pipe	1
9-10	½-in. to ¼-in. bushing	1
11 (optional)	¼-in. std. nut and 5/16-in. std. nut	2 each
12	¼-in. x 1¼-in. std. and 5/16-in. x ¼-in. std. bolt	2 each
13	½-in. awning eyelet	2
14	½-in. pipe cap	4

Note: If item 13 is not obtainable, change item 2 to 2½-in. nipples, and drill 5/16-in. holes close to one end to accommodate the motorboard mounting bolts.

RP-151, -158, -160, -162

Trip Lever and Trip Pawl Spring:

The original bronze trip-pawl spring, Stock No. 38562, is no longer available. When this spring requires replacement, due to loss or irreparable damage, it is necessary to install either a new steel spring, Stock No. 39961, in accordance with instructions given below, or else install a complete new trip lever assembly which employs the steel spring.

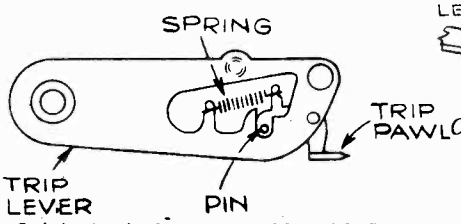
In RP-151, the new trip lever, trip pawl, and steel spring assembly is Stock No. 38561

In RP-158, -160, and -162, the new trip lever, trip pawl, and steel spring assembly is Stock No. 38632.

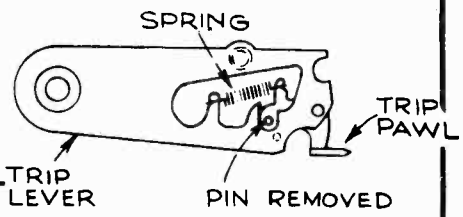
The new lever and spring assemblies will be supplied on orders for the original assemblies.

Installing Steel Spring No. 39961 on Trip Lever:

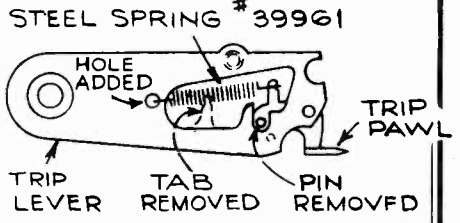
1. Drill a 3/32-inch hole in lever as shown.
2. Cut off the tab that was used to anchor the original bronze spring.
3. Install steel spring as shown.



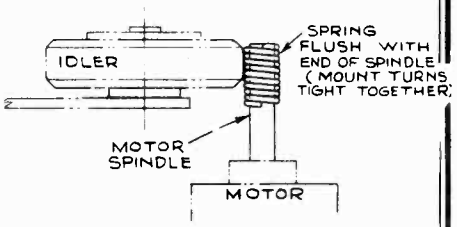
Original trip lever assembly with Bronze spring.



Original trip lever with corner cut off to prevent lever striking the ratchet.



Trip lever with new steel spring. This steel spring can be installed on original lever in place of bronze spring by drilling a 3/32 inch hole and cutting off the tab on original lever.

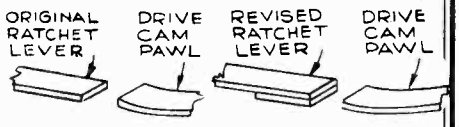


Spring sleeve installed on 60-cycle motor spindle for operation on 50-cycle supply.

REVISED RATCHET LEVER

In RP-158, -160, and -162, continuous tripping can be caused by failure of the ratchet lever to block the drive cam pawl at completion of a change cycle.

This has been corrected by doubling the thickness of the end of the ratchet lever so that it presents a broader face to the edge of the drive cam pawl. The lever with double thickness is carried under the same Stock Number (38656) as the original lever, which it supersedes.



Continuous tripping in RP-158, -160, and -162 can be caused by failure of the rachet lever to block the drive cam pawl. The replacement lever has double thickness at end to present a broader face to the drive cam pawl.

CHANGES
NOTES, DATA

RCA MFG. CO., INC.

RP-151, -158, -160, -162

Crystals and Sapphires:

The following Stock Numbers for crystal-and-sapphire assemblies supersede all previous listings:

RP	Used in Models	Stock No. of Sapphire and Holder, less nut—	Stock No. of Crystal and Sapphire Assembly—
151	V-225	38449	Top, 39919 (Alum. case) Bottom, 38598 (Alum. case)
158	V-175, V-209, V-210	39564	38610
160	V-215, V-219, V-221	38449	39550 (Zinc case)
162	V-135	39564	38610

Zinc-cased crystals have letters "ZN" cast in the metal.

Use only zinc-cased crystal No. 39550 for RP-160. This can not be used in RP-151.

Do not replace complete pickup where sapphire only requires replacement.

RP-160

Sapphire Pressure:

The correct sapphire pressure in RP-160 is approximately 1¼ ounces. The pressure is governed by a spring inside the end of the pickup arm. Owing to the fact that both aluminum and zinc castings (with difference in weight) have been used for the arm and the crystal, and also that only the zinc crystal (Stock No. 39550) is supplied for replacement, it is necessary to check the sapphire pressure whenever either the crystal or the arm is replaced.

The zinc arm is identified by the letters "ZN" after the drawing number inside the arm.

The zinc crystal is identified by the letters "ZN" moulded at the rear end of the cartridge.

The various combinations are tabulated below, along with the Stock Numbers of pivot arms and springs involved.

ARM AND CRYSTAL COMBINATIONS	CORRECT ARM AND SPRING
Aluminum arm Stock 38650 Aluminum crystal Stock 38453	Pivot arm Stock 38603 Pivot arm spring Stock 30585
Aluminum arm Stock 38650 Zinc crystal Stock 39550	Pivot arm Stock 38603 Pivot arm spring Stock 30585
Zinc arm Stock 39671 Zinc crystal Stock 39550	Pivot arm Stock 39672 Rivet for arm and spring Stock 39674 Pivot arm spring Stock 39754
Zinc arm Stock 39671 Aluminum crystal Stock 38453	Pivot arm Stock 39672 Rivet for arm and spring Stock 39674 Pivot arm spring Stock 39673

60 TO 50 CYCLE CONVERSION

For Rim-Drive Phono Motors:

(These instructions supersede all past issues, covering the use of shrunk sleeves.)

A spring sleeve is used to increase the diameter of the motor drive spindle, to compensate for the slower speed of the motor when used on a 50 cycle line.

Spring sleeves are available for the following models which comprise most of the motors using spindle drive manufactured to date.

To apply the spring-sleeve to the motor spindle, lock the rotor mahually and press spring gently over end of spindle, twisting the free end of spring counter-clockwise (to unwind coil) until following end of spring is flush with end of spindle.

The ends of spring should not protrude, and all coils should be close together, allowing a flat even surface on the motor spindle to contact the rubber drive.

Model No.	MOTOR Dwg. No.	MOTOR Stock No.	RP No.	Spring-Sleeve Stock No.
V-100	91647-3	36404		39681
V-101	"	"		"
V-102	"	"		"
V-105	"	"		"
QU56-C	92127-1	36984		"
QU56-M	"	"		"
V-135	91647-5	39301	RP-162	39750
V-140	"	"	"	"
V-175	91706-1	38612	RP-158	39748
V-209	"	"	"	"
V-210	"	"	"	"
QU51-M	"	"	RP-152R	"
QU52-C	"	"	RP-152S	"
QU52-M	"	"	RP-152R	"
QU55	"	"	RP-152R	"
V-215	91655-1	36254	RP-160	39749
V-219	or 91655-6	36254	RP-160A	"
V-221	"	"	RP-160B	"
V-225	91845-1	38557	RP-151	"
QU-51C	91655-6	36254	RP-145E	"
QU5	91655-6	34364	RP-145E	"

IMPROVED TONE ARM RETURN LEVER

Stock No. 39751

The tone arm return lever in RP-158, -160, -162, has been revised to incorporate two important improvements:

(1) A cam to adjust landing position on 12-inch records.

(2) A positive-acting feed-in lever and spring. (This pushes the tone arm in toward the music grooves after the sapphire has landed on the record.)

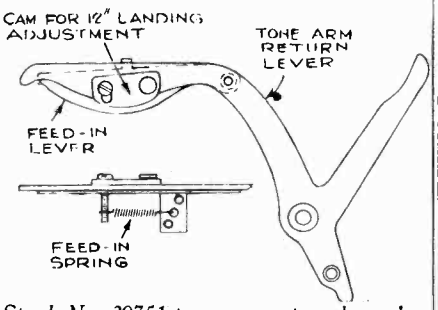
This revised lever, Stock No. 39751, supersedes the original lever, Stock No. 38618.

12-inch Landing Adjustment:

When adjusting a mechanism that has this revised lever, make the 10-inch landing adjustment in the usual manner as specified in the service notes. Then check landing on a 12-inch record and adjust the cam if necessary. The correct landing position for 12-inch records is 5⅜ inches from the sapphire to the nearest side of the spindle.

Feed-in Spring Adjustment:

The feed-in spring (Stock No. 39752) is hooked in one hole on a bracket that has three spaced holes to permit coarse adjustment of feed-in tension. Fine adjustment can be obtained by bending the bracket.

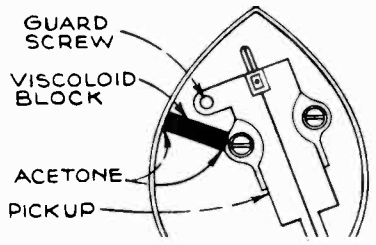


Stock No. 39751 tone arm return lever has a cam to adjust 12-inch landing position, and a positive acting feed-in mechanism. The feed-in tension can be adjusted by hooking the spring in a different hole on the bracket, and by bending the bracket.

RP-158, RP-162

Tone-Arm Resonance:

Chatter at frequencies near 2,500 cycles on some 1st production RP-158 or RP-162 mechanisms is caused by tone-arm resonance which can be eliminated by inserting a block of viscoloid (⅛ in. x ⅛ in. x 3/16 in.) in the arm as shown. The viscoloid block is No. 39949.



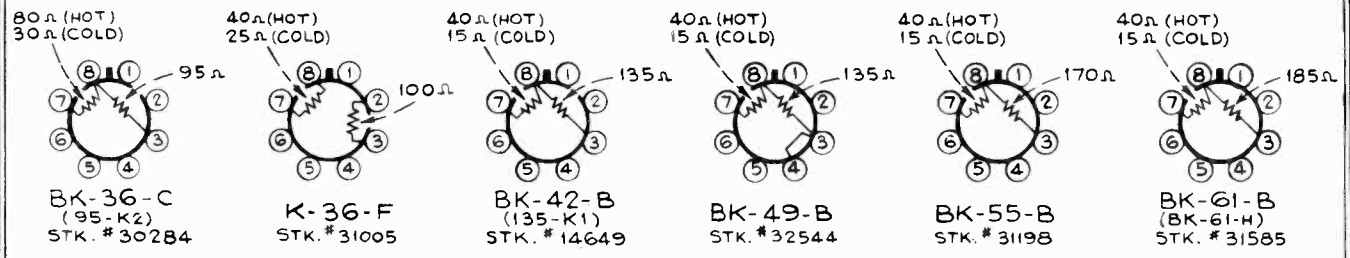
Viscoloid damper (No. 39949) minimizes tone arm resonance in RP-158, -162.

BALLAST TUBES

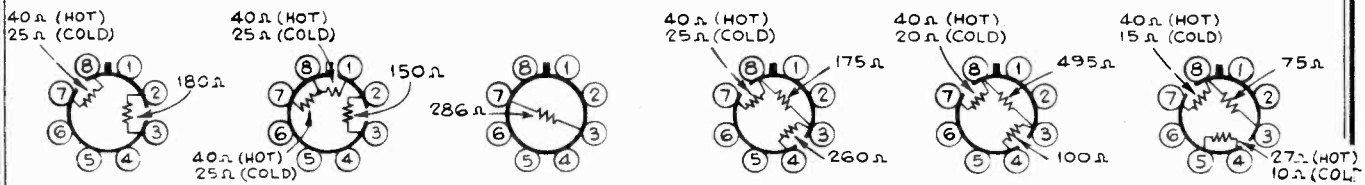
RCA MFG. CO., INC.

RCA Resistor Ballast Tube Data

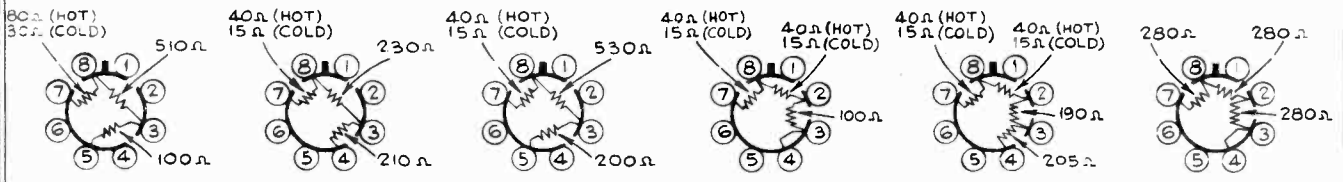
(Nos. in parenthesis are original designations)



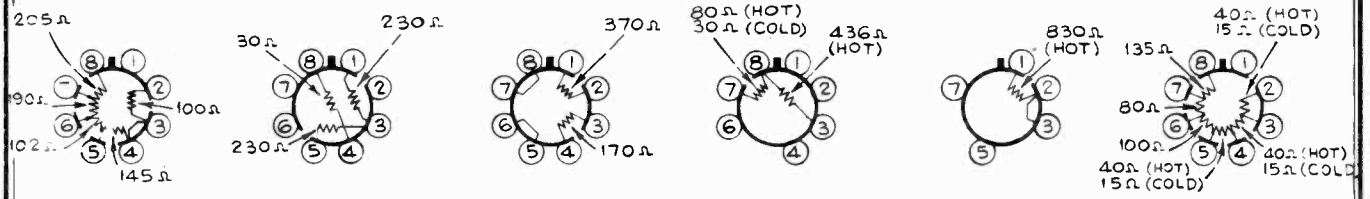
BK-36-C (95-K2) STK. # 30284 | K-36-F STK. # 31005 | BK-42-B (135-K1) STK. # 14649 | BK-49-B STK. # 32544 | BK-55-B STK. # 31198 | BK-61-B (BK-61-H) STK. # 31585



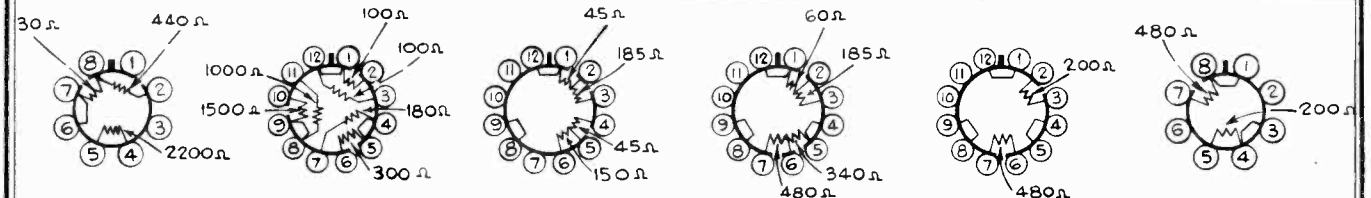
K-61-F STK. # 31019 | K-61-H STK. # 32109 | B-86-A STK. # 33793 | 260-K1 STK. # 30300 | 495-K1 STK. # 30599 | K-83747-6 (BK-36-B) STK. # 31577



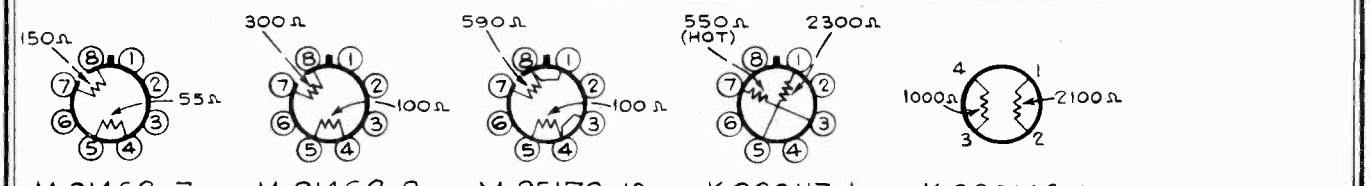
K-85277-3 STK. # 32247 | K-85277-4 STK. # 32850 | K-85277-5 STK. # 32849 | M-86892-1 STK. # 33811 | M-86892-2 STK. # 33812 | M-86892-3 STK. # 33813



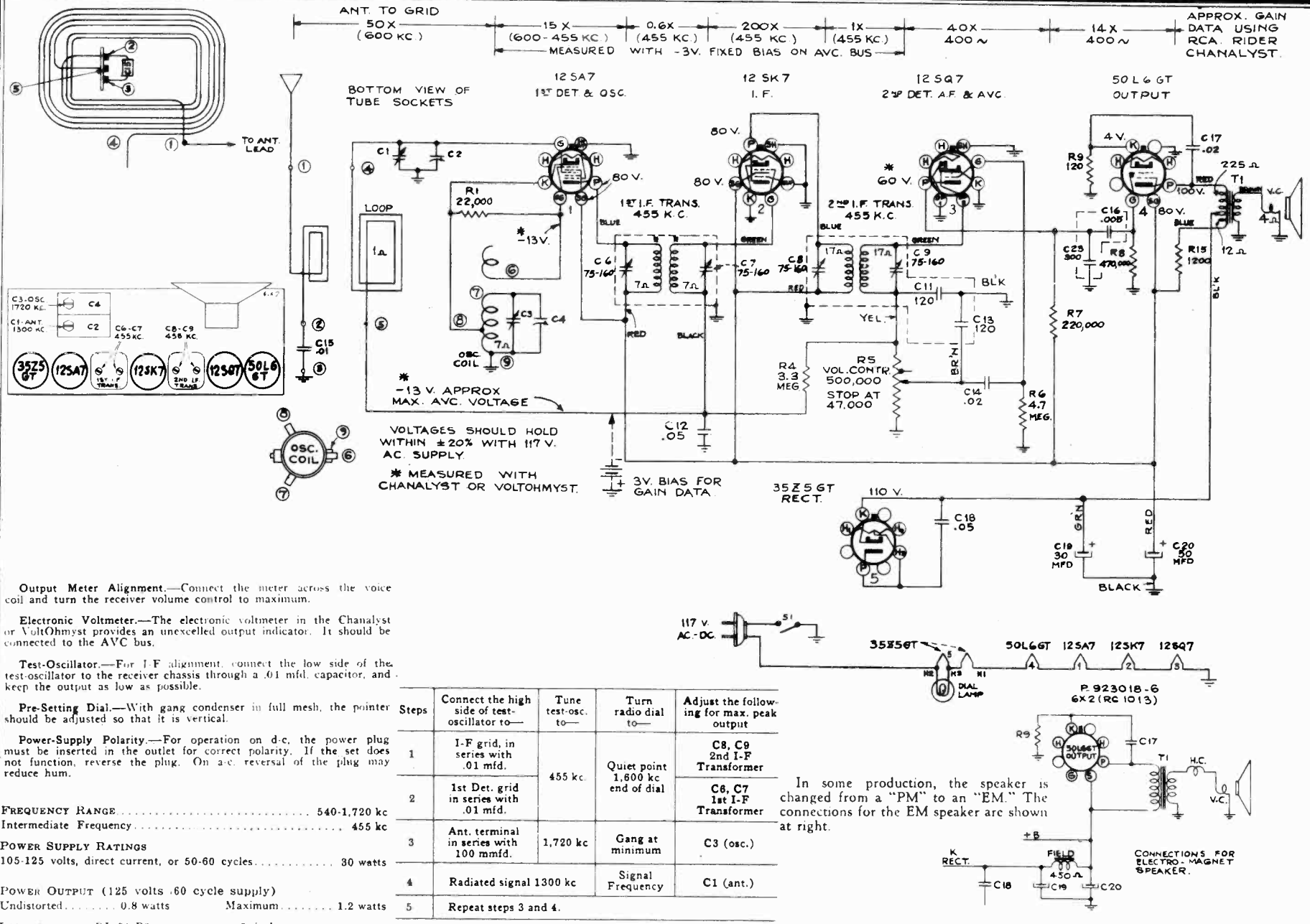
M-86892-4 STK. # 33947 | M-86892-6 STK. # 34563 | M-86892-7 STK. # 34458 | M-86892-8 STK. # 34805 | M-86892-9 STK. # 35000 | M-86892-10 STK. # 35183



M-86892-11 STK. # 37847 | M-91462-1 STK. # 35748 | M-91462-2 STK. # 35635 | M-91462-3 STK. # 37891 | M-91462-5 STK. # 37983 | M-91462-6 STK. # 38289



M-91462-7 MI-8159-1 | M-91462-8 MI-8159-2 | M-95178-10 STK. # 39346 | K-920117-1 STK. # 38702 | K-920146-1 STK. # 39575



Output Meter Alignment.—Connect the meter across the voice coil and turn the receiver volume control to maximum.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the receiver chassis through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

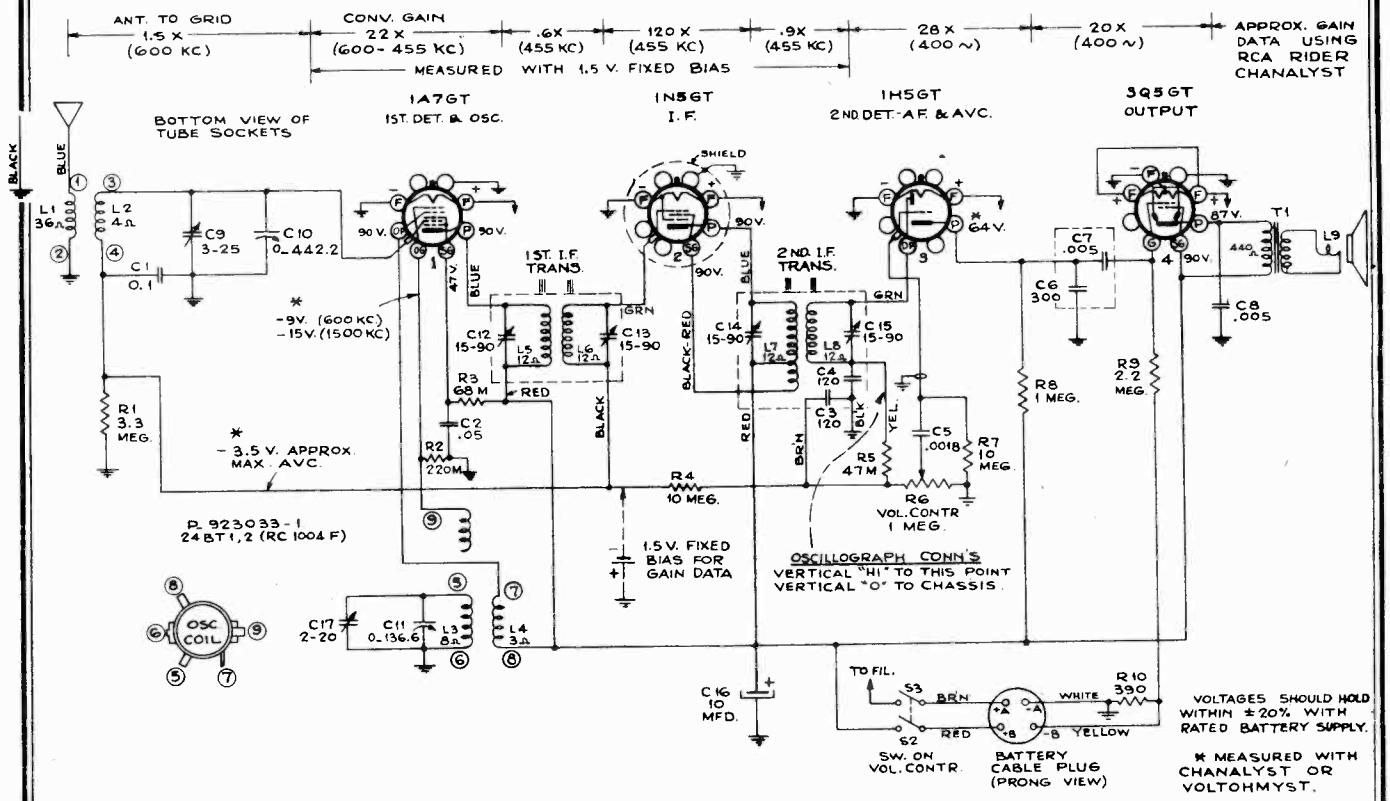
FREQUENCY RANGE	540-1,720 kc
Intermediate Frequency	455 kc
POWER SUPPLY RATINGS	
105-125 volts, direct current, or 50-60 cycles	30 watts
POWER OUTPUT (125 volts 60 cycle supply)	
Undistorted 0.8 watts	Maximum 1.2 watts
LOUDSPEAKER RL-81-B2	5 inch permanent magnet
or RL-86-A3	5 inch electro magnet

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc.	Quiet point 1,600 kc end of dial	C8, C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C6, C7 1st I-F Transformer
3	Ant. terminal in series with 100 mmfd.	1,720 kc	Gang at minimum	C3 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C1 (ant.)
5	Repeat steps 3 and 4.			

In some production, the speaker is changed from a "PM" to an "EM." The connections for the EM speaker are shown at right.

MODELS 24BT-1, 24BT-2
Chassis RC-1004F

RCA MFG. CO., INC.



FREQUENCY RANGE	540-1,720 kc
INTERMEDIATE FREQUENCY	455 kc

BATTERY DRAIN

"A"	.25 amperes
"B"	14 m.a.
MAX. POWER OUTPUT	.3 wat.

LOUDSPEAKER (5-inch PM)

Identification number	RL-85-6	92322-1
Voice coil impedance at 400 cycles	3 ohms	3 ohms

Cathode Ray Alignment is the preferable method. Connections for the oscillograph are shown in the diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil and turn the receiver volume control to maximum.

Test Oscillator.—For all alignment operations, connect the low side of the test oscillator to the receiver chassis, and keep the output as low as possible to avoid AVC action.

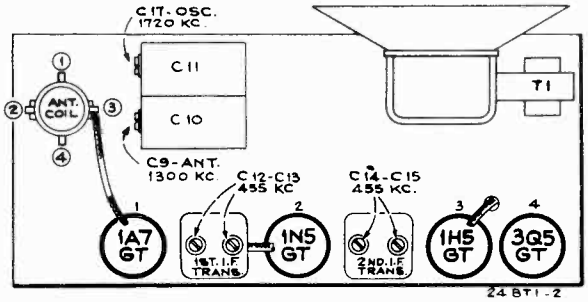
Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus.

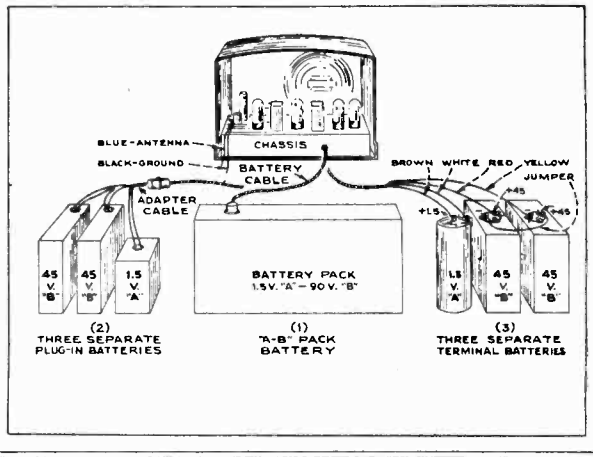
Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is horizontal.

Step	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3	Antenna terminal in series with 220 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		1,300 kc	1,300 kc signal	C9 (ant.)

Precautionary Lead Dress.—

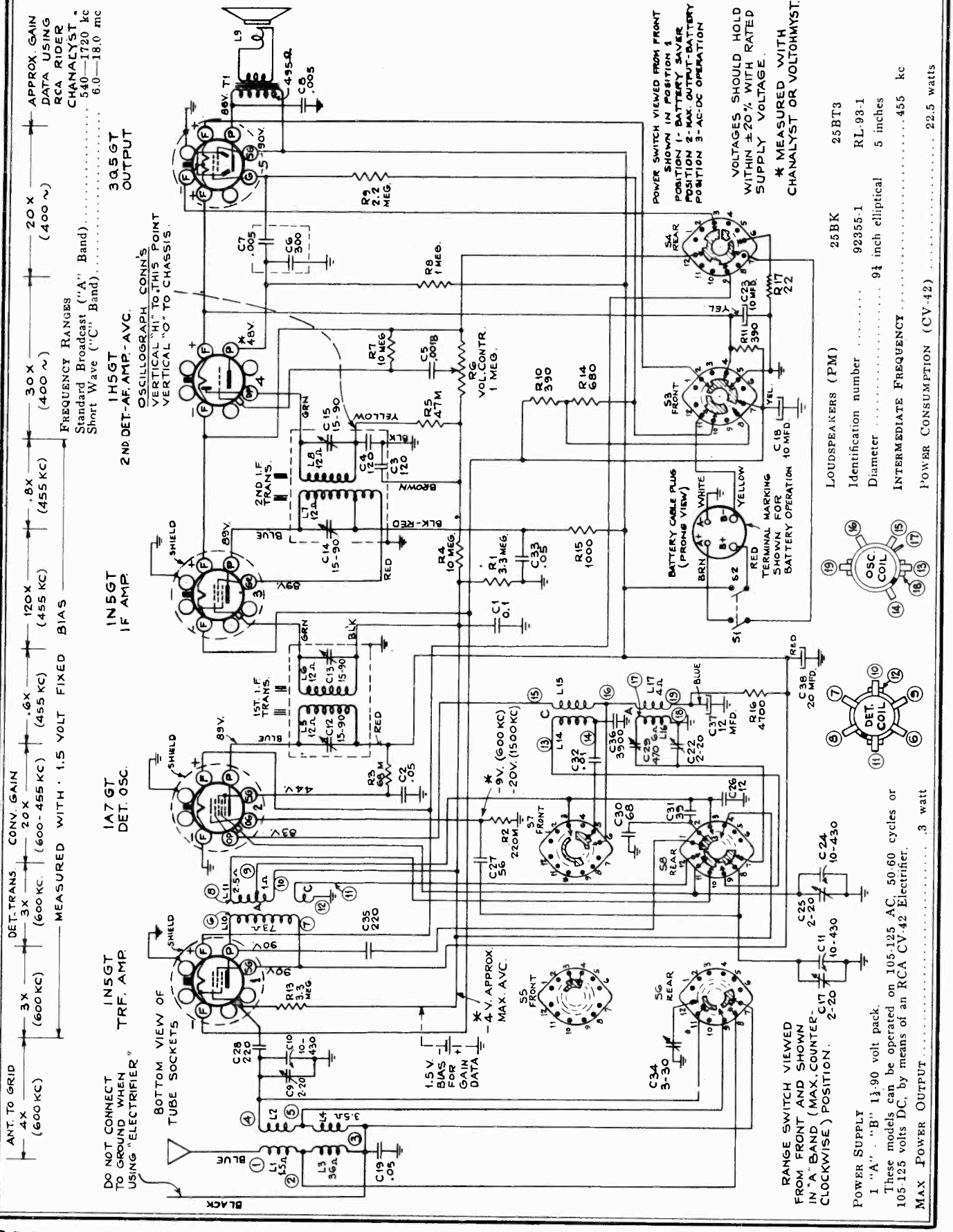
1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. Keep AVC lead connecting C1 away from the 1A7GT plate.
3. Keep blue plate leads coming from IF transformers short and close to the chassis.
4. All filament wires should be dressed close to chassis.





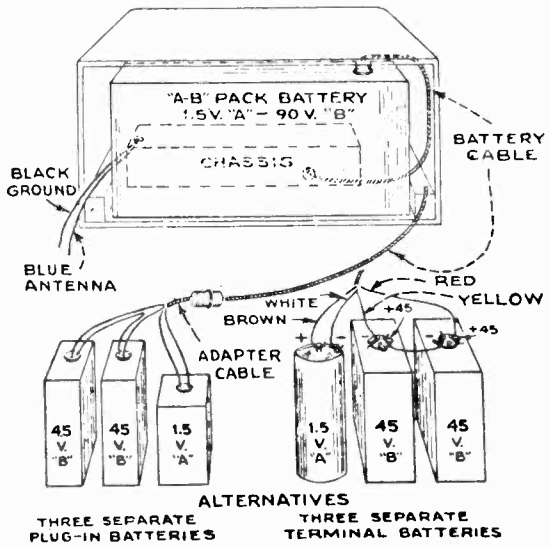
RCA MFG. CO., INC.

MODELS 25BK, 25BT-3
Chassis RC-1004B
CV-42 Electrifier



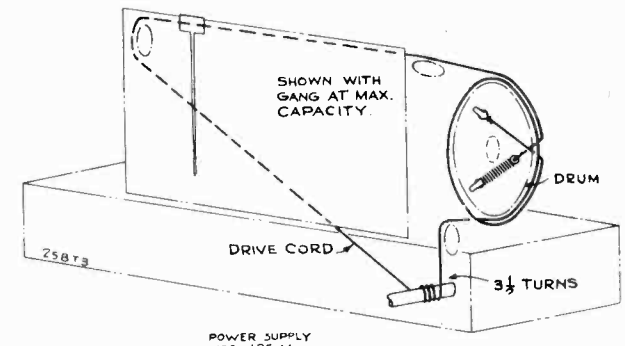
MODELS 25BK, 25BT-3
Chassis RC-1004B
Electrifier CV-42

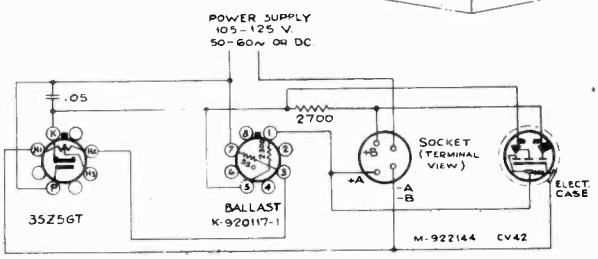
RCA MFG. CO., INC.



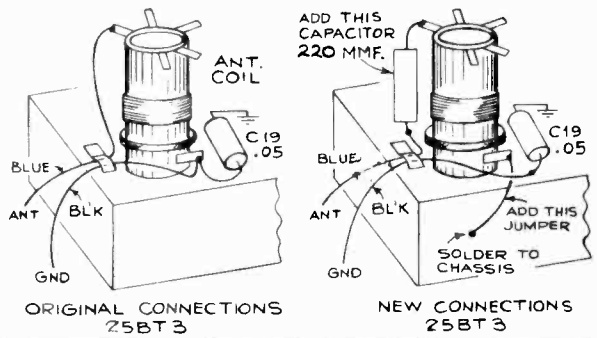
Precautionary Lead Dress:—

1. All filament wires should be dressed close to chassis.
2. Keep AVC lead connecting .1 Mfd. Filter to Ant. Coil away from 1A7GT plate.
3. Keep grid lead coming from first IF transformer short.
4. Keep Blue leads coming from IF transformer short and close to chassis.
5. Keep grid leads of 1N5GT and 1A7GT tubes away from each other.





Circuit of CV-42 Electrifier



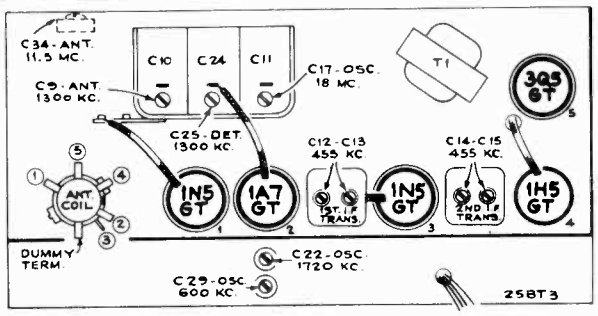
Remove any external ground connections when using the Electrifier.

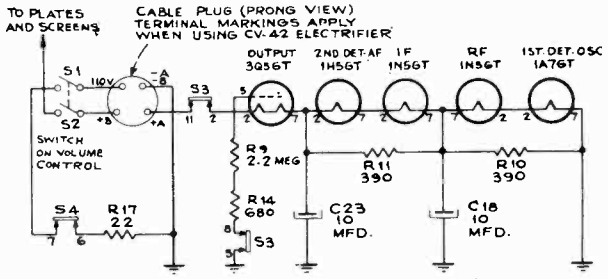
CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.

DO NOT TURN THE "BATTERY-ELECTRIC" SWITCH TO ELECTRIC POSITION WHILE THE RECEIVER IS CONNECTED TO BATTERIES.

On a DC power supply, if no reception is obtained, reverse the plug in the outlet and retune. On an AC supply, reversal of the plug may reduce hum. CAUTION! Do not touch Radio Chassis unless power plug is removed from socket.

Step	Connect high side of test osc. to—	Tune test-osc. to—	Turn radio-dial to—	Adjust the following for maximum peak output
1	I-F grid, in series with .01 mfd.	455 kc	"A" Band, Quiet point between 550 and 750 kc	C14 and C15 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			C12 and C13 (1st I-F trans.)
3	Antenna terminal in series with 220 mfd.	18 mc	18 mc	C17 (Osc.)
4		1720 kc	Tuning condenser rotor plates all out	C22 (Osc.)
5		600 kc	600 kc	C29 (Rock)
6		1300 kc	1300 kc signal	C9 (Ant.) C25 (Det.)
7	Repeat steps 4, 5, and 6			
8	Antenna terminal in series with 300 ohms	11.5 mc	11.5 mc signal	C34 (Ant.)





Simplified Diagram of Filament Circuit when using CV-42

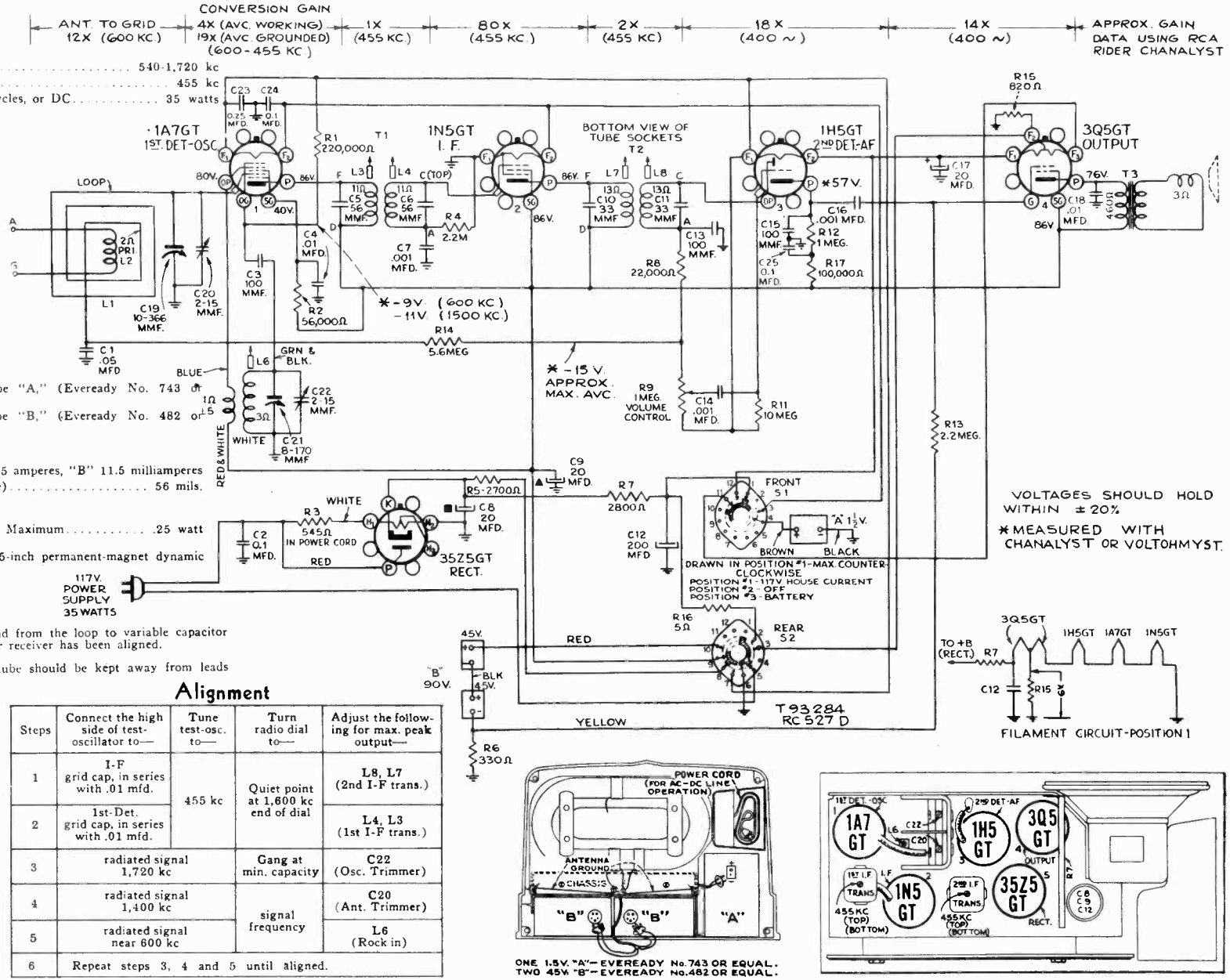
Hum Modulation on Model 25BT3 When Using CV-42 "Electrifier."

The following changes should be made in cases where hum modulation is experienced when operating Model 25BT3 from a CV-42 electrifier power unit. It is *not* necessary to remove the chassis from the cabinet to make these changes.

(1) Connect a 220 mmfd. molded mica capacitor in series with the blue antenna lead as shown.

(2) Disconnect the black ground lead and C19 from the bottom lug on the antenna coil. Connect a jumper from this lug to chassis. Connect the black ground lead to C19 and tape the joint.

The original and revised connections are shown at left.



Batteries Required

"A" one 1.5 volt dry plug-in type "A," (Eveready No. 743 or equivalent)

"B" two 45 volt dry plug-in type "B," (Eveready No. 482 or equivalent)

Current Consumption

Battery Operation ..... "A" 0.25 amperes, "B" 11.5 milliamperes

Total Rect. "B" (117 volt, 60 cycle) ..... 56 mils.

Power Output

Undistorted ..... .15 watt Maximum ..... .25 watt

Loudspeaker ..... 5-inch permanent-magnet dynamic

Precautionary Lead Dress.—

1. Lead from I-F tube grid and from the loop to variable capacitor should not be disturbed after receiver has been aligned.
2. Grid lead to the 1N5-GT tube should be kept away from leads to filament resistors.

Alignment

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	I-F grid cap, in series with .01 mfd.	455 kc	Quiet point at 1,600 kc end of dial	L8, L7 (2nd I-F trans.)
2	1st-Det. grid cap, in series with .01 mfd.			L4, L3 (1st I-F trans.)
3	radiated signal 1,720 kc		Gang at min. capacity	C22 (Osc. Trimmer)
4	radiated signal 1,400 kc		signal frequency	C20 (Ant. Trimmer)
5	radiated signal near 600 kc			L6 (Rock in)
6	Repeat steps 3, 4 and 5 until aligned.			

MODEL 25BT-2 — RCA MFG. CO., INC.

Chassis RC-1004A CV-42 Electrifier

POWER SUPPLY
1 "A" - "B" 1½-90 volt pack.

Model 25BT2 can be operated on 105-125 volts AC, 50-60 cycles, or 105-125 volts DC, by means of a RCA CV-42 Electrifier.

BATTERY DRAIN

MAXIMUM POWER OUTPUT ..... .3 watt
"A" ..... .3 amperes
"B" ..... 10 m.a. (Switch at "Battery Saver" position)
"C" ..... 14 m.a. (Switch at "Maximum Output" position)

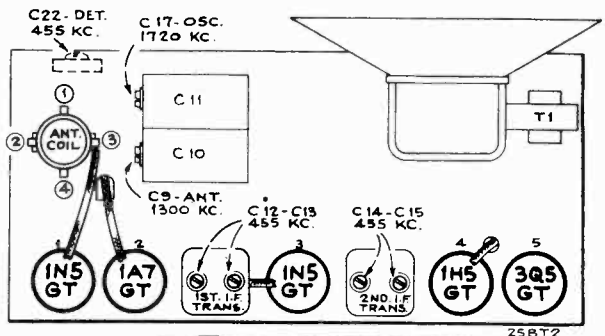
POWER CONSUMPTION
With CV-42 Electrifier Unit ..... 22.5 watts

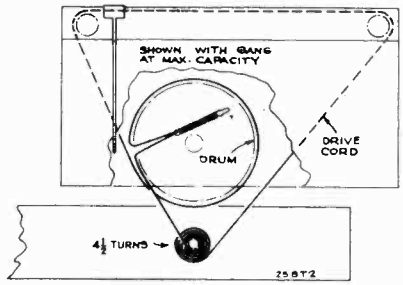
LOUDSPEAKER (5-inch PM)	RL-85-6	92322-1
Voice coil impedance at 400 cycles	3 ohms	3 ohms

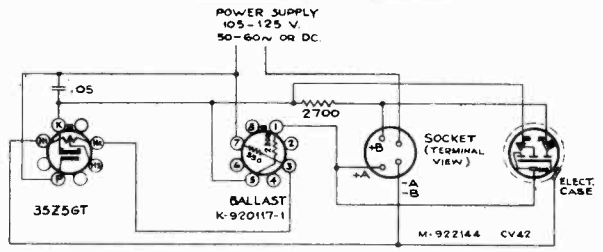
Step	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3	Antenna terminal in series with 200 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		1,300 kc	1,300 kc signal	C9 (ant.)
5		455 kc	Quiet point between 550 and 750 kc	Adjust C22 for minimum output on strong 455 kc signal

Precautionary Lead Dress.—

1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. All filament wires should be dressed close to chassis.
3. Keep AVC lead connecting C1 to antenna coil away from the 1A7GT plate.
4. Keep blue plate leads coming from I.F. transformers short and close to chassis.
5. Keep yellow leads connecting to oscillator coil away from trap coil.
6. Keep grid lead of 1N5GT RF tube away from 1A7GT grid.



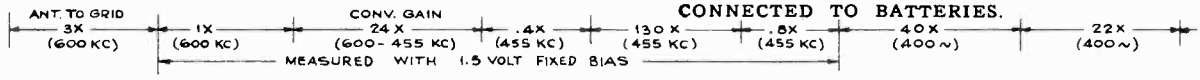


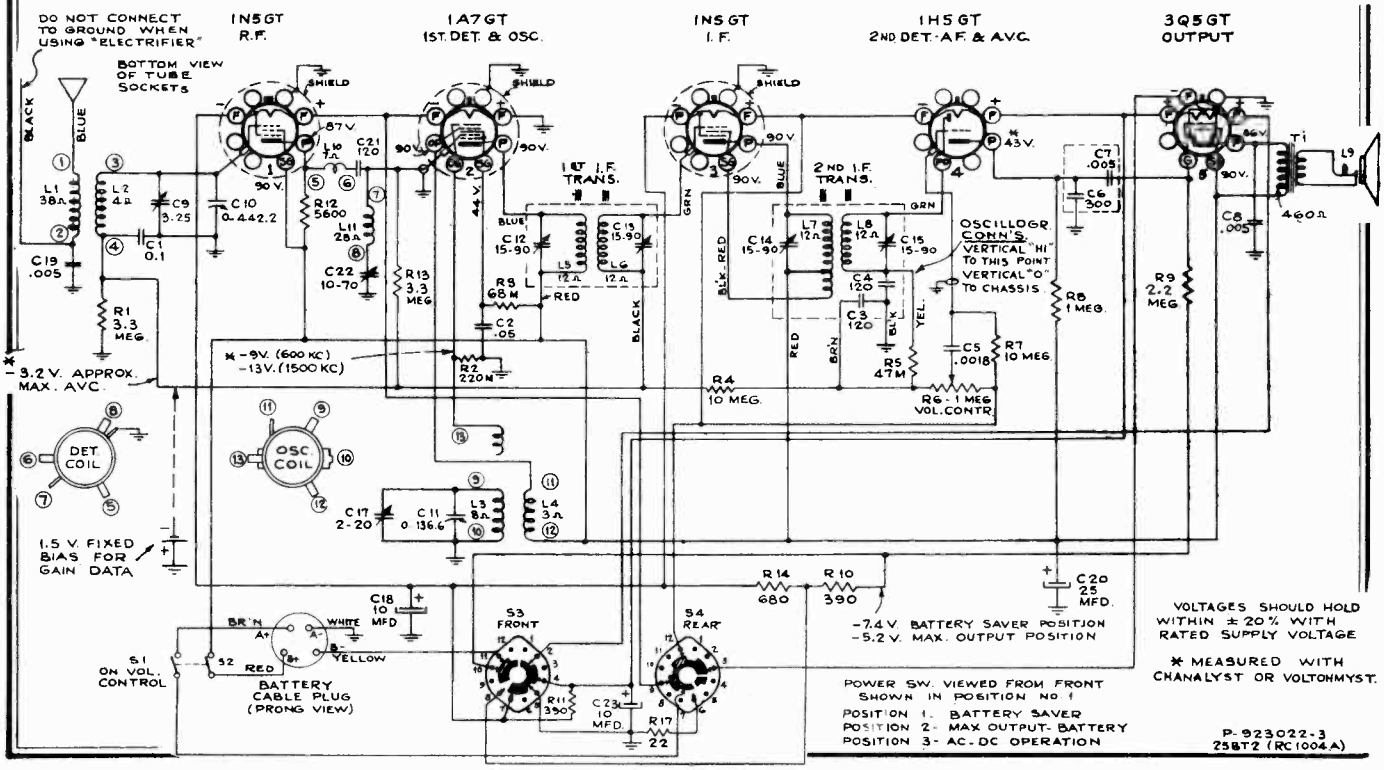


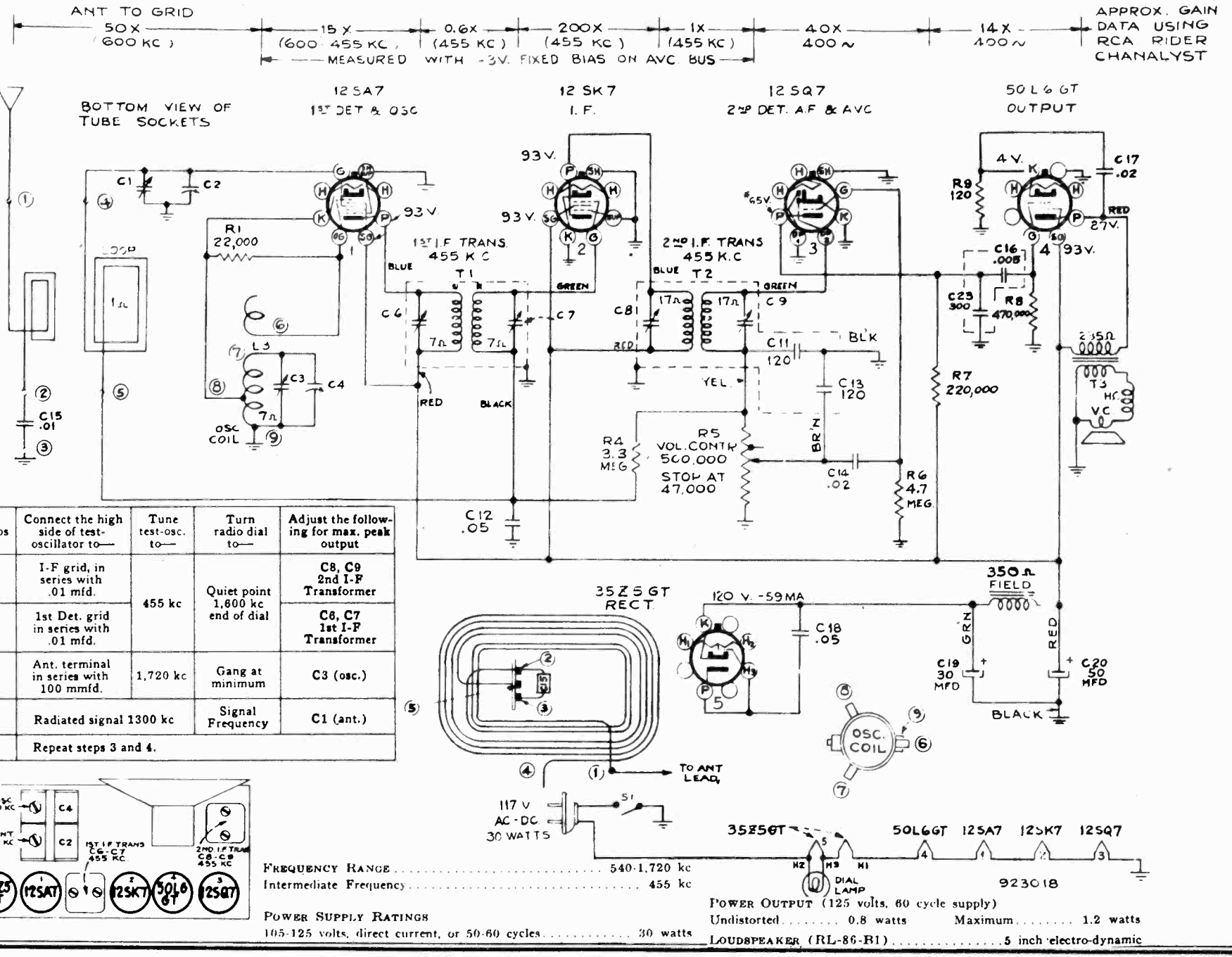
Remove any external ground connections when using the Electrifier.

CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.

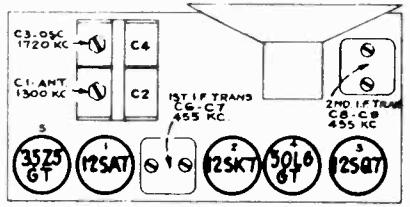
DO NOT TURN THE "BATTERY-ELECTRIC" SWITCH TO ELECTRIC POSITION WHILE THE RECEIVER IS CONNECTED TO BATTERIES.







Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	C8, C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C6, C7 1st I-F Transformer
3	Ant. terminal in series with 100 mmfd.	1,720 kc	Gang at minimum	C3 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C1 (ant.)
5	Repeat steps 3 and 4.			



FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

POWER SUPPLY RATINGS
105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)
Undistorted ..... 0.8 watts Maximum ..... 1.2 watts
LOUDSPEAKER (RL-86-B1) ..... 5 inch electro-dynamic

MODELS 26X-1, 26X-3
Chassis RC-1014A

RCA MFG. CO., INC.

FREQUENCY RANGE
Broadcast ..... 540-1,720 kc
Short Wave ..... 8.7-15.6 mc

INTERMEDIATE FREQUENCY ..... 455 kc

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT
Undistorted ..... 0.9 watts
Maximum ..... 1.4 watts

LOUDSPEAKER RL-81B2 "PM," or RL-86B1, "EM."
Size 5-inch
V.C. Impedance ..... 4 ohms at 400 cycles

POWER SUPPLY RATING
105-125 volts, AC, 50 or 60 cycles, or DC ..... 30 watts

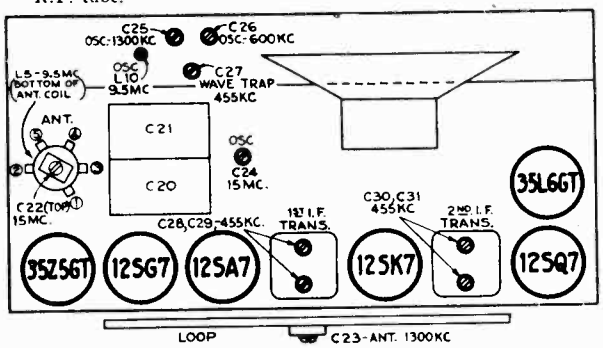
Precautionary Lead Dress

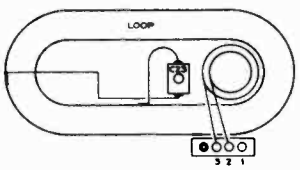
1. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
2. Dress brown and yellow leads from 2nd I.F. transformer away from output plate and bypass condenser.
3. Dress .02 capacitor C12 away from output capacitor C16.
4. Dress all leads or parts as far as possible away from oscillator coil.
5. Dress lead from C13 to band switch down along front apron of chassis.
6. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and R.F. tube.

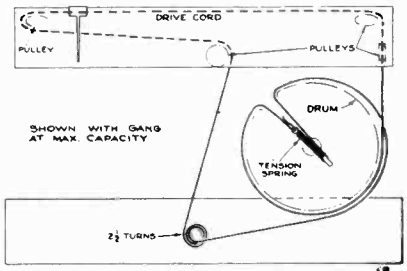
Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I.F. grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C30, C31 2nd I-F trans.
2	1st det. grid in series with 0.1 mfd.			C-28, C-29 1st I-F trans.
3	R.F. grid in series with 0.1 mfd.			C-27** Wave trap
4	Ant. terminal in series with 47 mmf. (link open)	15 mc	15 mc "C" Band	C-24 (osc.)* C-22 (ant.)
5		9.5 mc	9.5 mc "C" Band	L-10 (osc.) L-5 (ant.)
6		Repeat steps 4 and 5.		
7	Ant. terminal in series with 220 mmf. (link open)	1,300 kc	1,300 kc "A" Band	C-25 (osc.) C-23 (ant.)
8		600 kc	600 kc "A" Band	C-26 (osc.)
9		Repeat steps 7 and 8.		

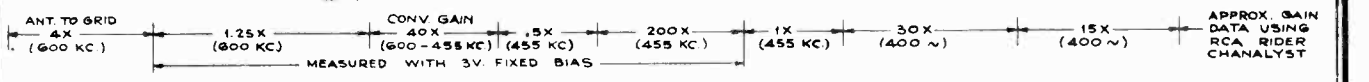
*Use minimum capacity peak if two peaks can be obtained.
**Adjust C-27 for minimum signal with 455 kc applied to R.F. grid.

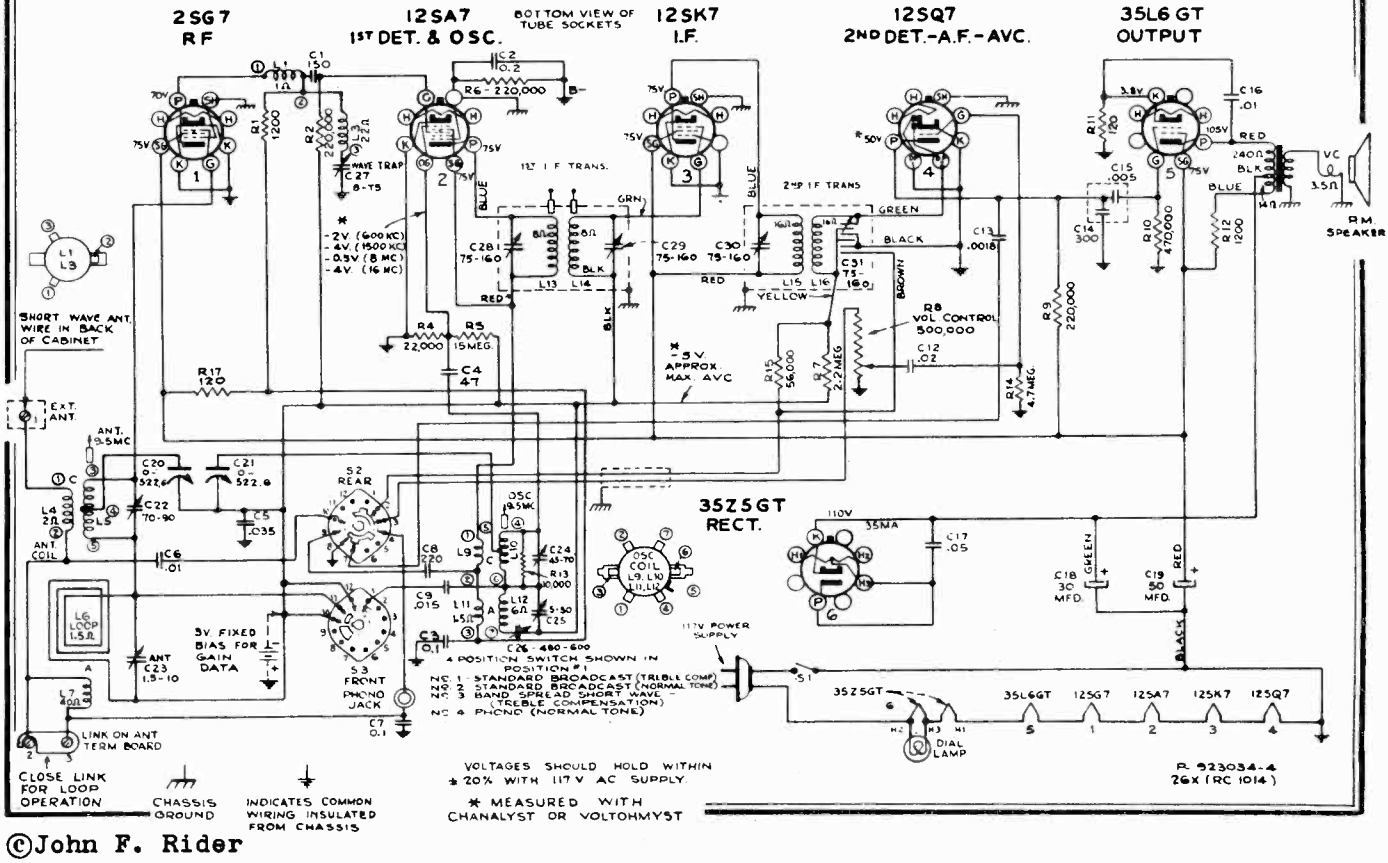
Note.—Oscillator tracks 455 kc above signal on all bands.

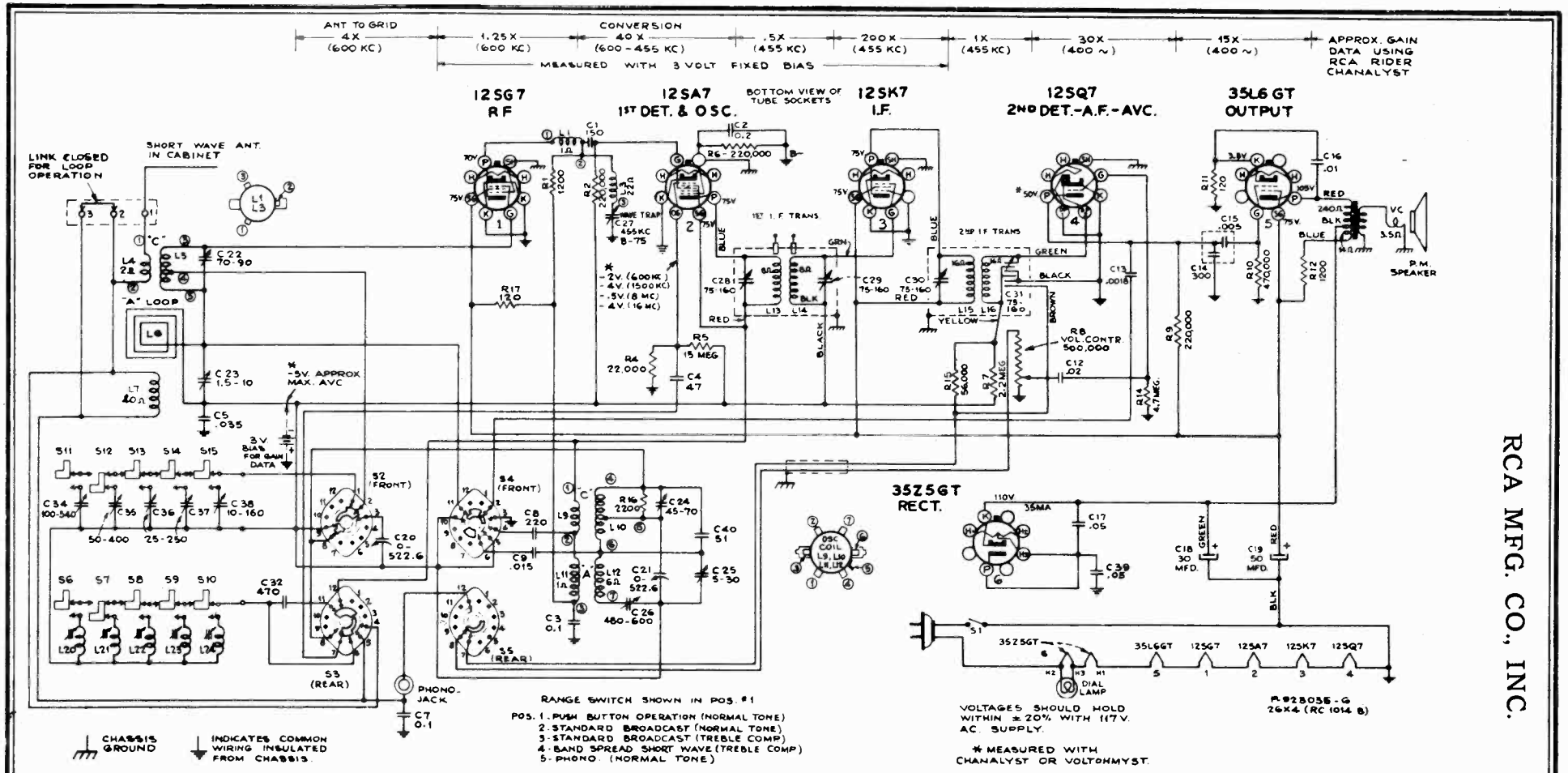


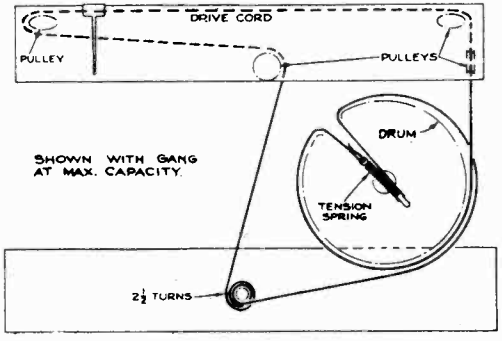












Critical Lead Dress

1. Dress grid lead to IF amp. tube back into shield can and plate lead from same tube back into shield can to keep exposed length as short as possible.
2. Dress output tube plate lead to speaker and output bypass condenser away from terminal board and yellow lead in cable.
3. Dress brown and yellow leads from 2nd IF transformer away from output plate and bypass condenser.
4. Dress .02 capacitor C12 away from output capacitor C16.
5. Dress all leads or parts as far as possible away from oscillator coil.
6. Dress lead from C13 to band switch down along front apron of chassis.
7. Dress lead from trimmer condenser on loop to S.W. Ant. coil around outside of rectifier tube. Other leads between rectifier and RF tube.
8. Dress lead to contact No. 11 on front wafer of switch away from audio leads.

MODEL 26X-4
Chassis RC-1014B

RCA MFG. CO., INC.

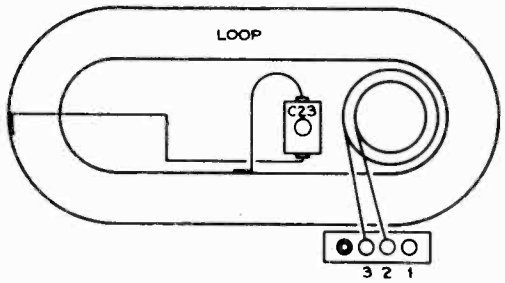
FREQUENCY RANGE
Broadcast ..... 535-1,600 kc
Short Wave ..... 8.7-15.6 mc
Intermediate Frequency ..... 455 kc

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

POWER OUTPUT
Undistorted ..... 0.9 watts
Maximum ..... 1.4 watts

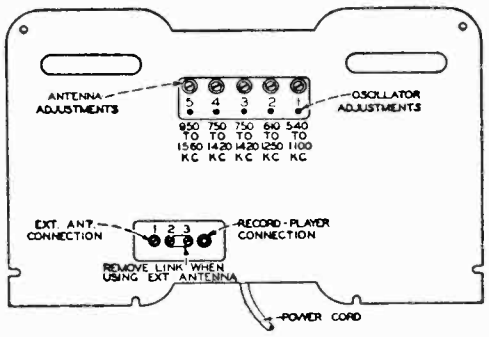
LOUDSPEAKER RL-81B2 "PM," or RL-86-B1 "EM."
Size 5-inch
V.C. Impedance ..... 4 ohms at 400 cycles

POWER SUPPLY RATING
105-125 volts, AC, 50 or 60 cycles, or DC ..... 30 watts



PUSH-BUTTON RANGES
One station between approximately ..... 540-1,100 kc
One station between approximately ..... 610-1,250 kc
Two stations between approximately ..... 750-1,420 kc
One station between approximately ..... 950-1,560 kc

Push Button Adjustment



The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station.
4. After oscillator core is set correctly, adjust No. 1 antenna trimmer for maximum output.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On the 950 to 1,560 kc push-button, the higher frequency stations may be received with L24 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

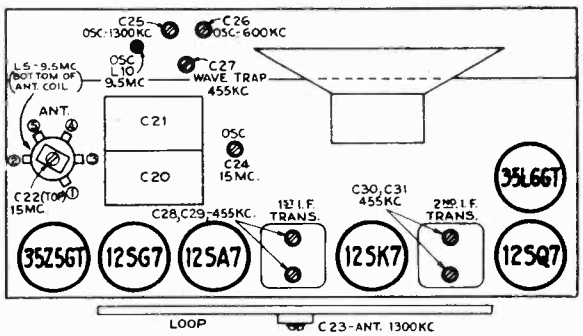
Alignment Procedure

Test Oscillator.—For all alignment operations, keep the output as low as possible to avoid a.v.c. action.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the dial backing plate for quick reference during alignment.

Power Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.



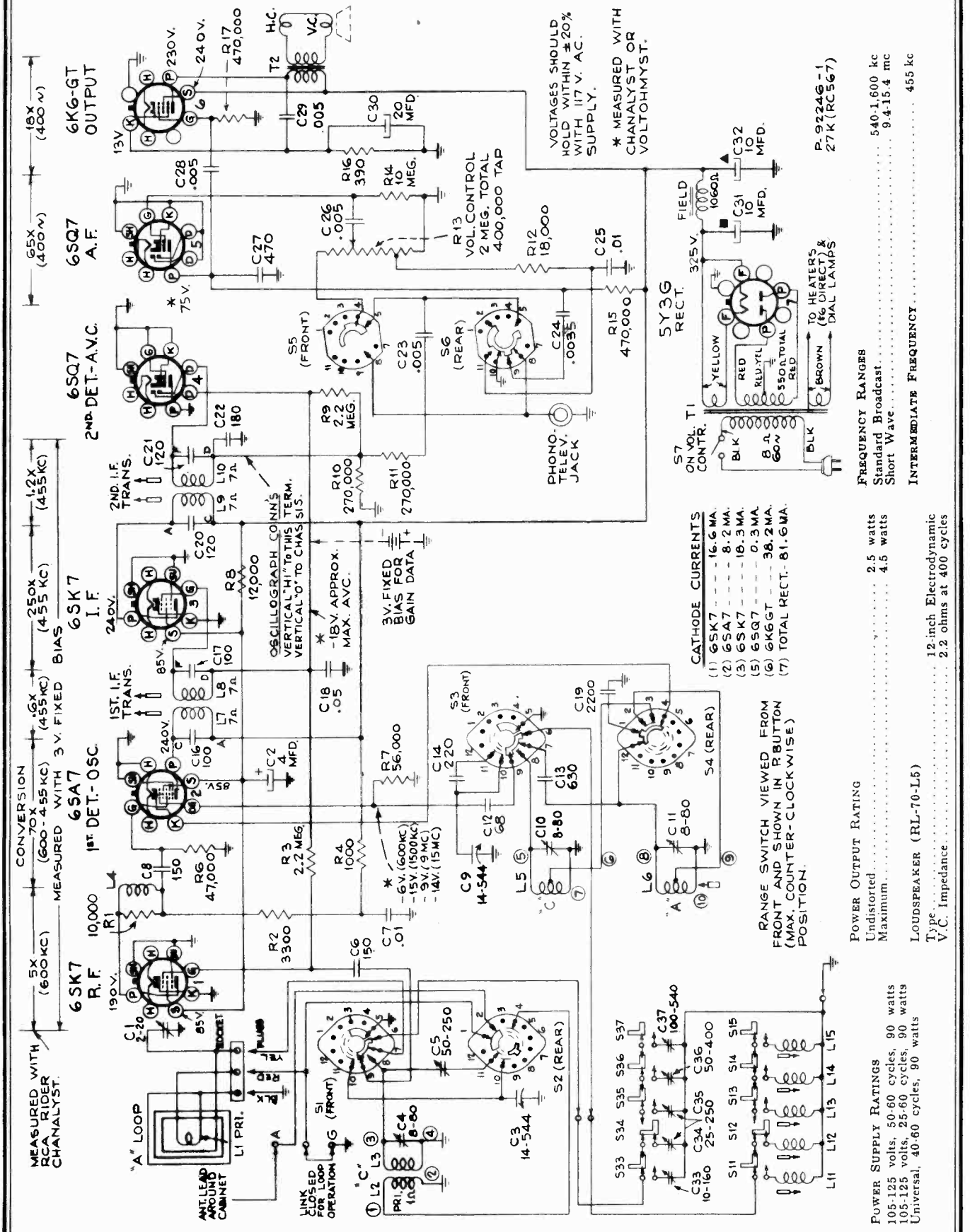
Steps	Connect high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I.F. grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C30, C31 2nd I-F trans.
2	1st det. grid in series with 0.1 mfd.			C-28, C-29 1st I-F trans.
3	R.F. grid in series with 0.1 mfd.			C-27** Wave trap
4	Ant. terminal in series with 47 mmf. (link open)	15 mc	15 mc "C" Band	C-24 (osc.)* C-22 (ant.)
5		9.5 mc	9.5 mc "C" Band	L-10 (osc.) L-5 (ant.)
6		Repeat steps 4 and 5.		
7	Ant. terminal in series with 220 mmf. (link open)	1,300 kc	1,300 kc "A" Band	C-25 (osc.) C-23 (ant.)
8		600 kc	600 kc "A" Band	C-26 (osc.)
9		Repeat steps 7 and 8.		

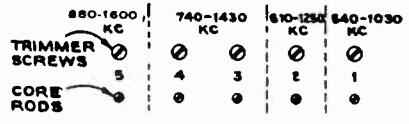
*Use minimum capacity peak if two peaks can be obtained.
**Adjust C-27 for minimum signal with 455 kc applied to R.F. grid.

Note.—Oscillator tracks 455 kc above signal on all bands.

MODEL 27K, Chas. RC-567

RCA MFG. CO., INC.





Push Button Adjustment

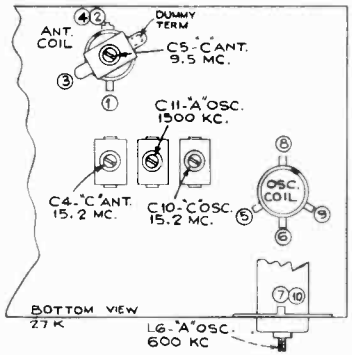
The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core (L-15) to receive the station.
4. After oscillator core is set correctly, adjust C-37 for maximum output.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

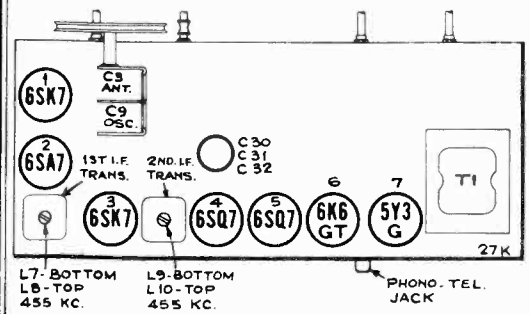
On the 880 to 1,600 kc push-button, the higher frequency stations may be received with L-11 either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

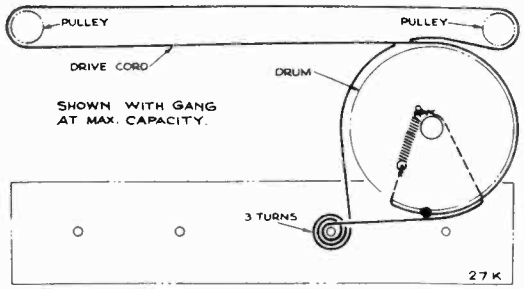


Steps	Connect high side of test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	6SK7 I-F grid in series with 0.01 mfd.	455 kc	"A" Band Quiet Point between 550 and 750 kc	L-9 and L-10 (2nd I-F Trans.)
2	6SA7 grid in series with 0.01 mfd.			L-7 and L-8 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf.	1,500 kc	"A" Band 1,500 kc (20°)	C-11 (osc.)
4		600 kc	"A" Band 600 kc (149.5°)	L-6 (osc.)
5	Antenna terminal in series with 47 mmf. (link open)	15.2 mc	"C" Band 15.2 mc (13.5°)	C-10 (osc.)* C-4 (ant.)
6		9.5 mc	"C" Band 9.5 mc (148°)	C-5 (ant.) (Rock gang)
7	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	"A" Band 1,500 kc	C-1 (on loop)
8		600 kc	600 kc	L-6 (osc.) (Rock gang)
9		Repeat steps 7 and 8.		

*Use minimum capacity peak if two can be obtained.

Note.—Oscillator tracks 455 kc above signal on all bands.





External Antenna.—For best reception on "C" band with an external antenna, peak the trimmer on "C" antenna coil for maximum output on a station in the 31-meter band.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic drawing.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

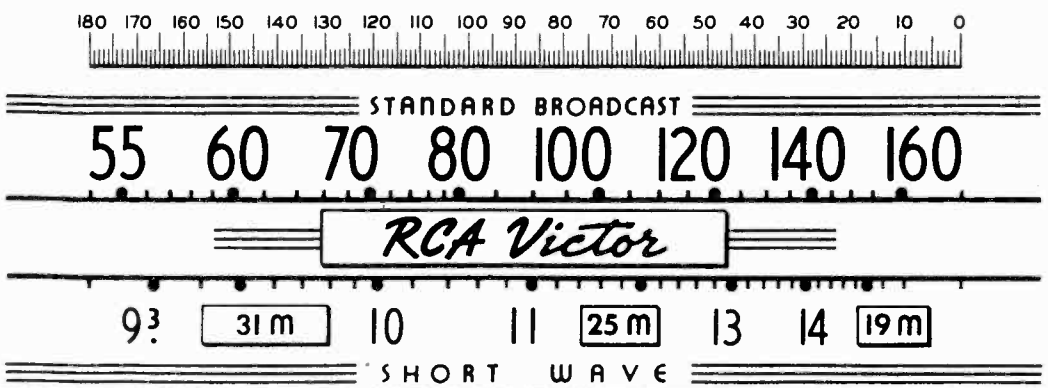
Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

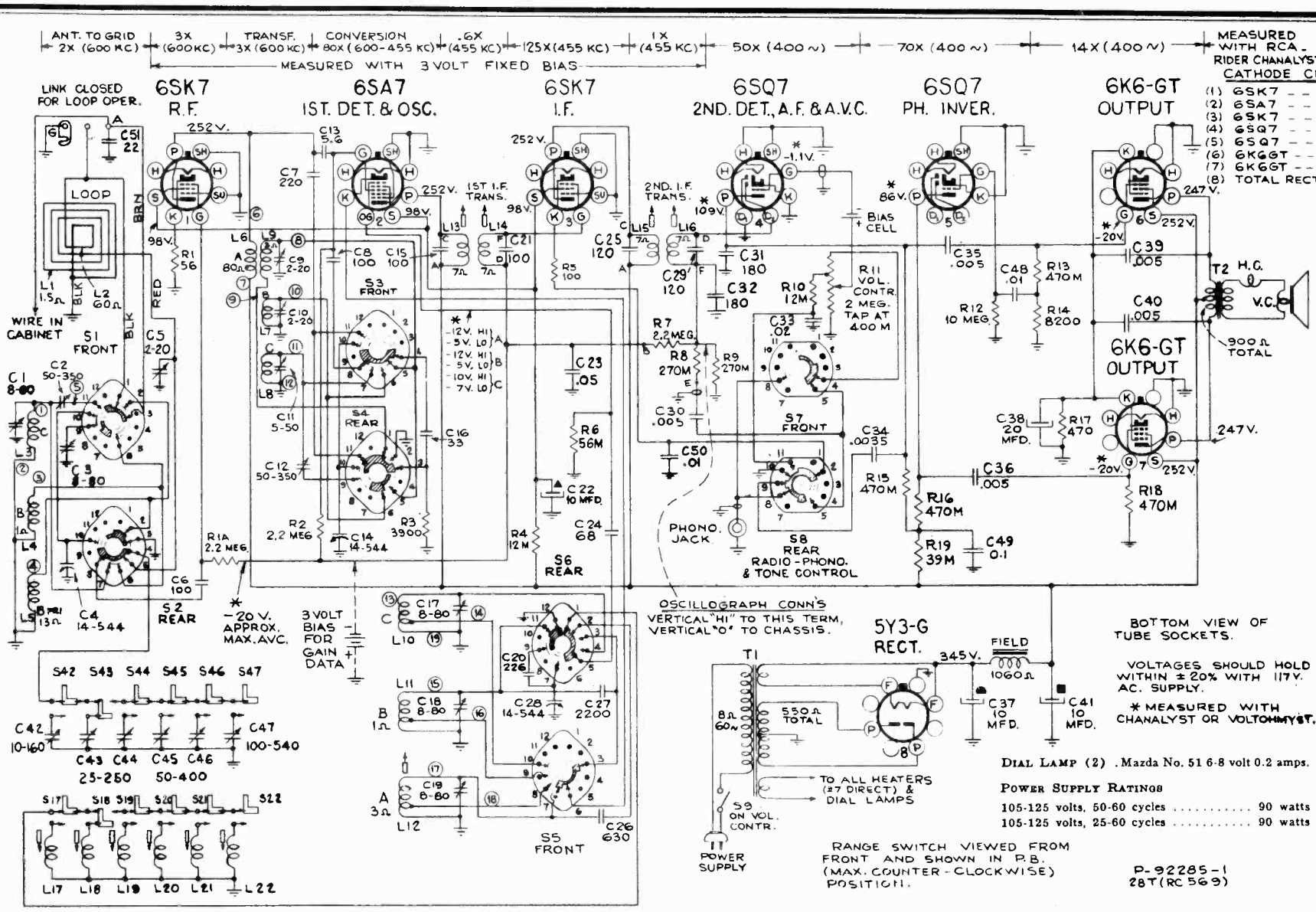
As the first step in r-f alignment, check the position of the drum. The "90°" mark on the drum scale must be vertical, and directly under the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by plastic cement which must be tight when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "180°" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.





Precautionary Lead Dress.—

1. Dress shielded lead from diode filter to tone control switch away from grid of the 6SQ7 a-f amplifier.
2. Dress shielded lead from grid of 6SQ7 a-f amplifier away from diode output system.
3. Power leads to rear of volume control should be dressed towards side apron.
4. Plate leads on output tubes should be dressed towards chassis.

FREQUENCY RANGES

"A" Standard Broadcast	540-1600 kc
"B" Medium Wave	2,300-6,300 kc
"C" Short Wave	9,400-15,400 kc

INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT RATING

Undistorted	4.5 watts
Maximum	5.5 watts

LOUDSPEAKER (92196-3)

Type	9x6 inches elliptical, electrodynamic
V.C. Impedance	4.4 ohms at 400 cycles

RCA MFG. CO., INC.

MODEL 28T, Chas. RC-569

MODEL 28T, Chas. RC-569

RCA MFG. CO., INC.

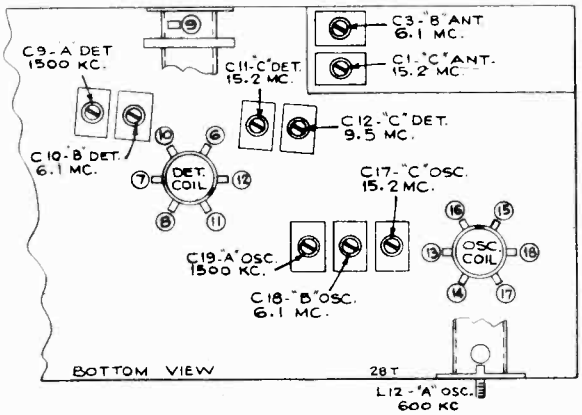
Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

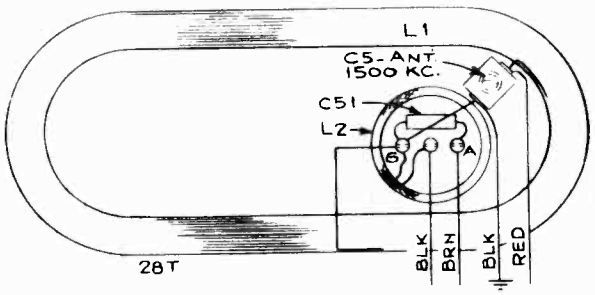
Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

Calibration for Alignment.—The dial calibration for alignment purposes can be set up in two ways:

1. The dial may be very easily removed from the cabinet. The condenser plates should then be turned into full mesh, the pointer adjusted to the scratch at the left end of the dial backing plate, and the dial placed on the frame so that its extreme left calibration mark coincides with the pointer. The dial may be held in place with scotch tape. In this manner the actual receiver dial is used for alignment. When alignment is finished, the scale should be replaced.
2. A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 0 degree scale mark is horizontal with the gang in full mesh.

Pointer for Calibration Scale.—If method (2) is used, improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to the 0 degree mark on the calibration scale when the plates are fully meshed.





Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

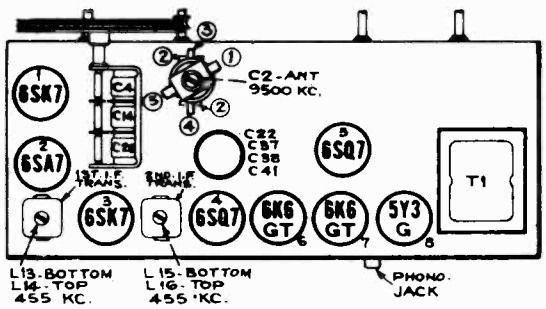
Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

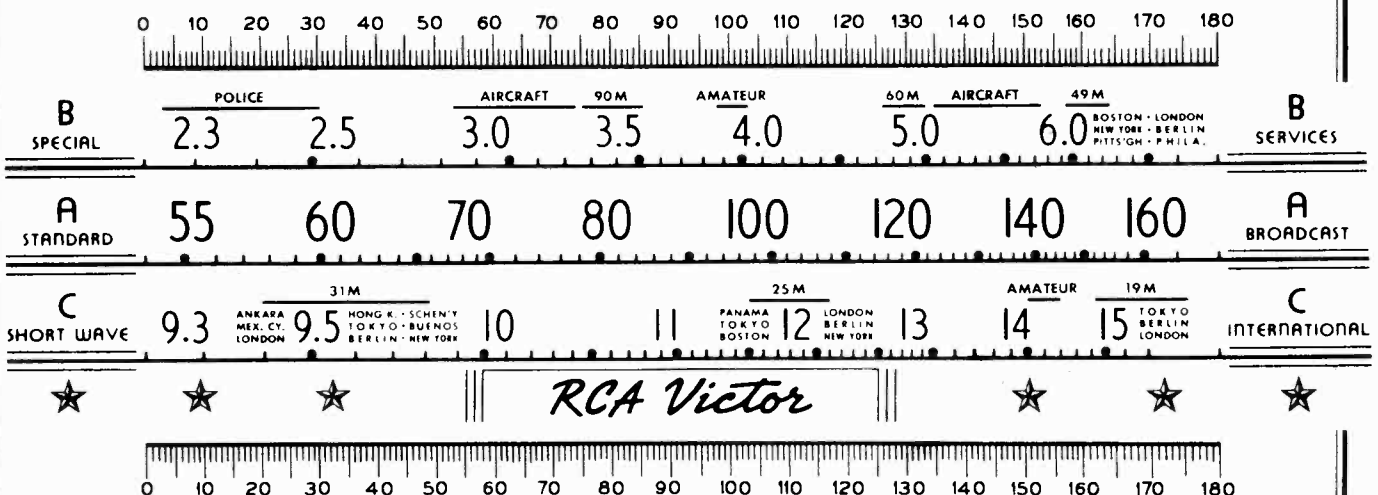
External Antenna.—For best reception on "C" band with an outside antenna, adjust C2 for peak output on a station in the 31-meter band.

Steps	Connect the high side of the test-osc. to—	Tune test osc. to—	Turn radio dial to—	Adj. the following for max. peak output
1	I-F Grid in series with .01 mfd.	455 kc	"A" Band Quiet Point between 550-750 kc	L-15 and L-16 2nd I-F Trans.
2	Det. Grid in series with .01 mfd.			L-13 and L-14 1st I-F Trans.
3	Ant. terminal in series with 200 mmfd. (link open)	1,500 kc	1500 kc (160°) "A" Band	C-19 (osc.) C-9 (Det.) C-5 (on loop)
4		600 kc	600 kc (30.5°)	L-12 Rock Gang
5		Repeat (3) and (4)		
6	Ant. terminal in series with 22 mmfd. (link open)	6,100 kc	6,100 kc (161°) "B" Band	C-18 (osc.)* C-10 (Det.) Rock Gang C-3 (ant.)
7		15,200 kc	15,200 kc (167°) "C" Band	C-17 (osc.)* C-11 (Det.) Rock Gang C-1 (ant.)
8		9,500 kc	9,500 kc (28.6°)	C-2 (ant.) C-12 (Det.) Rock Gang
9		Repeat (7) and (8)		

*Use minimum capacity peak if two peaks can be obtained.

Note—Oscillator tracks 455 kc above signal on all bands.



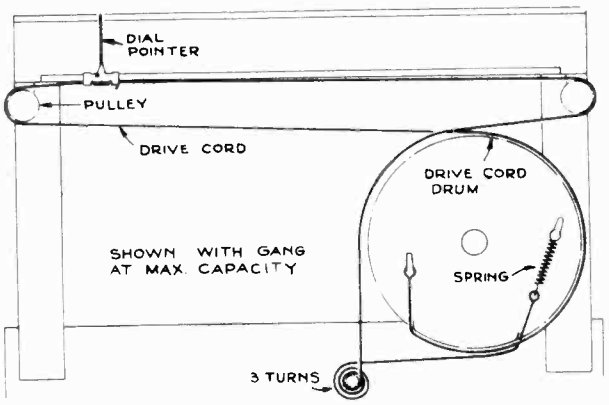


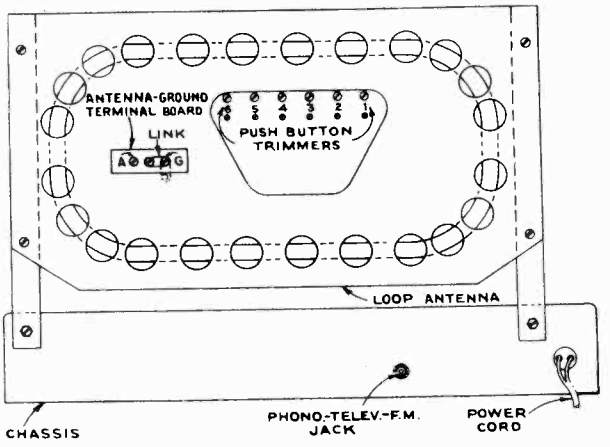
MODEL 28T, Chas. RC-569

RCA MFG. CO., INC.

POWER-VOLUME CONTROL — RADIO-PHONO TONE CONTROL

TUNING CONTROL — RANGE CONTROL





Replacement Parts

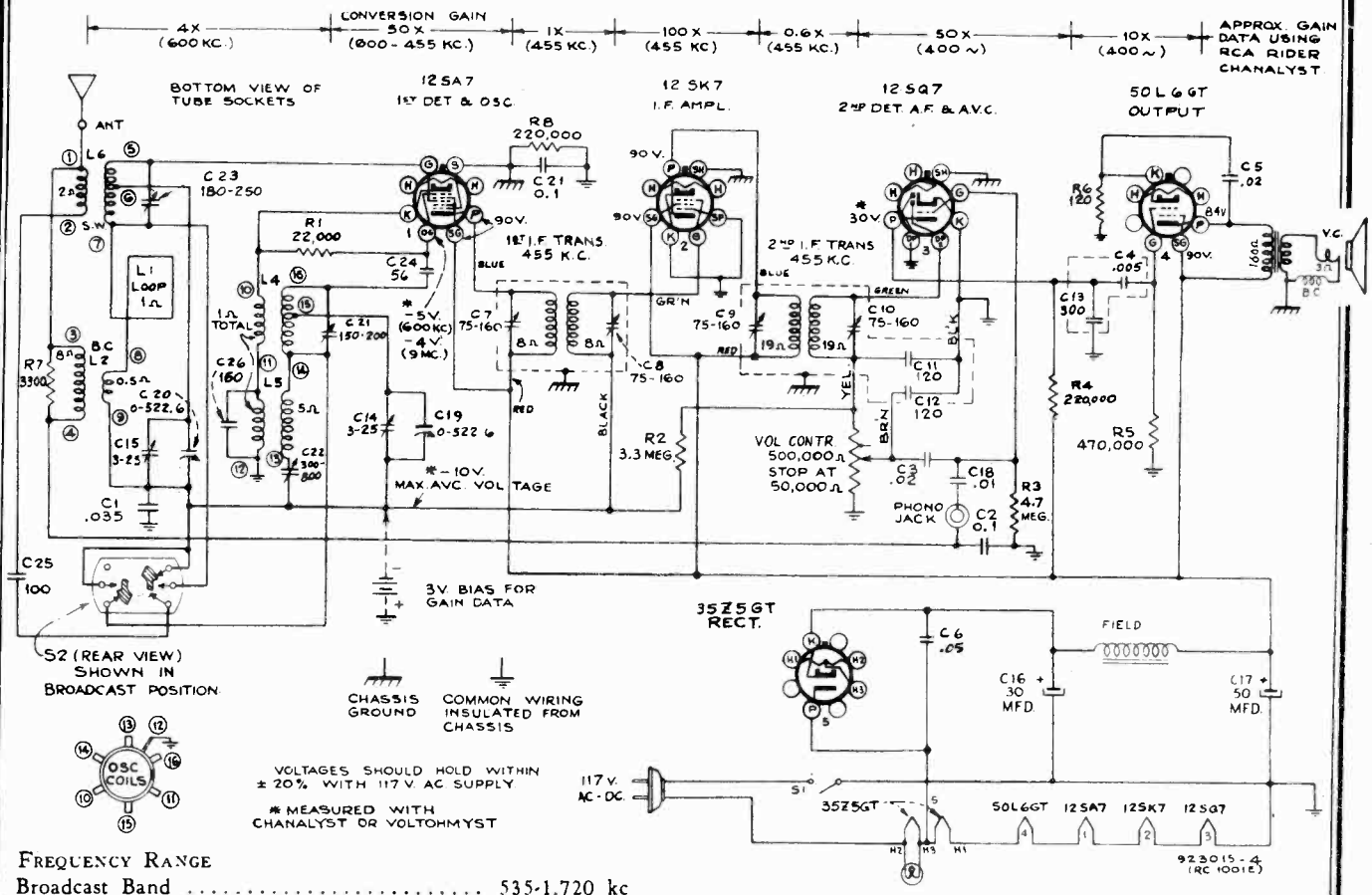
Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-569)	
34025	Board—"Antenna-Ground" board	.25
33014	Capacitor—Electrolytic, comprising 3 sections of 10 mfd., 450 volts, and 1 section of 20 mfd., 25 volts	1.90
38368	Capacitor—Adjustable trimmer (50-350 mmfd.) for antenna coil	.25
38357	Capacitor—Mica trimmer—2-20 mmfd.	.25
38363	Capacitor—Mica trimmer comprising 2 sections of 8-80 mmfd.	.40
35791	Capacitor—Mica trimmer comprising 3 sections of 8-80 mmfd.	.50
36424	Capacitor—Mica trimmer comprising 1 section of 10-160 mmfd., 2 sections of 25-250 mmfd., 2 sections of 50-400 mmfd., and 1 section of 100-540 mmfd.	1.10
38360	Capacitor—Mica trimmer comprising 1 section of 50-350 mmfd., 1 section of 5-50 mmfd., and 2 sections of 2-20 mmfd.	.75
12814	Capacitor—5.6 mmfd.	.35
14021	Capacitor—22 mmfd.	.35
12948	Capacitor—33 mmfd.	.35
13057	Capacitor—68 mmfd.	.35
12720	Capacitor—100 mmfd., moulded	.35
34699	Capacitor—100 mmfd., unmoulded	.30
34700	Capacitor—120 mmfd.	.30
13003	Capacitor—180 mmfd.	.35
12694	Capacitor—220 mmfd.	.35
38830	Capacitor—226 mmfd.	.35
38831	Capacitor—630 mmfd.	.45
30882	Capacitor—2,200 mmfd.	.20
30303	Capacitor—.0035 mfd.	.40
33584	Capacitor—.005 mfd.	.25
4937	Capacitor—.01 mfd.	.25
36248	Capacitor—.02 mfd.	.20
32787	Capacitor—.05 mfd.	.20
4839	Capacitor—0.1 mfd.	.30
31581	Cell—Bias cell	.25
38367	Coil—Antenna coil	1.00
36031	Coil—Loop primary coil	.50
38358	Coil—Oscillator coil	1.00
38315	Coil—Push button oscillator coil—high frequency	.30
37638	Coil—Push button oscillator coil—low frequency	.30
38366	Coil—R.F. coil	1.75
38364	Condenser—3-gang variable tuning condenser	3.65
38404	Control—Volume control and power switch	2.00
34662	Cord—Pointer cord (approx. 60-in. overall length)	.25
35788	Core—Adjustable core and stud for oscillator coil	.15
35871	Core—Adjustable core and stud for push button oscillator coils	.55
38359	Cup—Coil mounting cup and bushing	.20
38361	Drum—Condenser drive drum	.50
38365	Frame—Dial frame complete—less dial	1.75
31580	Holder—Bias cell holder	.15
35798	Indicator—Station selector indicator	.20
38356	Loop—Antenna loop complete—less supports	2.60
5040	Plug—4-contact female plug for speaker cable	.30
31373	Pulley—Drive cord pulley	.08
13220	Resistor—56 ohms, ½ watt	.20
34765	Resistor—100 ohms, ½ watt	.20
35885	Resistor—470 ohms, 2 watt	.25
30694	Resistor—3,900 ohms, ½ watt	.20
14075	Resistor—8,200 ohms, ½ watt	.20
30436	Resistor—12,000 ohms, ½ watt	.20
35875	Resistor—12,000 ohms, 3 watt	.35
12266	Resistor—39,000 ohms, ½ watt	.20
30650	Resistor—56,000 ohms, ½ watt	.20
30651	Resistor—270,000 ohms, ½ watt	.20
30648	Resistor—470,000 ohms, ½ watt	.20
30649	Resistor—2.2 meg., ½ watt	.20
30992	Resistor—10 meg., ½ watt	.20
35797	Shaft—Tuning knob shaft	.30
31364	Socket—Dial lamp socket	.20
35787	Socket—Phono input socket	.15
31251	Socket—Tube socket	.25
31418	Spring—Pointer cord spring	.05
12007	Spring—Retaining spring for oscillator coil core and stud	.02
38362	Switch—Range switch	2.85
38384	Switch—Selector switch	2.90
38369	Switch—Tone switch	1.00
35636	Transformer—First I.F. transformer	1.70
35790	Transformer—Second I.F. transformer	1.60
35588	Transformer—Power transformer—105-120 volts, 25 cycle	6.30
35959	Transformer—Power transformer—105-120 volts, 50-60 cycle—less shields	3.75
35969	Washer—"C" washer for tuning knob shaft	.02
	SPEAKER ASSEMBLIES (92196-3)	
38817	Coil—Field coil—1,060 ohms	2.10
38373	Cone—Cone complete with voice coil	1.75
5039	Plug—4-prong male speaker plug	.30
38374	Transformer—Output transformer	1.65
	MISCELLANEOUS ASSEMBLIES	
38376	Bezel—Push button bezel	.75
38375	Button—Push button	.20
37334	Clip—Dial clip	.15
38378	Decalcomania—Control panel decal—Pkg. 5	.02
38377	Dial—Glass dial scale	1.40
35814	Knob—Control knob	.25
11765	Lamp—Dial lamp	.15
34317	Marker—Station selector marker	.35
33774	Mounting—Speaker mounting hardware	.30
30900	Spring—Retaining spring for control knobs	.05
34053	Spring—Retaining spring for push button	.02

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL 34X, Ch.RC-1001E

RCA MFG. CO., INC.



VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC SUPPLY

* MEASURED WITH CHANALYST OR VOLTOHMYST

Frequency Range

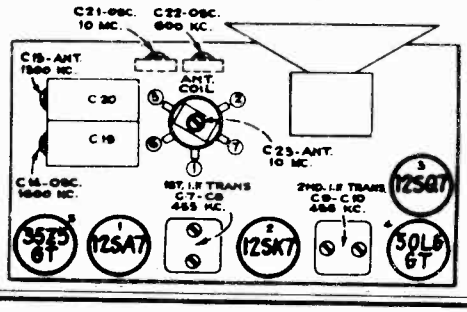
Broadcast Band	535-1,720 kc
Short Wave Band	8.9 mc to 12 mc.

Intermediate Frequency ..... 455 kc

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. in series with 47 mmf.	10 mc*	10 mc	C21 (osc.)** C23 (ant.)
4	Antenna term. in series with 200 mmfd.	1,600 kc	1,600 kc	C14 (osc.)
5	Radiation Loop	1,300 kc	Resonance on Signal	C15 (ant.)
6	Radiation Loop	600 kc	600 kc	C22 Osc. Rock in

* It is recommended that this step be repeated using a received station of known frequency.

** Use minimum capacity if two peaks can be obtained.



Pilot Lamp..... Mazda No. 51, 6-8 volts, 0.2 amp.

Power Output

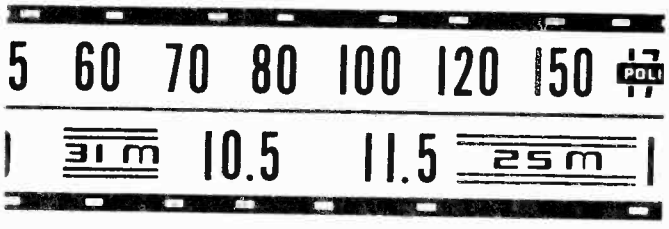
Undistorted	.9 watts
Maximum	1.3 watts

Loudspeaker

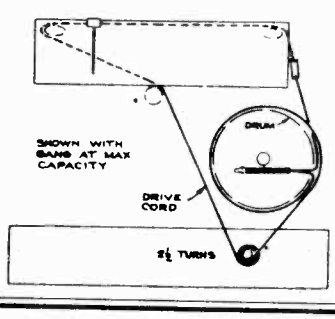
Type	5-inch electro dynamic
V.C. Impedance	4.0 ohms at 400 cycles

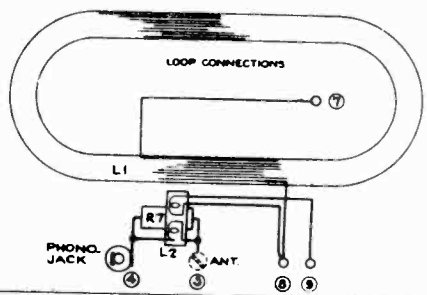
Power Supply Rating

105-125 volts, AC 50 or 60 cycles, or DC..... 25 watts



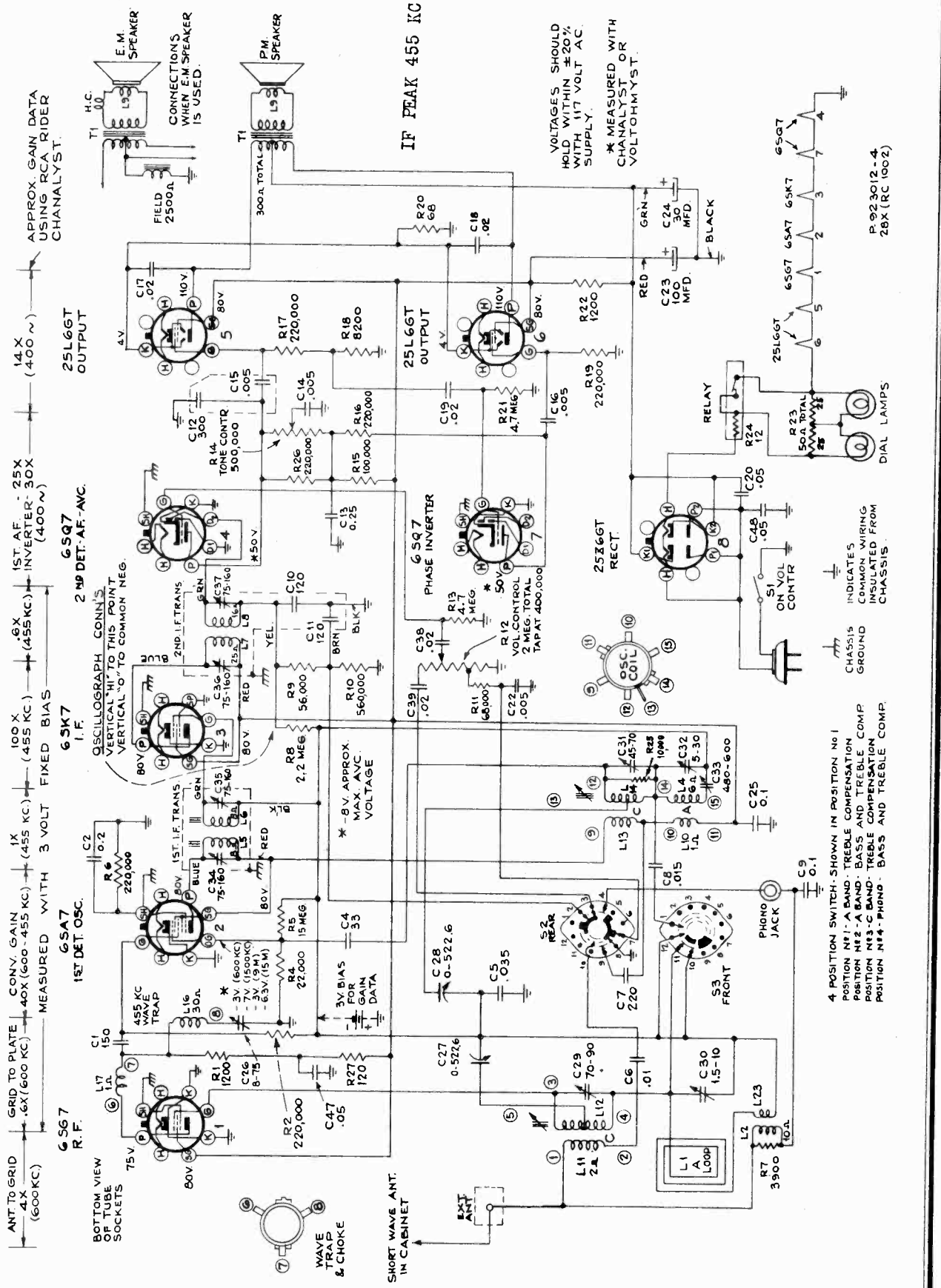
The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.





MODEL 28X, Chas.RC-1002

RCA MFG. CO., INC.



MODEL 28X, Ch. RC-1002

RCA MFG. CO., INC.

FREQUENCY RANGES	
Standard Broadcast	535-1,720 kc
Short Wave	8.7-15.6 mc
Intermediate Frequency	455 kc

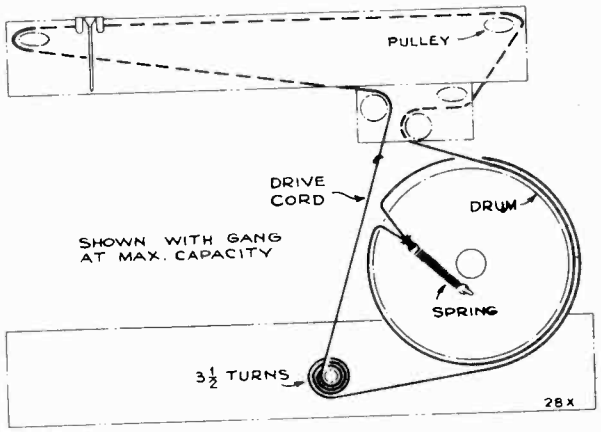
Thermal relay cuts in the dial lamps after the set warms up.—This set incorporates a thermal relay to control the dial lamps. When the set is "off," the relay contacts are closed. This shorts out the two lamps. When the set is turned "on," the heater current flows through the relay element R24. This heats up and causes the relay contacts to open, permitting the heater current to flow through the two dial lamps and light them. In normal operation, the lamps light about a half-minute after the set is turned on.

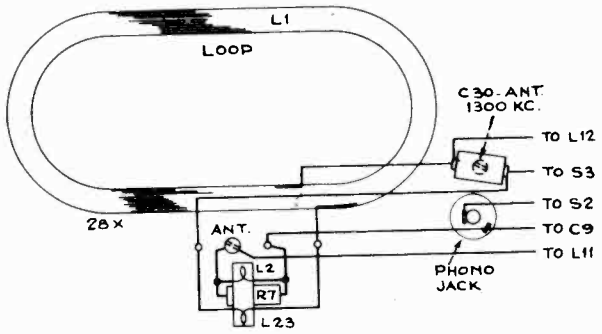
LOUDSPEAKER	92136-2	or	92136-3
Type	PM		EM
Size	9¼-inch "Ellipticon"		9¼-inch "Ellipticon"
Voice Coil Impedance at 400 cycles	4 ohms		3 ohms

POWER OUTPUT RATING	
Undistorted	2.5 watt
Maximum	4.0 watt

POWER SUPPLY RATING	
105-125 A.C. 50-60 cy. or D.C.	45 watts

	Height	Width	Depth
Cabinet Dimensions (inches)	10¾	15	9½
Chassis Base Dimensions (inches)	2½	12½	6
Overall Chassis Height			9½





Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

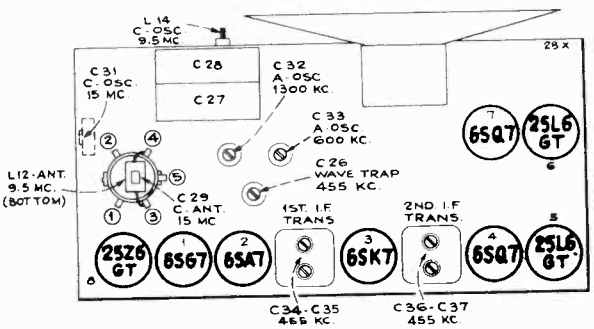
Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Phono Attachment.—A jack is provided on the rear of cabinet for connecting a Phono Attachment into the audio-amplifying circuit. The cable from the Phono Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Dial Pointer Adjustment.—The dial pointer should be set at the left hand end dial marks, with the gang in full mesh.

Steps	Connect the high side of test osc. to—	Tune test osc. to—	Range Switch to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid in series with .01 mfd.	455 kc	A	Quiet Point near middle of dial	C36, C37 2nd I.F. Trans.
2	Det. grid in series with .01 mfd.				C34, C35 1st I.F. Trans.
3	Ant. lead in series with 50 mmfd.	15 mc	C	15 mc	C-31 (osc.)* C-29 (ant.)
4		9.5 mc	C	9.5 mc	L14 (osc.) L12 (ant.)
		Repeat steps 3 and 4.			
5	Antenna terminal in series with 200 mmfd.	1,300 kc	A	1,300 kc	C-32 (osc.) C-30 (ant.)
6		600 kc	A	600 kc	C-33 Rock in
7		Repeat steps 5 and 6.			
8	R-F grid in series with .01 mfd.	455 kc	A	low end of dial	C-26**



*Oscillator should track on high frequency side of signal.

If two peaks are obtained use high frequency (minimum capacity peak).

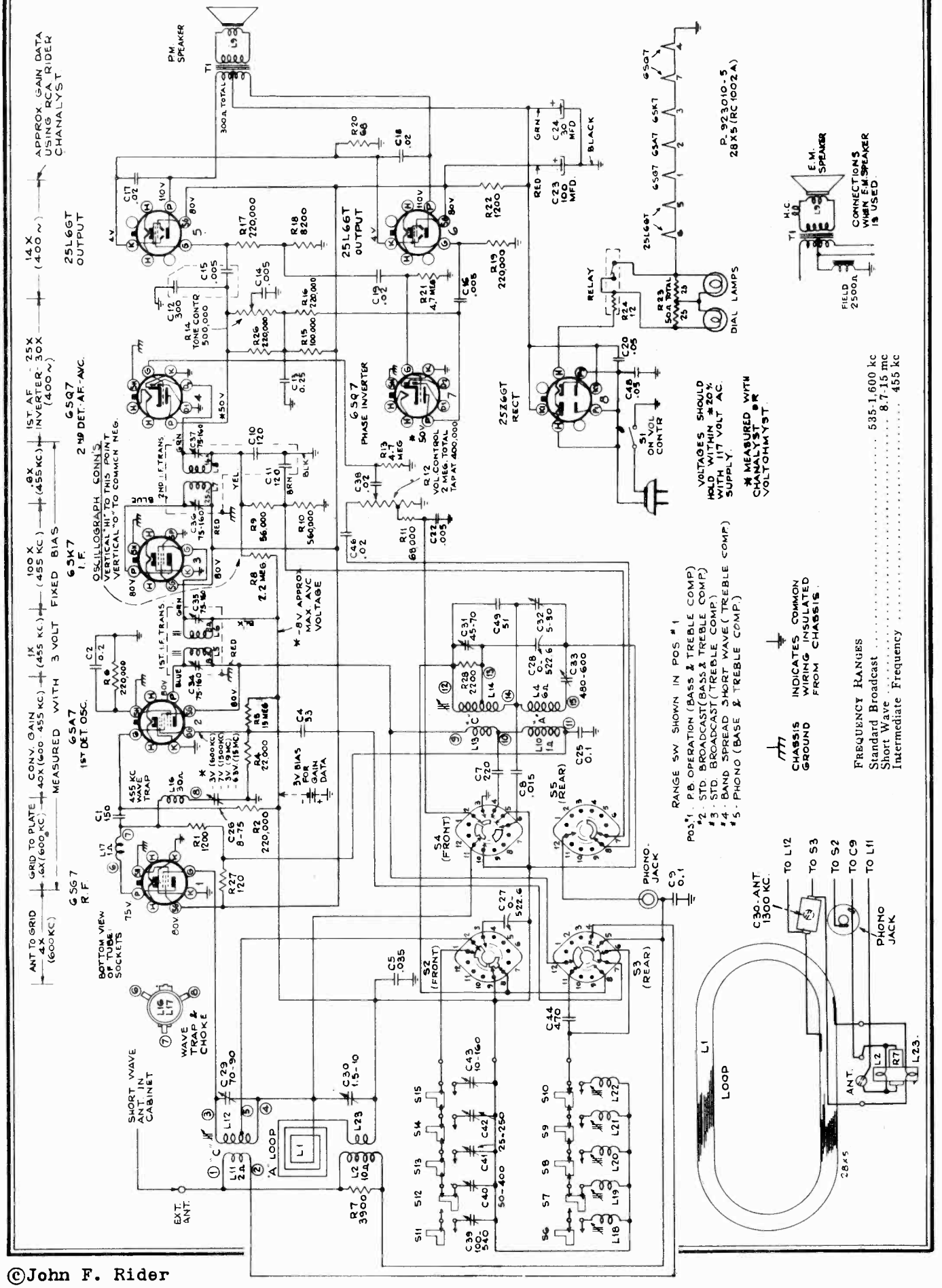
**Feed a high signal level of 455 kc into R.F. grid and adjust C-26 for minimum signal.

Critical Lead Dress

1. Dress all AC filament and power wiring down close to chassis and as far as possible from all audio grid or plate wiring.
2. Dress all leads or parts as far as possible away from oscillator coil.
3. Dress audio coupling capacitor C38 from volume control to grid of 6SQ7 away from filament wire connecting No. 8 pin socket 5 and No. 8 pin socket 7.
4. Dress lead from trimmer condenser on loop to S.W. ant. coil between rectifier and R.F. tube and away from other coil leads.
5. Dress I-F plate and grid leads back into shield can to keep exposed length as short as possible.

MODEL 28X5, Ch. RC-1002A

RCA MFG. CO., INC.



MODEL 28X5, Ch. RC-1002A

RCA MFG CO., INC.

LOUDSPEAKER

Type ..... Elliptical 9x6 inches Perm. Mag.
V.C. Impedance ..... 4 ohms at 400 cycles

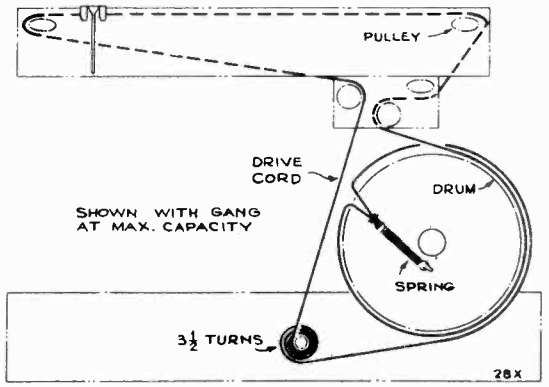
POWER OUTPUT RATING

Undistorted ..... 2.5 watt
Maximum ..... 4.0 watt

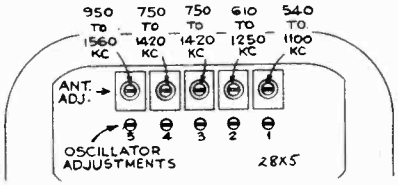
POWER SUPPLY RATING

105-125 A.C. 50-60 cy. or D.C. ..... 45 watts

Thermal relay cuts in the dial lamps after the set warms up.—This set incorporates a thermal relay to control the dial lamps. When the set is "off," the relay contacts are closed. This shorts out the two lamps. When the set is turned "on," the heater current flows through the relay element R24. This heats up and causes the relay contacts to open, permitting the heater current to flow through the two dial lamps and light them. In normal operation, the lamps light about a half-minute after the set is turned on.



Push Button Adjustment



The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure.

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. After turning range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station. It may be necessary to maintain approximate tracking between antenna and oscillator to receive weak stations.
4. After oscillator core is adjusted properly, adjust antenna trimmer No. 1 for maximum output.

   Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.
5. Adjust for each of the five remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

On push-button No. 5, the higher frequency stations may be obtained with the oscillator core No. 5 either in or out. (Oscillator frequency either 455 kc below or above the signal.) The out position should be used so the oscillator is 455 kc above the signal.

Alignment Procedure

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

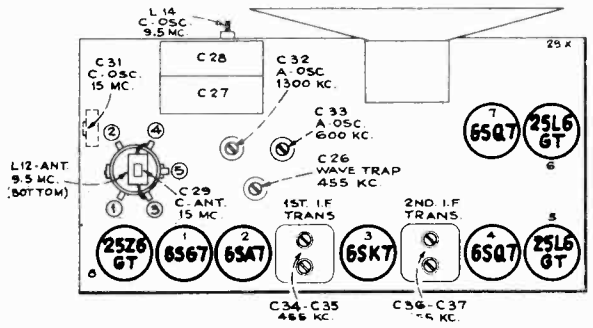
Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd., capacitor, and keep the output as low as possible.

Antenna.—The set is equipped with a built-in loop antenna. If an outdoor antenna is used, it may be connected to the "ANT" terminal on rear of cabinet. It should not be longer than 100 feet, including lead-in. If it is longer, connect a 100 to 200 mmf. capacitor in series with the lead-in.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

Phono Attachment.—A jack is provided on the rear of cabinet for connecting a Phono Attachment into the audio-amplifying circuit. The cable from the Phono Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

Dial Pointer Adjustment.—The dial pointer should be set at the left-hand end dial marks, with the gang in full mesh.



Steps	Connect the high side of test osc. to—	Tune test. osc. to—	Range Switch to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid in series with .01 mfd.	455 kc	A	Quiet Point near middle of dial	C36, C37 2nd I-F trans.
2	Det. grid in series with .01 mfd.				C34, C35 1st I-F trans.
3	Ant. lead in series with 50 mmfd.	15 mc	C	15 mc	C31 (osc.)* C-29 (ant.)
4		9.5 mc	C	9.5 mc	L-14 (osc.) L-12 (ant.)
		Repeat steps 3 and 4.			
5	Antenna terminal in series with 200 mmfd.	1,300 kc	A	1,300 kc	C-32 (osc.) C-30 (ant.)
6		600 kc	A	600 kc	C-33 Rock in
7		Repeat steps 5 and 6.			
8	R-F grid in series with .01 mfd.	455 kc	A	low end of dial	C-26**

*Oscillator should track on high frequency side of signal.
If two peaks are obtained use high frequency (minimum capacity peak).

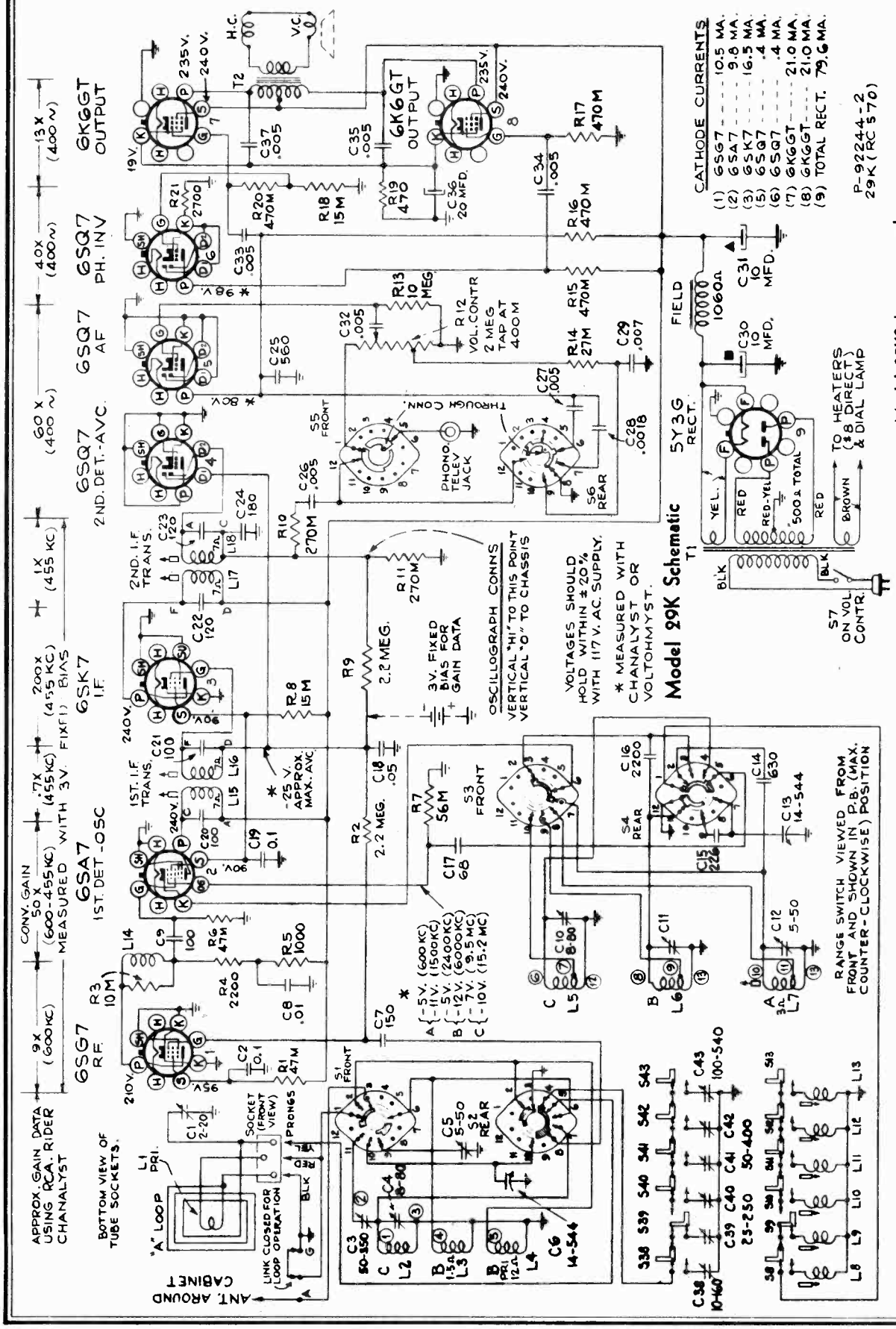
**Feed a high signal level of 455 kc into R.F. grid and adjust C-26 for minimum signal.

Critical Lead Dress

1. Dress all AC filament and power wiring down close to chassis and as far as possible from all audio grid or plate wiring.
2. Dress all leads or parts as far as possible away from oscillator coil.
3. Dress audio coupling capacitor C38 from volume control to grid of 6SQ7 away from filament wire connecting No. 8 pin socket 5 and No. 8 pin socket 7.
4. Dress lead from trimmer condenser on loop to S.W. ant. coil between rectifier and R.F. tube and away from other coil leads.
5. Dress I-F plate and grid leads back into the shield can to keep exposed length as short as possible.

RCA MFG. CO., INC.

MODEL 29K, Ch. RC-570;
29K2, Ch. RC-570C



Precautionary Lead Dress.—

1. Dress all filament wiring away from audio and output tube grids.
2. The 226 mmfd. (C15) should be dressed away from all parts and wiring.
3. Leads from 2nd I.F. to tone switch should be dressed under the trimmer bank.
4. Speaker leads should be dressed close to chassis base and away from the phono plug.
5. Primary transformer lead should be twisted around A.C. lead to switch and dressed over top of transformer.
6. Dress C7 (150 mmfd. cap.) from range switch to R.F. socket away from all leads and metal parts.

MODELS 29K, Ch. RC-570; 29K2, Ch. RC-570C

RCA MFG. CO., INC.

Power Supply Ratings

Rating A..... 105-125 volts, 50-60 cycles, 100 watts
Rating B..... 105-125 volts, 25-60 cycles, 100 watts

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the indicator-drive-cord drum which is mounted on the shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in R.F. alignment, check the position of the drum. The 135° mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are in minimum capacity position. The drum is held to the shaft by means of plastic cement which must be securely fastened when the drum is in the correct position.

To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with 0-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "0" mark on the calibration scale when the plates are fully meshed.

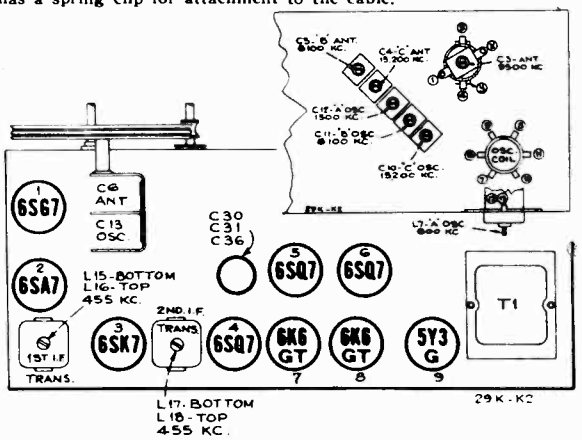
Dial-Indicator Adjustment. — After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator at the 540 kc mark, and gang condenser fully meshed. The indicator has a spring clip for attachment to the cable.

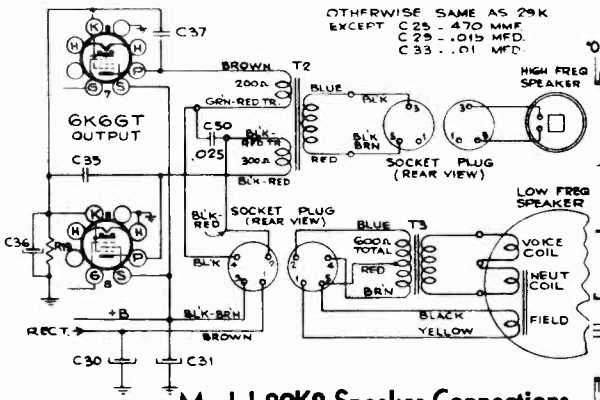
Loudspeakers	(RL 70J-1)	(RL 81B-6)
Models	29K and 29K2	29K2
Type	12-inch electrodynamic	5-inch Perm. Magnet
V.C. Impedance	2.2 ohms at 400 cycles	3 ohms at 400 cycles

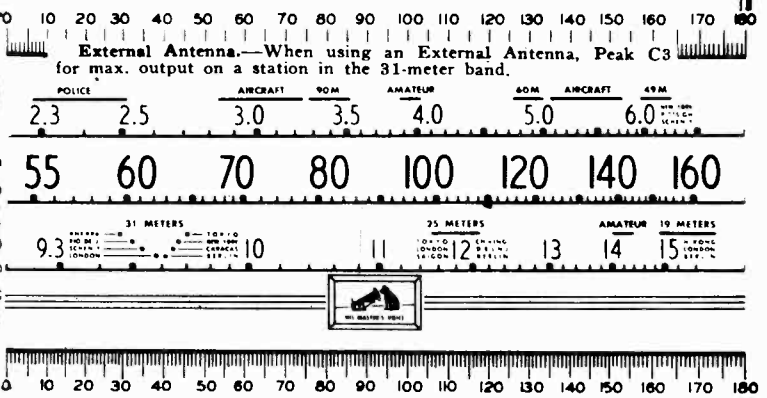
Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Range Switch	Turn radio dial to—	Adjust the following for max. peak output
1	6SK7 I-F grid in series with .01 mfd.	455 kc	"A"	Quiet Point near 180°	L17 and L18 (2nd I-F Trans.)
2	6SA7 Det. grid in series with .01 mfd.				L-15 and L-16 (1st I-F Trans.)
3	Ant. section of Gang Condenser	1,500 kc	"A"	160°	C-12 (osc.)
4		600 kc		30.5°	L-7 (osc.)
5	Ant. terminal "A" in series with 47 mmf. link open	6,100 kc	"B"	161°	C-11 (osc.)* C-5 (ant.)
6		15,200 kc	"C"	167°	C-10 (osc.)* C-4 (ant.)
7		9,500 kc		32°	C-3 (ant.) (Rock Gang)
8		Repeat steps 6 and 7.			
9	Fasten chassis in cabinet, see that link is closed on antenna terminal board, indicator at left end of dial scales with gang at maximum capacity.				
10	A radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	"A"	1,500 kc signal	C-1 (ant.) on loop
11		600 kc		600 kc	L-7 (osc.) (Rock Gang)
12		Repeat steps 10 and 11.			

*Use minimum capacity peak if two peaks can be obtained.

Note: Oscillator tracks above signal on all bands.







Model 29K2 Speaker Connections

Phasing Speakers in 29K2

For correct tone, it is ESSENTIAL that the two speakers operate "in phase," so that the two cones move in and out together.

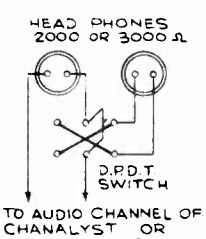
It is necessary to check the phasing whenever a new speaker, cone, field coil, or output transformer is installed, or whenever the speaker connections are altered in any way.

The recommended procedure is as follows:

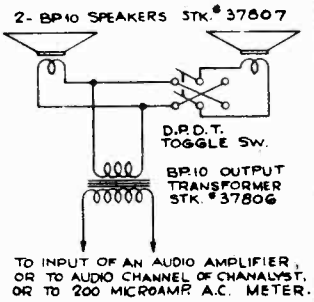
1. Hook up a "phase checker," using headphones or PM speaker units as shown. Connect the checker to an audio amplifier that has an output meter. (The audio channel in the Chanalyst is excellent for this purpose.)

2. Feed a 400-cycle modulated signal into the receiver. Turn volume up to medium. Hold both units of the checker in front of the large speaker in set. Throw the toggle switch to each position and note which position gives maximum output on meter. Mark this position of the switch "in phase." Mark the other position "out of phase."

3. Place one unit of the phase checker in front of each speaker in the set. Throw the toggle switch to each position and leave it at the position that gives greatest output on the meter. Note the switch marking for this position. If it says "in phase," the set speakers are correctly phased. If it says "out of phase," reverse the leads to the voice-coil terminals of the small speaker in the receiver.



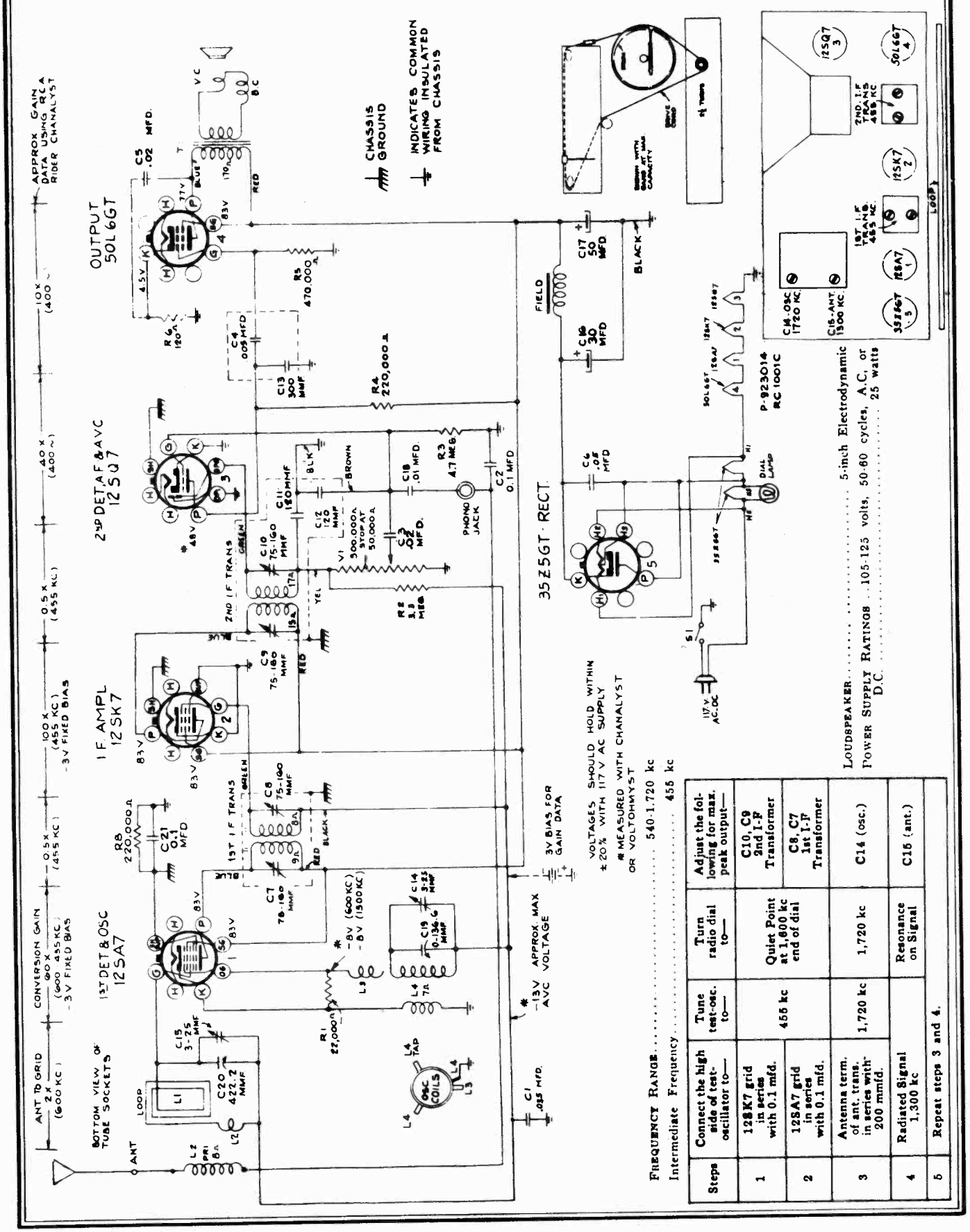
"Phase Checker," using Headphones.



"Phase Checker," using small PM speakers.

MODEL 35X, Ch.RC-1001C

RCA MFG. CO., INC.



FREQUENCY RANGE ..... 540-1,720 kc

Intermediate Frequency ..... 455 kc

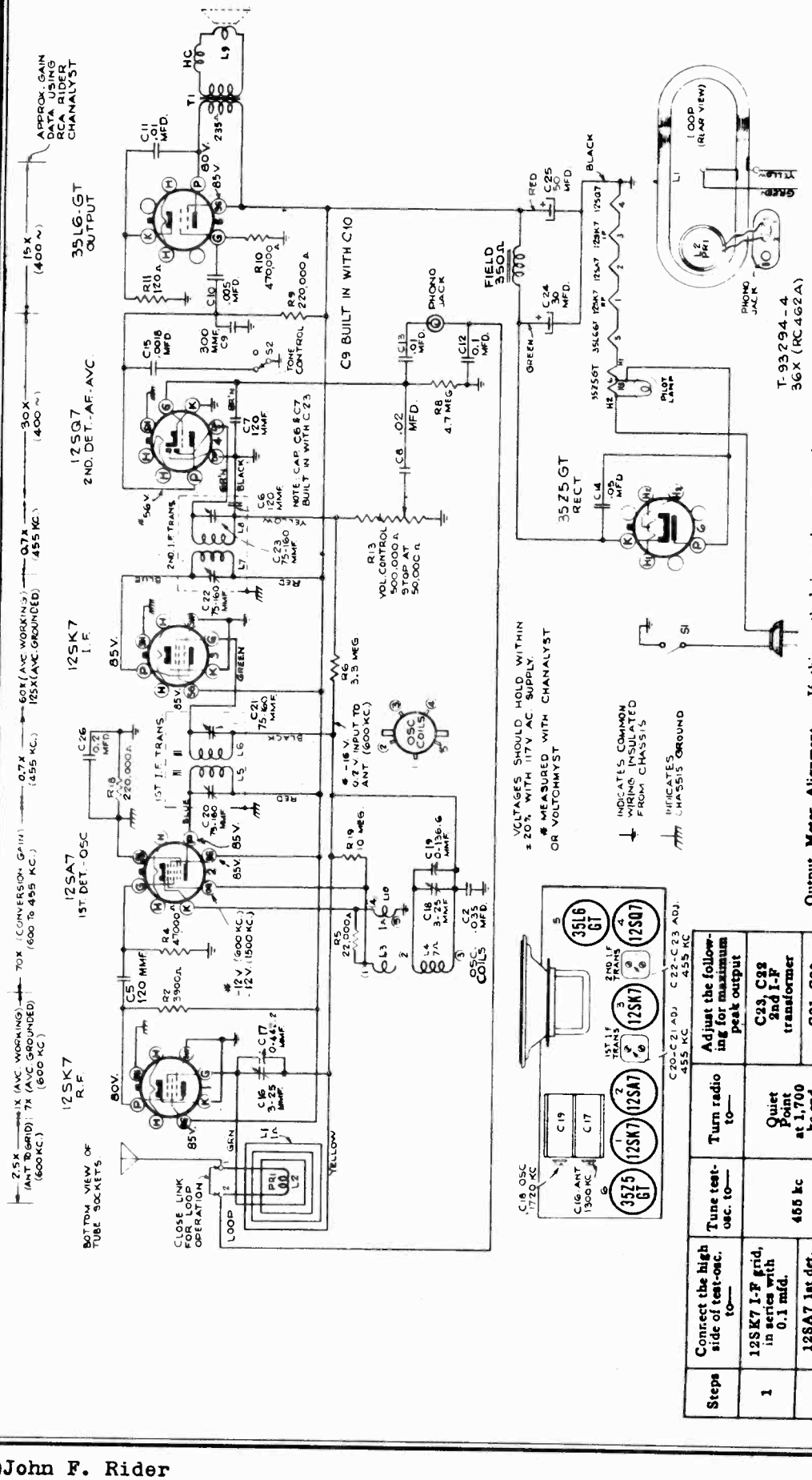
LOUDSPEAKER .....

POWER SUPPLY RATINGS .....

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. of ant. trans. in series with 200 mmfd.	1,720 kc	1,720 kc	C14 (osc.)
4	Radiated Signal 1,300 kc		Resonance on Signal	C15 (ant.)
5	Repeat steps 3 and 4.			

MODEL 36X, Ch. RC-462A

RCA MFG. CO., INC.



Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio to—	Adjust the following for maximum peak output
1	12SK7 I-F grid, in series with 0.1 mfd.	455 kc	Quiet Point at 1,700 kc end of dial	C23, C22 2nd I-F transformer
2	12SA7 1st det. grid, in series with 0.1 mfd.			C21, C20 1st I-F transformer
3	12SK7 R-F grid, in series with 0.1 mfd.	1,720 kc	1,720 kc	C18 (osc.)
4	Radiated signal 1,300 kc		Signal frequency	C16 (ant.)
5	Repeat steps 3 and 4			

Output Meter Alignment. — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, keep the output as low as possible to avoid a-v-c action.

Precautionary Lead Dress:

1. .01 mfd. capacitor from output plate to cathode to be dressed as far as possible away from .015 mfd. 1st audio grid condenser and volume control terminals to eliminate audio howl.
2. Filament lead to pin No. 7 on 85L6-GT socket to be dressed away from 1st audio grid.
3. Dress B+ lead on 12SK7 I.F. socket across bottom of socket between grid and plate contacts to aid reduction of grid plate capacitance.
4. Dress excess lead lengths of I.F. transformer, grid and plate leads into cans to aid shielding.
5. Dress filament leads of 35L6-GT around 12SQ7 socket and into chassis corner to reduce hum.

FREQUENCY RANGE ..... 535-1,720 kc
INTERMEDIATE FREQUENCY ..... 455 kc

POWER OUTPUT
Undistorted ..... 0.9 watts
Maximum ..... 1.4 watts

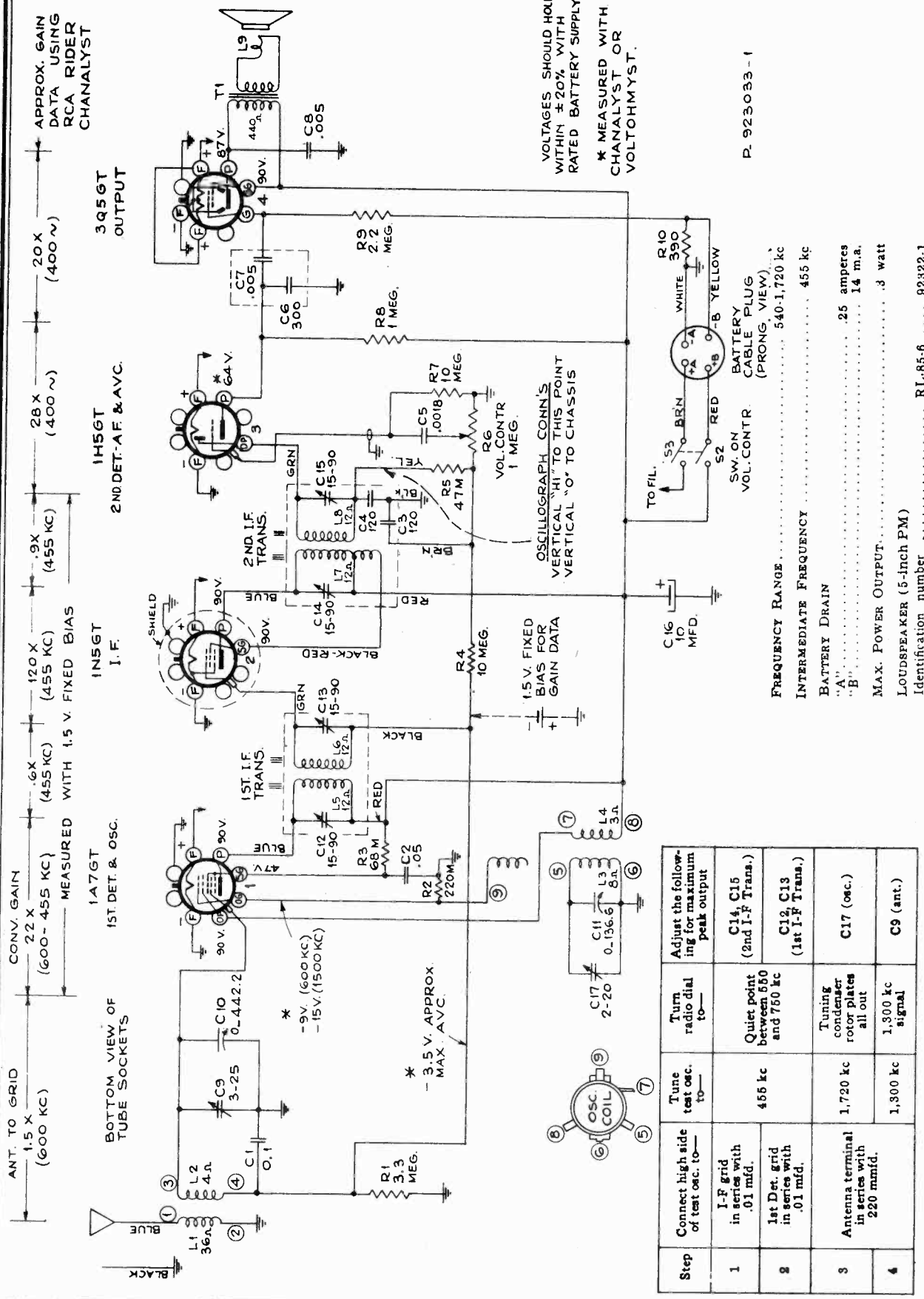
LOUDSPEAKER (RL-86-B1)
Type ..... 5-inch permanent-magnet dynamic
V.C. Impedance ..... 4 ohms at 400 cycles

POWER SUPPLY RATING
105-125 volts, AC, 50 or 60 cycles, or DC ..... 30 watts

PILOT LAMP ..... Mazda No. 51, 6-8 volts, 0.2 amp.

RCA MFG. CO., INC.

MODEL B-50, Ch. RC-1004H



Step	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3	Antenna terminal in series with 220 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		1,300 kc	1,300 kc signal	C9 (ant.)

Precautionary Lead Dress.—

1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. Keep AVC lead connecting C1 away from the 1A7GT plate.
3. Keep blue plate leads coming from IF transformers short and close to the chassis.
4. All filament wires should be dressed close to chassis.

FREQUENCY RANGE ..... 540-1,720 kc
INTERMEDIATE FREQUENCY ..... 455 kc
BATTERY DRAIN
"A" ..... .25 amperes
"B" ..... 14 m.a.
MAX. POWER OUTPUT ..... .3 watt
LOUDSPEAKER (5-inch PM)
Identification number RL-85-6 92322-1
Voice coil impedance at 400 cycles ..... 3 ohms ..... 3 ohms

MODEL B-52, Ch. RC-1004D

RCA MFG. CO., INC.

BATTERY DRAIN
"A" ..... .3 amperes
"B" ..... 10 m.a. (Switch at "Battery Saver" position)
"B" ..... 14 m.a. (Switch at "Maximum Output" position)

POWER CONSUMPTION
With CV-42 Conversion Unit ..... 22.5 watts

LOUDSPEAKER (5-inch PM)	RL-85-6	92322-1
Voice coil impedance at 400 cycles	3 ohms	3 ohms

CAUTION: Turn power switch off (counter-clockwise) when installing or replacing tubes or batteries.

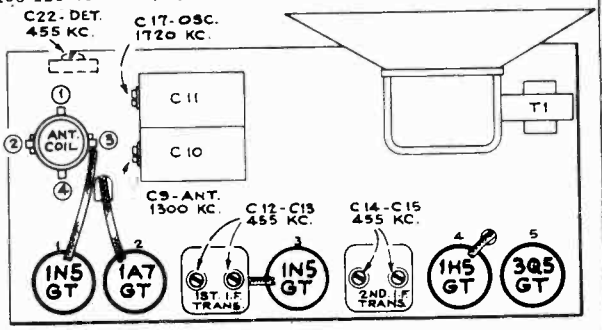
DO NOT TURN THE "BATTERY-ELECTRIC" SWITCH TO ELECTRIC POSITION WHILE THE RECEIVER IS CONNECTED TO BATTERIES.

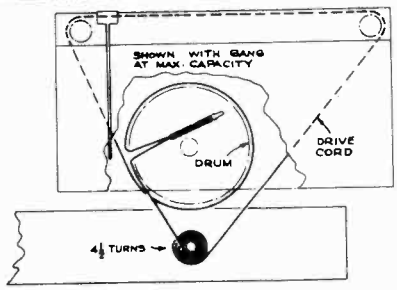
Step	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output
1	I-F grid in series with .01 mfd.	455 kc	Quiet point between 550 and 750 kc	C14, C15 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			C12, C13 (1st I-F Trans.)
3	Antenna terminal in series with 200 mmfd.	1,720 kc	Tuning condenser rotor plates all out	C17 (osc.)
4		1,300 kc	1,300 kc signal	C9 (ant.)
5		455 kc	Quiet point between 550 and 750 kc	Adjust C22 for minimum output on strong 455 kc signal

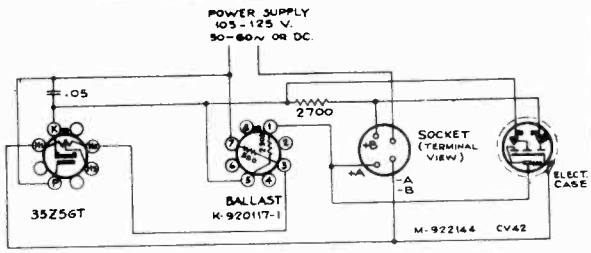
Precautionary Lead Dress.—
1. The lead from the 3Q5 plate to output transformer should be dressed under clip and away from audio input leads.
2. All filament wires should be dressed close to chassis.
3. Keep AVC lead connecting C1 to antenna coil away from the 1A7GT plate.
4. Keep blue plate leads coming from I.F. transformers short and close to chassis.
5. Keep yellow leads connecting to oscillator coil away from trap coil.
6. Keep grid lead of 1N5GT RF tube away from 1A7GT grid.

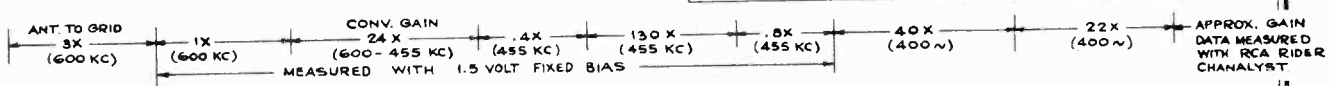
POWER SUPPLY
1 "A" - "B" 1½-90 volt pack.

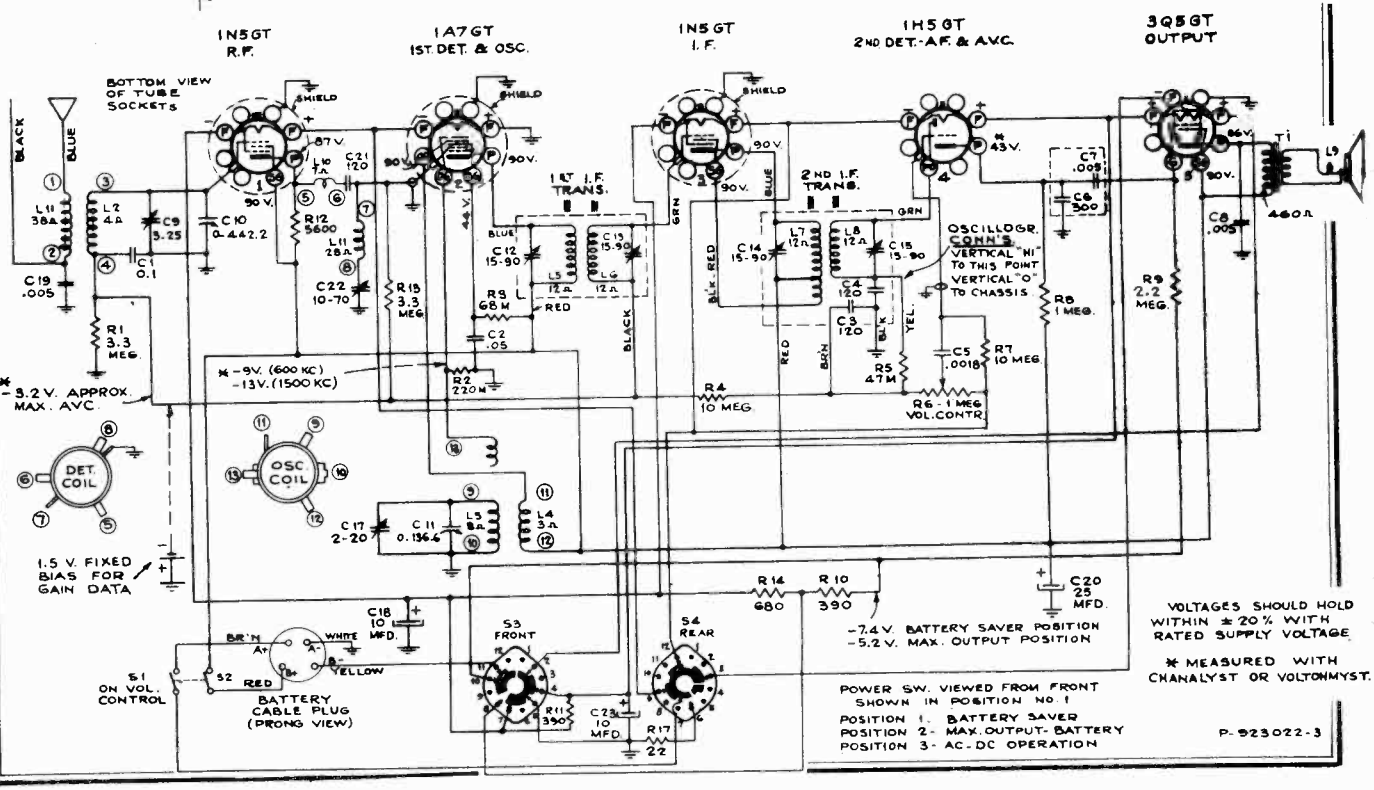
Model B-52 can be operated on 105-125 volts AC, 50-60 cycles, or 105-125 volts DC, by means of CV-42 Conversion Unit.





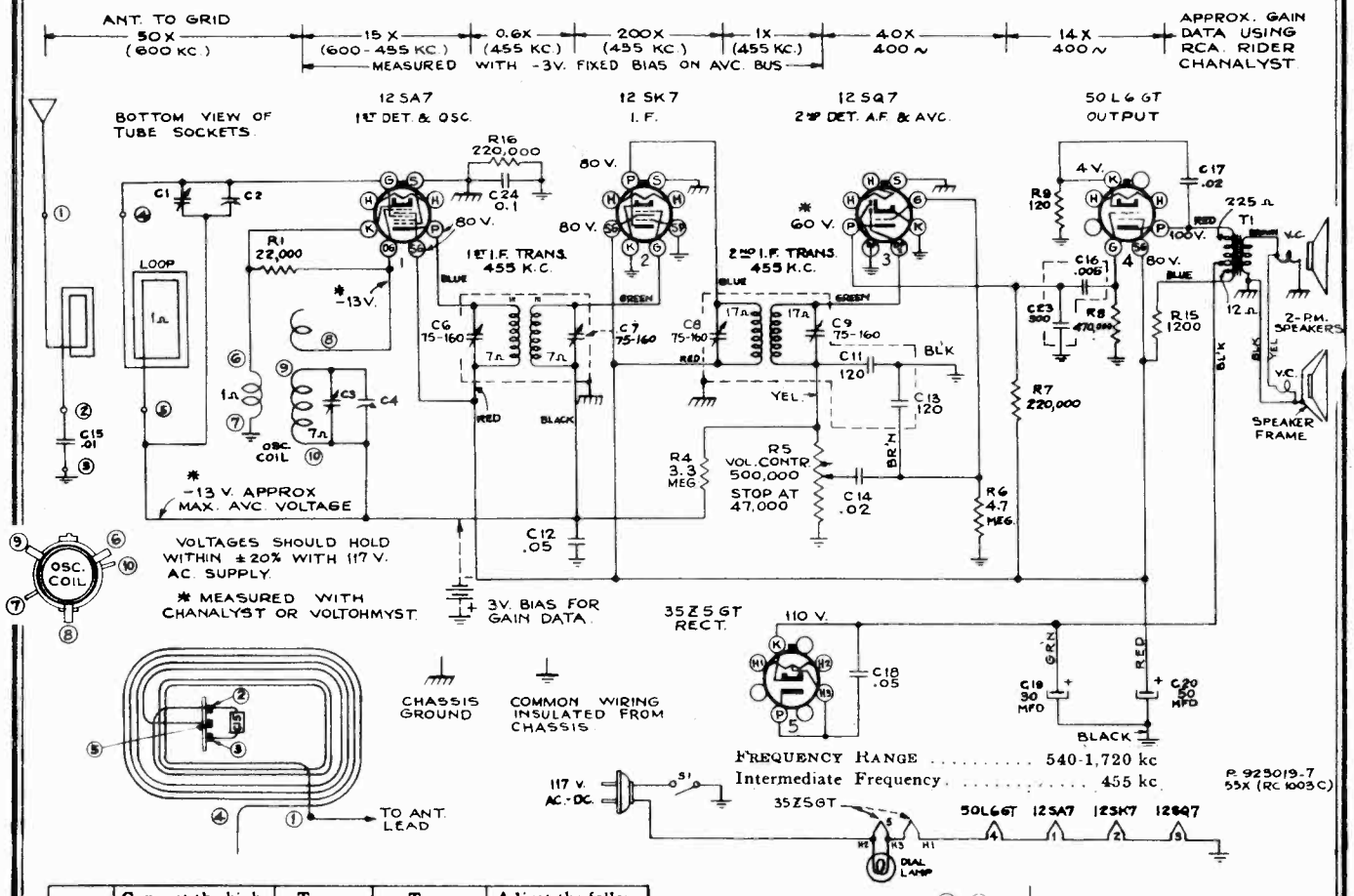




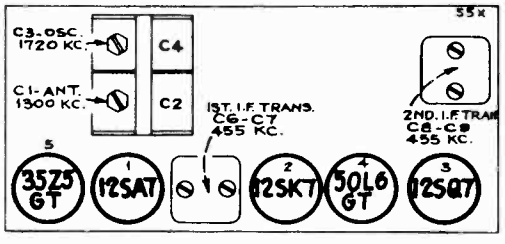


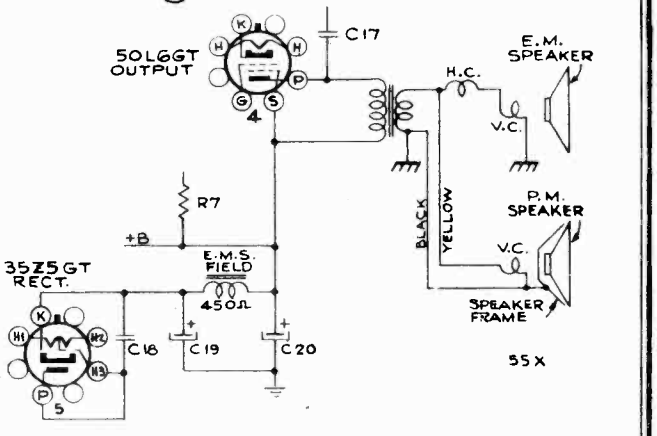
MODEL 55X, Ch. RC-1003C

RCA MFG. CO., INC.



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	C8, C9 2nd I-F Transformer
2	1st Det. grid in series with .01 mfd.			C6, C7 1st I-F Transformer
3	Ant. terminal in series with 100 mmfd.	1,720 kc	Gang at minimum	C3 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C1 (ant.)
5	Repeat steps 3 and 4.			





Above—Circuit of Model 55X Using one "PM" and one "EM" Speaker.

Phasing Speakers in Model 55X.—

For correct sound quality, it is ESSENTIAL that the cones of the two loudspeakers move in and out together.

To check the phasing, connect a 1½-volt dry cell across the secondary of the output transformer and observe, by sight or feel, whether the two cones move in the same direction. If one moves in while the other moves out, reverse the external connections to the voice coil of the permanent-magnet speaker.

POWER SUPPLY RATINGS

105-125 volts, direct current, or 50-60 cycles ..... 30 watts

POWER OUTPUT (125 volts, 60 cycle supply)

Undistorted ..... 0.8 watts Maximum ..... 1.2 watts

LOUDSPEAKERS

RL-86-A3 5-inch "EM," 4-ohm voice coil
RL-81-B2 5-inch "PM," 4-ohm voice coil

Test-Oscillator.—For I-F alignment, connect the low side of the test-oscillator to the common negative through a .01 mfd. capacitor, and keep the output as low as possible.

Pre-Setting Dial.—With gang condenser in full mesh, the pointer should be adjusted so that it is vertical.

Power-Supply Polarity.—For operation on d-c, the power plug must be inserted in the outlet for correct polarity. If the set does not function, reverse the plug. On a-c, reversal of the plug may reduce hum.

MODEL R-56 Phono.

RCA MFG. CO., INC.

POWER OUTPUT RATING

Undistorted ..... 2.25 watts
Maximum ..... 4.50 watts

LOUDSPEAKER

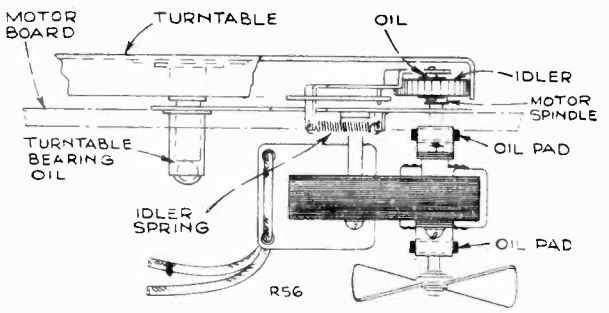
RL-86-C1 ..... 5-inch Electrodynamic
V. C. Impedance at 400 cycles ..... 4 ohms

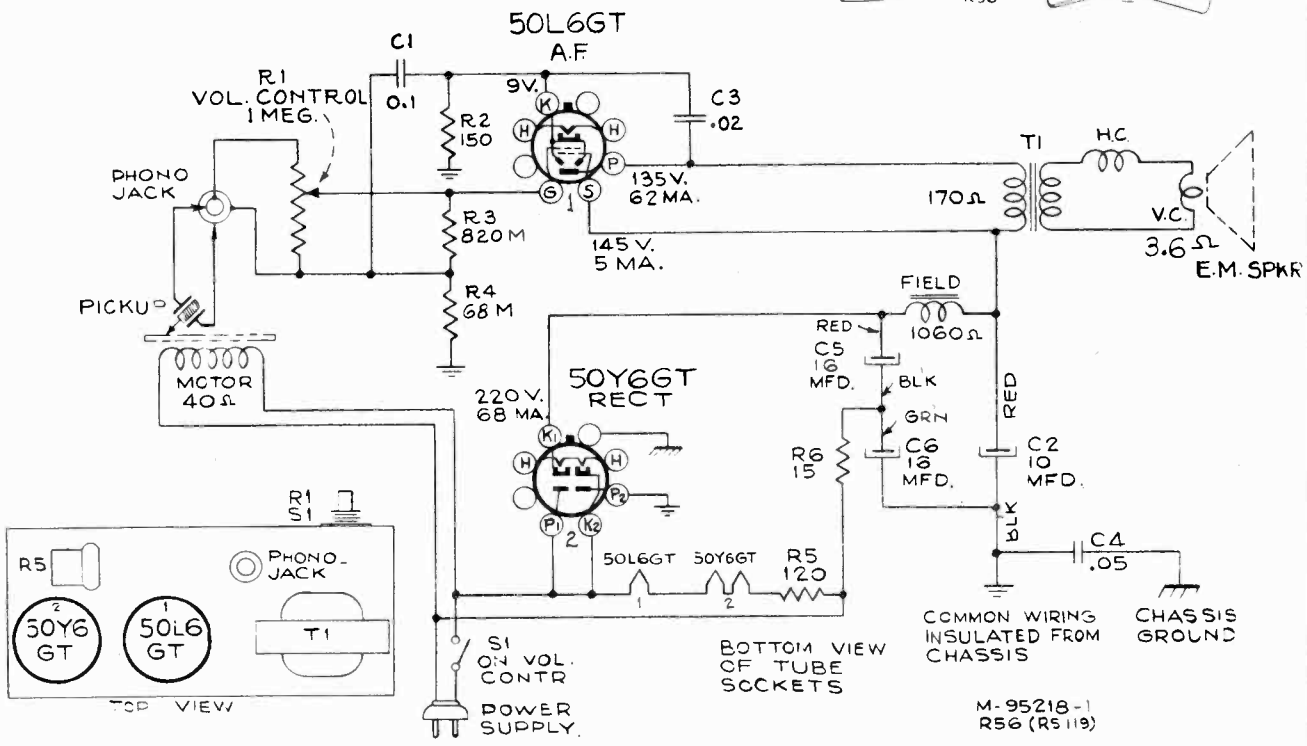
PHONOGRAPH

Motor ..... Self-starting Induction
Drive ..... Rim Drive, 78.25 R.P.M.
Pickup ..... Crystal

POWER SUPPLY

105-125 volts, 60 cycles ..... 50 watts





STOCK No.	DESCRIPTION	Unit List Price
	AMPLIFIER ASSEMBLY	
39684	Capacitor—Electrolytic, one section of 10 mfd., 250 volts, and one section of 16 mfd., 150 volts	1.10
36248	Capacitor—.02 mfd., 700 volts	.20
32787	Capacitor—.05 mfd., 400 volts	.20
43763	Capacitor—0.1 mfd., 400 volts	.30
39500	Capacitor—16 mfd., 150 volts	.50
38410	Control—Volume control and power switch	1.50
11565	Resistor—15 ohms, ½ watt	.20
39685	Resistor—120 ohms, 3.1 watt	.45
30785	Resistor—150 ohms, 1 watt	.22
14138	Resistor—68,000 ohms, ½ watt	.20
30161	Resistor—820,000 ohms, ½ watt	.20
33742	Socket—Phono input socket	.20
31251	Socket—Tube socket	.25
39683	Transformer—Output transformer	1.35
	PICKUP AND ARM ASSEMBLY	
33591	Arm—Pickup arm only—less cartridge, and pivot shaft and base assembly	.50
34482	Base—Pickup arm base—less pivot shaft	.30
34758	Bushing—One rubber and one metal bushing for pickup arm	.15
39686	Crystal—Pickup crystal cartridge	4.25
34311	Ring—Retaining ring for pivot shaft	.05
33974	Screw—Needle screw	.10
34481	Shaft—Pickup arm pivot shaft	.70
	SPEAKER ASSEMBLY (RL-86C-1)	
32907	Cap—Cone center dust cap	.02
39688	Coil—Field coil	2.10
39689	Coil—Neutralizing coil	.25
39539	Cone—Cone, voice coil, center suspension, and dust cap	1.20
	MOTOR ASSEMBLY	
36402	Arm—Idler arm and stud for motor	.25
20134	Ball—Steel ball for turntable bearing	.06
36404	Motor—105-125 volts, 60 cycle motor	4.75
36403	Mounting—One set of motor mounting grommets, spacers, and washers	.10
36406	Plate—Idler arm guide plate for motor	.10
36401	Plate—Motor plate complete with bearing and ball	.50
30340	Retainer—Motor fan retainer	.02
30585	Spring—Motor idler arm tension spring	.06
36399	Turntable—Turntable and bushing complete with spindle	1.50
33726	Washer—"C" washer for motor idler wheel	.02
36405	Washer—Flat washer for motor idler wheel	.01
36274	Wheel—Motor idler wheel and bearing	.55
	MISCELLANEOUS ASSEMBLIES	
38990	Foot—Cabinet foot	.20
38710	Knob—Volume control knob	.15
33530	Mounting—Rubber grommet, washers, and nut for mounting pickup arm	.10
39690	Screw—Finish screw and washer for mounting amplifier (1 set)	.05

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

RCA MFG. CO., INC

MODELS TRK-90, Chassis KC-4H, KK-7H; TRK-120, Chassis KC-4F, KK-7F

General Description

The TRK-120 consists of a console-type, high-picture-definition, mirror-viewing, five channel, Television Receiver and an eleven-tube, three-band broadcast radio receiver enclosed in a handsomely styled modern cabinet. Features of the Television receiver include: Twelve-inch Kinescope; Styrol (humidity-resisting) r-f and i-f transformer forms; black and white pictures; single station selector switch; temperature compensated condensers; iron core i-f and r-f tuning; double safety switch protection; safety-glass viewing shield; extra large viewing mirror for wide angle viewing; automatic brightness control; and automatic volume control.

The TRK-90 is a direct viewing, high-picture-definition console-type, five channel, Television Receiver and an eleven tube, three-band broadcast radio receiver in a deluxe upright modern cabinet. Television features of this receiver are the same as for the TRK-120, except that a nine-inch Kinescope is used.

General Specifications

Model TRK-90				Model TRK-120			
Height	47½ in.	Depth	24⅜₁₀ in.	Height	40⅝ in.	Depth	19⅞ in.
Width	31½ in.	Weight	200 lb.	Width	34⅝ in.	Weight	198 lb.
Shipping Weight	283 lb.			Shipping Weight	275 lb.		

Power Supply Rating ..... 105-125 volts, 60 cycles, 420 watts (Total)
Fuse Rating—T5 and T7 (T7 and T8 in 50 cycle model) ..... 3 amperes
Fuse Rating—T6 (T9 in 50 cycle model) ..... ¾ ampere

Mechanical Specifications

Video Chassis Base Dimensions	17 in. x 16 in	Max. Height	8½ in.
SPU Chassis Base Dimensions	15 in. x 13¼ in.	Max. Height	10 in.

Electrical Specifications

RCA Tube Complement

In KC-4F (TRK-120), and KC-4H (TRK-90) Video Chassis

(1) RCA-6AC7	(5) RCA-6AB7	(9) RCA-6SQ7	(13) RCA-6AB7	(17) RCA-6N7	(21) RCA-6N7	
(2) RCA-6J5	(6) RCA-6AB7	(10) RCA-6AC7	(14) RCA-6H6	(18) RCA-6N7	(22) RCA-6J5	
(3) RCA-6AB7	(7) RCA-6AC7	(11) Kinescope*	(15) RCA-6N7	(19) RCA-6L6	*RCA-1803-P4 (TRK-120)	
(4) RCA-6AB7	(8) RCA-6H6	(12) RCA-6SK7	(16) RCA-6Y6-G	(20) RCA-5V4-G	*RCA-1804-P4 (TRK-90)	

In KK-7F (TRK-120), and KK-7H (TRK-90) Socket Power Units

(23) RCA-5U4-G ..... Low Voltage Rectifier (24) RCA-2V3-G ..... High Voltage Rectifier

Television Channels (Selector Switch Positions)

1	44 to 50 mc.	3	66 to 72 mc.
2	50 to 56 mc.	4	78 to 84 mc.
5	84 to 90 mc.		

Over-all Video Band Width ..... 4 mc.
Scanning ..... Interlaced, 441 Line
Horizontal (Line) Scanning Frequency (Sawtooth Wave) ..... 13,230 cps
Vertical (Field) Scanning Frequency (Sawtooth Wave) ..... 60 cps
Frame Frequency (Picture Repetition Rate) ..... 30 cps

Picture Size (Approx. Mask Dimensions)

TRK-90 ..... 5½ x 7¼ in. TRK-120 ..... 7⅜ x 9¾ in.

Precautions in Handling Kinescopes

The Kinescope bulb encloses a high vacuum and, due to its large surface area, is subjected to considerable air pressure. For these reasons, Kinescopes must be handled with more care than ordinary receiving tubes.

The large end of the Kinescope bulb — particularly that part at the rim of the viewing surface—must not be struck, scratched or subjected to more than moderate pressure at any time. If the tube sticks, or fails to slip into its socket or deflecting yoke smoothly, investigate and remove the cause of trouble. Do not force the tube.

All RCA Kinescopes are shipped in special cartons and should always be left in the cartons until ready for installation in the receiver. Keep the carton for future use.

The RCA-1803-P4 (12-inch) Kinescope is equipped with a protective lid and shield. Do not at any time remove the close-fitting cone-shaped section of the protective shield from the Kinescope. This section should be installed with the tube in the cabinet and is designed to protect the user while handling the glass bulb.

CAUTION: Do not open the shipping carton, install, remove, or handle the Kinescope in any manner, unless shatter-proof goggles and heavy gloves are worn. People not so equipped should be kept away while handling Kinescopes. Keep Kinescope away from the body while handling.

MODELS TRK-90, TRK-120

RCA MFG. CO., INC.

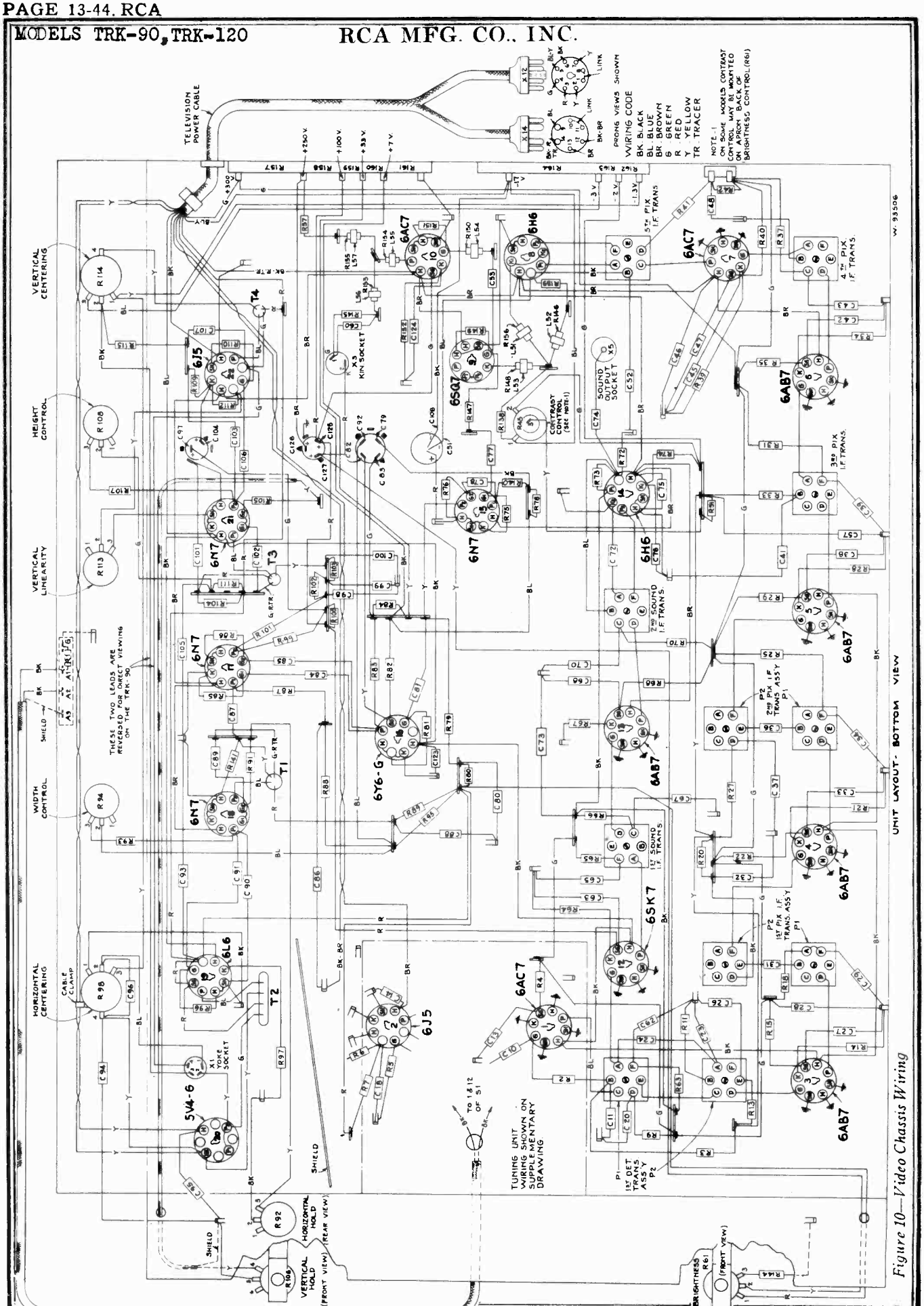
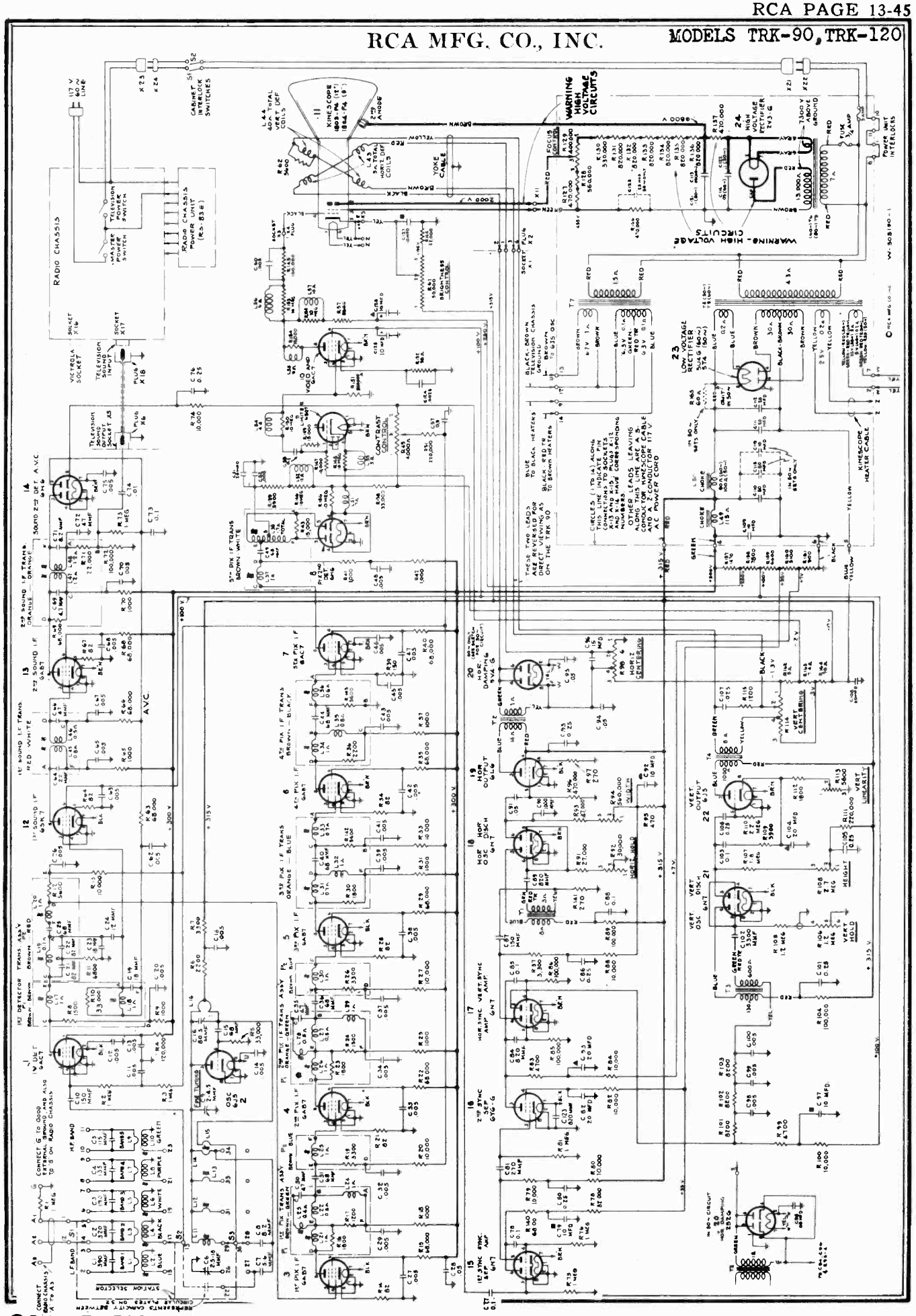


Figure 10—Video Chassis Wiring

RCA MFG. CO., INC.

MODELS TRK-90, TRK-120



MODELS TRK-90, TRK-120

RCA MFG. CO., INC.

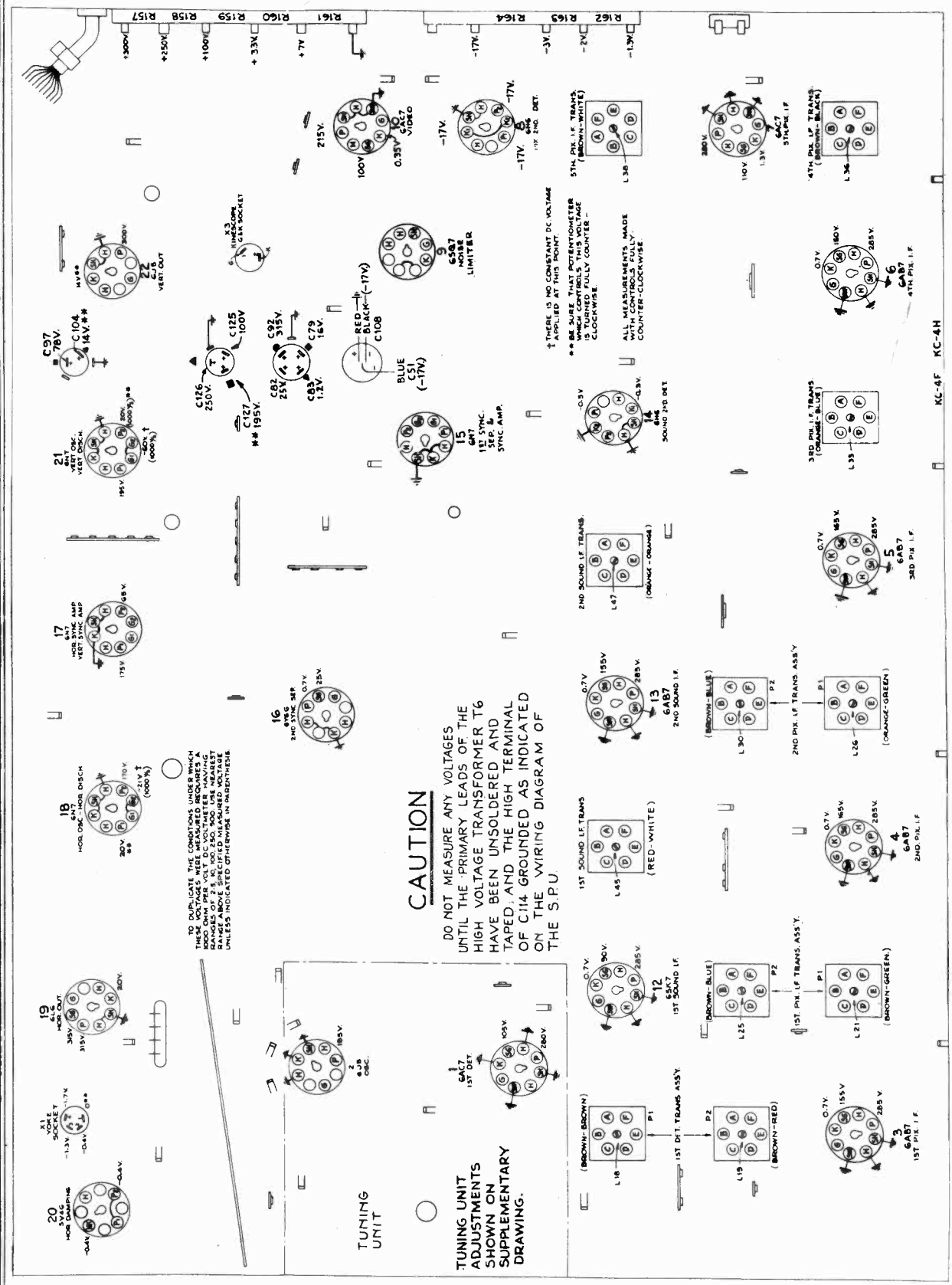


Figure 8—Voltage Diagram

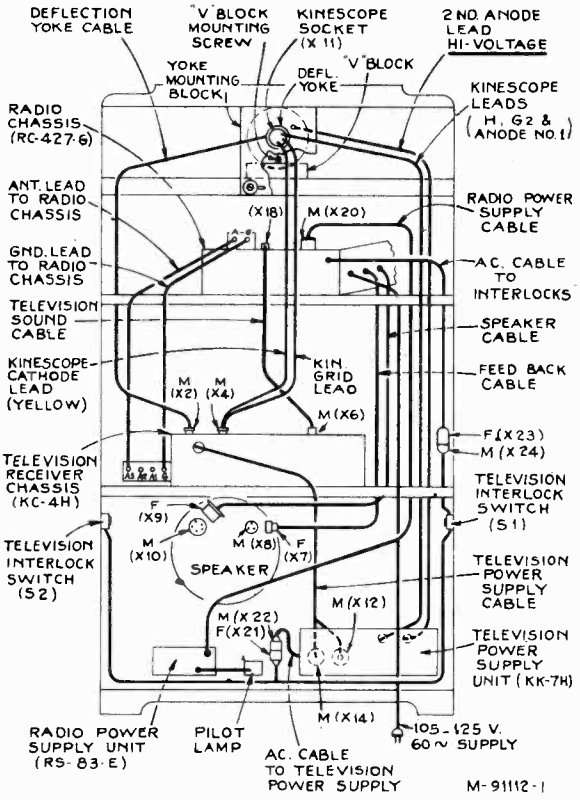


Figure 3—Cabinet Wiring—Model TRK-90

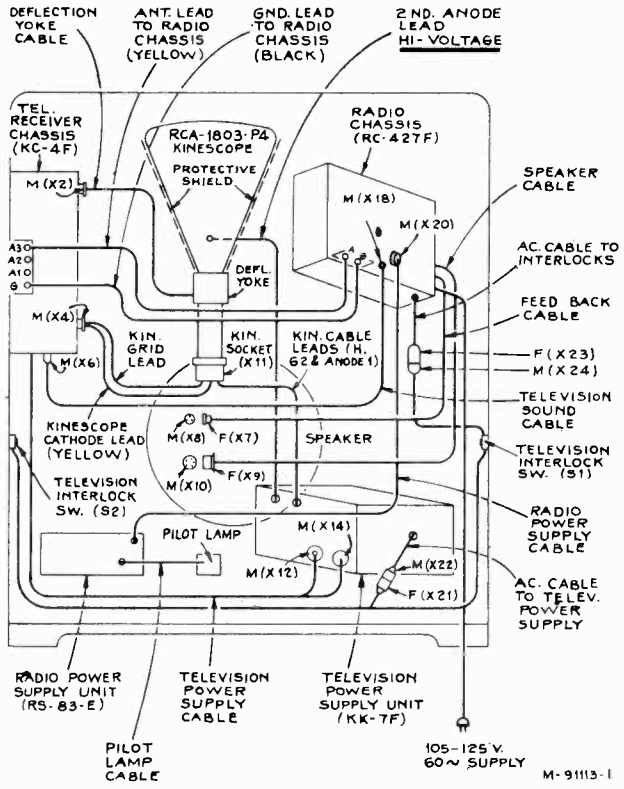
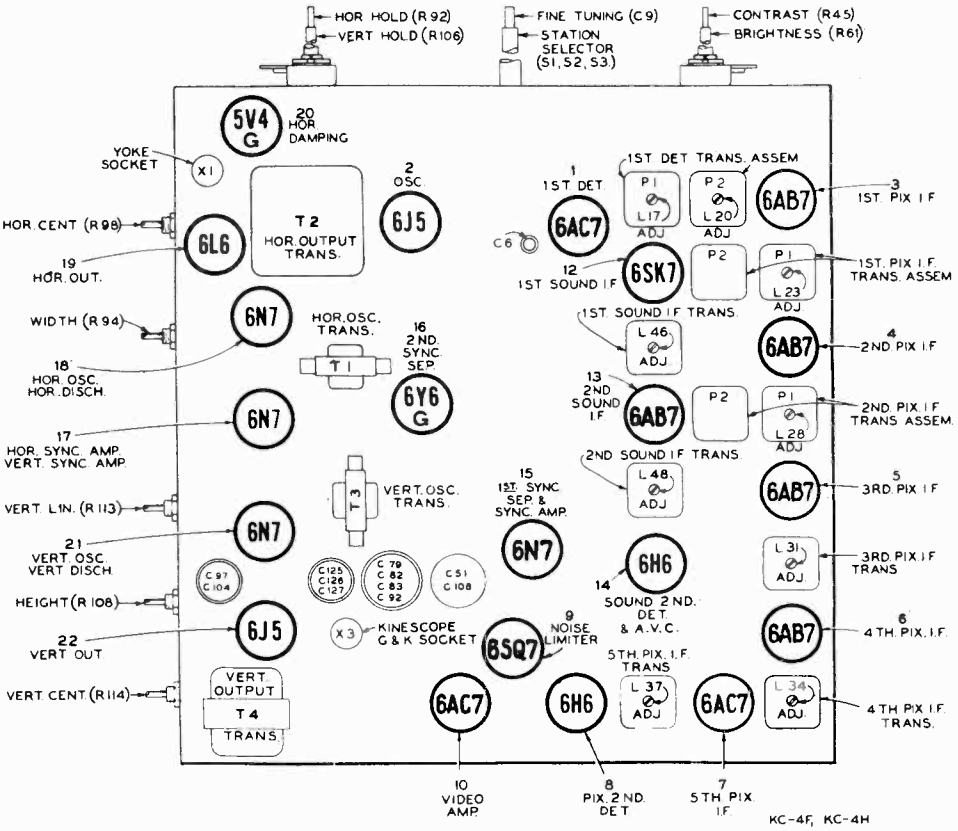
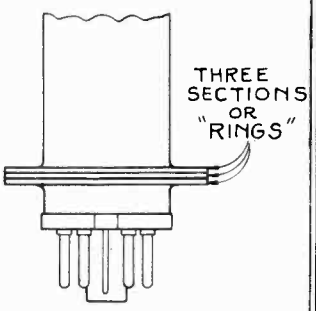


Figure 3a—Cabinet Wiring—Model TRK-120



At Left—Figure 5 Top View Video Chassis



(Above) Figure 6 Recommended Type 6L6 Identification

MODELS TRK-90, TRK-120
Chassis KK-7F, KK-7H

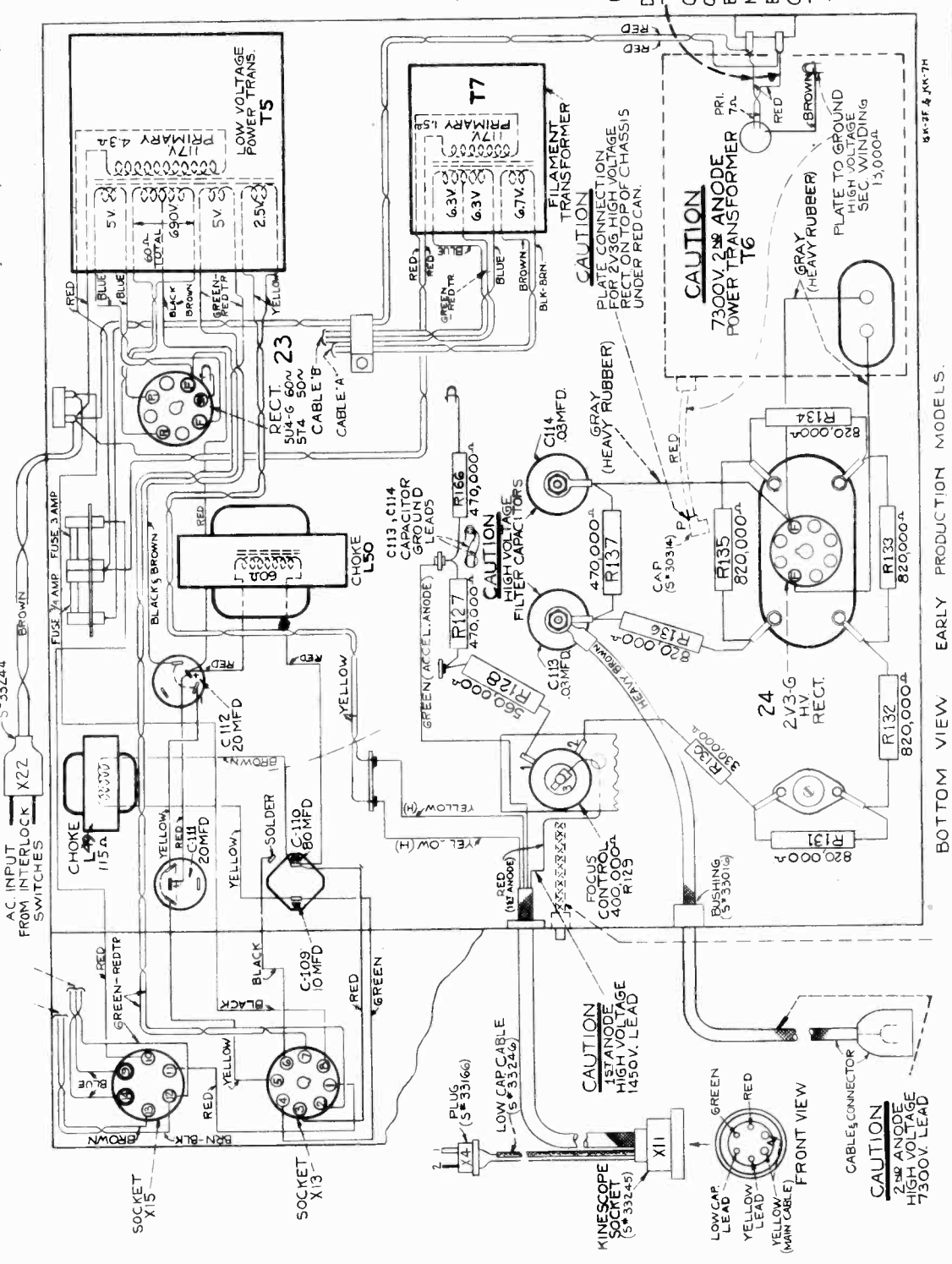
RCA MFG. CO., INC.

Socket Power Units KK-7F, KK-7H

The following precautions should be observed when any work is being done on the SPU:

1. Remove power supply cord from the power supply socket.
2. No attempt should ever be made to measure the high (7,500 volts) voltage because of the difficulties and dangers involved. Servicing should be done with an ohm meter.
3. If, at any time it becomes necessary to service the SPU, the suspected parts should be replaced by parts known to be in good operating condition.
4. Use only one hand at a time. It is advisable to keep the other hand in one's pocket.
5. Connect a shorting lead between ground (first) and the high voltage side of C113 and C114.
6. Whenever working with the oil-filled capacitors, keep a constant short across the capacitor, as these capacitors do not completely lose their charge after being discharged a single or several subsequent times.
7. Only one person at a time should work on the unit to prevent any misunderstanding which may result in an accident.

Figure 11—SPU Wiring (60 Cycle Models)



The finest television receiver built may be said to be only as good as the antenna design and installation. It is therefore important to use a correctly designed antenna, and use care in its installation.

The RCA Double Dipole Antenna, Stock No. 9871, is recommended for use with these receivers. Both this antenna and the "V" antenna described below are especially designed for a sufficient broad frequency response to cover the contemplated television spectrum with good efficiency and are therefore superior to a single Dipole type antenna.

When greater signal pickup, or where a shielding effect from noise sources or image reflections are desired, a reflector assembly, Stock No. 9872, may be added to the Stock No. 9871 Antenna to obtain an improved signal-to-noise ratio.

The RCA Double "V" Wire Type Television Antenna is an alternative type of antenna designed for television sight and sound reception. Two points of support are necessary. It serves adequately in suburban areas, but may not be sufficiently flexible in congested city areas where bad reflections and interference are encountered.

Antenna Installation.

In most cases, the antenna should not be installed permanently on the apartment or residence roof until the quality of the picture reception has been observed on a Television receiver. A temporary transmission line can be run between receiver and the antenna allowing sufficient slack to permit moving the antenna. Then, with a telephone system connecting an observer at the receiver and an assistant on the roof to find an antenna location, the antenna can be positioned to give the most satisfactory results on the received signal. A shift of only a few feet in antenna position or direction may effect a tremendous difference in picture reception.

Whenever possible, the antenna location should be chosen or erected so the antenna is not only broadside to the transmitter but removed as far as possible from highways, hospitals and doctors' offices and similar sources of interference. Auto ignition and diathermy apparatus may cause noise interference spoiling the picture.

In mounting any antenna, care must be taken to keep the antenna rods or pickup wires proper at least 1/4 wave length (at least 6 feet) away from other antennas, metal roofs and gutters or metal objects. Under certain extremely unusual conditions, it may be possible to rotate or position the antenna so it receives the cleanest picture over a reflected path. If such is the case, the antenna should be so positioned. However, such a position may give variable results as the nature of reflecting surfaces may vary with weather conditions, as a wet surface has been known to have different reflecting characteristics than a dry surface.

In short, a television receiving antenna and its installation must conform to much higher standards than an antenna for reception of International Short Wave and Standard Broadcast signals because:

(1) Intervening obstacles have a pronounced shielding effect on the ultra-high frequency waves producing low intensity signals. Severe trouble with multi-path transmissions may be experienced, especially in congested city areas.

(2) The picture signal is comprised of a very wide band or range of frequencies, all of which must be received with good efficiency.

(3) It must be continually remembered that the discernment for the eye is much more critical than that of the ear.

Transmission Line

RCA Victor has made available two types of exterior transmission lines. One is a special low loss weather-proofed line having the correct surge impedance to match the RCA Victor Television antennas and the RCA Victor Television receivers. It is carried as Stock No. 9882 in 1,000-foot rolls. The second type is a standard weather-proofed line, also having the correct surge impedance for proper antenna and receiver matching. It is carried as Stock No. 12430 in 90-foot rolls, Stock No. 12429 in 45-foot rolls and is available in 1,000-foot spools as Stock No. 9881. Use of improper lines may result in excessive loss or may lead to line reflections, resulting in multiple images or "ghosts," thus marring the reception.

For transmission line runs up to 200 feet, and where the signal strength on the antenna is relatively high, the Stock No. 12430, or Stock No. 12429 transmission line may be used. For all other applications the Stock No. 9882 transmission line is recommended.

In some areas of very high signal intensity, a lead covered transmission line may be advantageous.

Five-Television-Channel, Receiver

Kinescope Installation (TRK-90).

1. Remove back cover of cabinet.
2. Remove the two screws which secure the wooden block, on which the yoke is mounted, to the upper shelf, and drop this block and yoke away from the shelf.
3. Loosen the thumb screw in the center of the slotted block of wood on the top shelf, pull this block of wood towards the rear of the cabinet and turn it so that the "V" slot on the front end of the block is to your right.
4. Wearing gloves and goggles, carefully slide the Kinescope on the "V" in the block, and turn both the block and the Kinescope so that the Kinescope faces the viewing window. Slide the Kinescope up to the mask in the window and fasten loosely in place by sliding the "V" block up to the bottom of the Kinescope face, and fastening it with the thumb screw.
5. Place the yoke and the wooden block on which it is mounted, on the Kinescope neck, rotate the block 90° from its original mounting position in order to have it clear the top of the cabinet and slide it into position on the Kinescope neck. DO NOT FORCE YOKE. In some cases where the yoke lead is too short it may be necessary to loosen the "V" block and swing the Kinescope neck to the left in order to be able to place the yoke on the Kinescope neck without forcing.
6. Fit the upper part of the wooden yoke mounting block into the slot on the underside of the cabinet top and fasten the lower end of the block securely by means of the two screws. The Kinescope should be mounted loosely in place, so that the yoke is not forced on the Kinescope neck at any time.
7. Loosen the wing nuts on the yoke mounting bracket, and move the yoke forward on the neck of the Kinescope so that it pushes the Kinescope against the mask. Tighten the wing nuts to hold the Kinescope and yoke securely in this position.
8. It may be necessary to rotate the Kinescope, within the limits allowed by the high voltage second anode lead, with respect to the mask in order to obtain proper masking of the edges on the Kinescope screen. Before rotating the Kinescope, the screws holding the yoke mounting block should be loosened, so that the Kinescope neck will not be forced.
9. Move the "V" block forward so that it holds the bottom of the Kinescope in place. Tighten the thumb screw.
10. Place the second anode lead on the second anode cap at the side of the Kinescope.
11. After the receiver is operating, and if the picture is not squared with the mask, using a screw driver loosen the clamping screws on the band around the yoke and rotate the yoke until the picture is squared with the mask, then tighten these clamping screws securely.

CAUTION: When removing the back cover of the cabinet, after the screws have been removed do not allow the cover to slide down on the neck of the Kinescope, or the neck of the Kinescope may be snapped off.

Kinescope Installation (TRK-120).—Refer to figure 4.

1. Remove back cabinet cover.
2. Remove the top safety glass cover by removing the three wing nuts "E" at the two front corners and right rear corner of the cover and loosening the wing nut "E" at the left rear corner of the cover.
3. Lift the cover straight upwards, taking care not to scratch the cabinet finish with the protruding screws or the cover itself.
4. Loosen the two wing nuts "F" on the yoke holding frame, and allow the yoke to drop down as far as possible.
5. Using gloves and goggles, open the Kinescope shipping carton and remove the top cover on the Kinescope.

6. Remove the Kinescope from the shipping carton (do not remove the close fitting cardboard shield from the Kinescope), and insert the Kinescope into the cabinet, guiding the neck of the Kinescope into the yoke. Do not force the neck of the Kinescope into the yoke, or the tube may break. Let the Kinescope down slowly so that it finally rests on the yoke.

7. Rotate the Kinescope and cardboard container (but not the yoke), so that the second anode cap at the side of the tube is towards the front of the cabinet.

8. Place the white rubber mask on the face of the Kinescope, with the ribs on the mask facing upwards toward the mirror. Line up the mask so that it masks the edges on the Kinescope face. Then, if necessary, lift the Kinescope and rotate it so the mask is approximately squared up with the cover opening. The second anode cap should be kept towards the front of the cabinet.

9. Replace the safety glass cover and wing nuts. Tighten wing nuts to hold the cover securely.

10. Loosen the wing nuts "F" on the yoke mounting bracket and push the two metal brackets, on which the bottom of the yoke rests, upward, until the rubber mask rests against the top cover. If the mask and the cover opening do not line up, rotate the cone-shaped Kinescope shield until they do. Tighten the wing nuts to hold the yoke and tube in this position. In some cases it may be necessary to loosen the four screws holding the yoke support to the wooden frame and shift the yoke support to make the mask and Kinescope line up symmetrically with the cover opening.

11. Place the second anode lead on the second anode cap at the side of the Kinescope.

12. After the receiver is operating, and if the picture is not squared up with the cover opening, the two screws "H" on the band around the yoke should be loosened, and the yoke rotated to square up the picture, then these screws should be tightened with a screw driver.

Focusing Control.—This is a screw driver adjustment located on the right side of the cabinet near the base.

Adjustments.—There are a series of screw driver slot adjustments at the rear of the TRK-120 (at the side of the TRK-90), used to obtain the proper picture size, centering, and vertical distribution. These adjustments are explained fully in the receiver operating instructions

Video Chassis KC-4F, KC-4H

When it is desired to measure any voltages on this chassis, the primary leads of the high voltage transformer T6 should be disconnected and taped together.

When any changes have to be made in the Video chassis, the lead and part locations should be replaced as closely as possible to the original positions.

Because of the special equipment and procedure necessary for the proper alignment of these receivers, the alignment will be covered in a supplementary booklet.

Refer to the booklet: **Practical Television by RCA,** for detailed explanations of circuit operation in a Television receiver.

Service Hints:

1. Poor Horizontal Distribution of the picture elements may be due to a 6L6 tube. RCA-6L6 tubes of known recent manufacture are the only tubes recommended for the Horizontal sweep output circuit. By careful scrutiny, these tubes can be identified by the three "rings" or sections welded together at the base ring of the tube, as shown in Figure 6. If any other 6L6 tube is used in this position it will break down in a very short time.

2. If the picture "tears out" when the receiver is jarred it may be due to microphonic 6AB7, 6AC7 or 6J5 tubes.

3. The 6J5 oscillator tube should be removed without rocking it in its socket to loosen it, as the rocking motion may cause the 80.5 mmf capacitor to break off.

4. The coils in oscillator circuit should not be touched or moved or the alignment of the receiver will be disturbed.

5. The insulator on the filter capacitors may become dirty and break down to short out the high voltage.

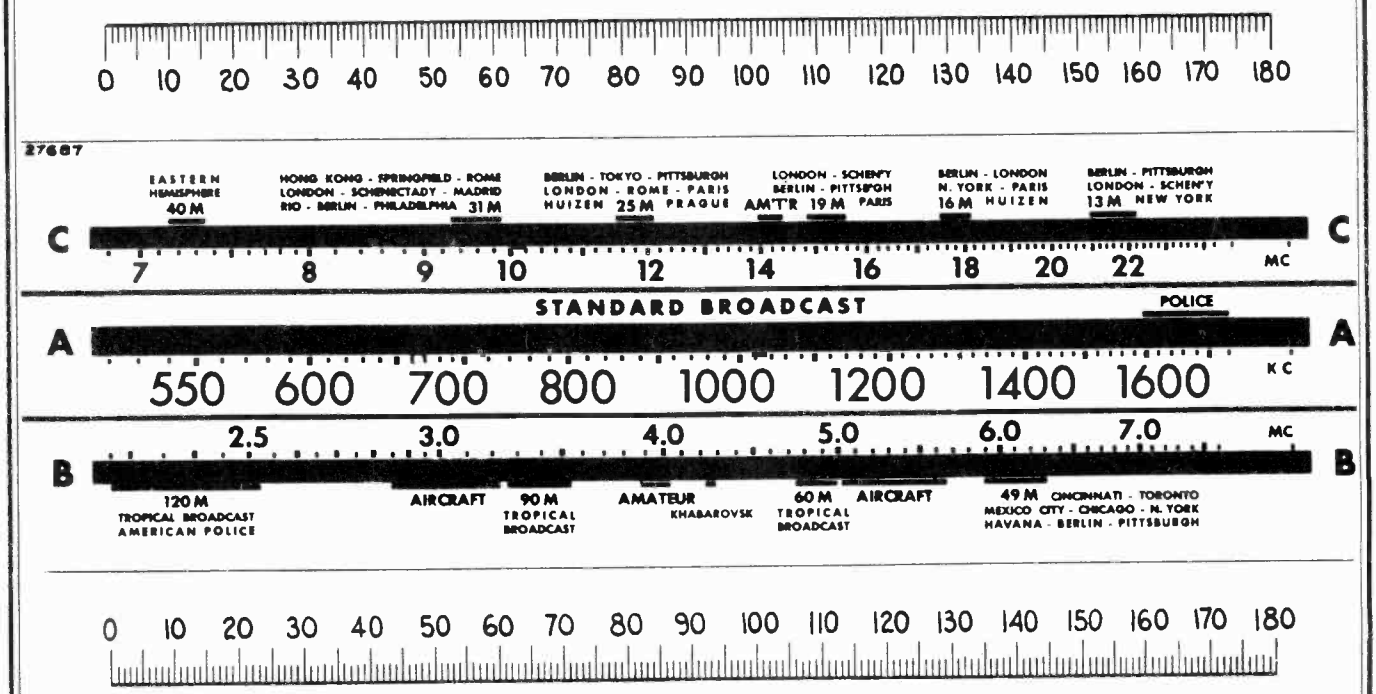
6. The Video coupling capacitors C50, 53, 59 should be kept clear of chassis.

7. A gassy 2V3-G tube may cause resistor R-137 to burn. Replace 2V3-G tube, and resistor, if necessary.

8. Changing the position of the oscillator shield plate will disturb the alignment.

Calibration Scale

Eleven-Tube, Three-Band, Electric Tuning, AC, Superheterodyne Broadcast Receiver



Tuning Dial, and Corresponding 0-180° Calibration Scale

The corresponding dial setting for any reading of the calibration scale can be determined by drawing a line straight up from this point; for example, 151° on the calibration scale corresponds to a dial reading of 1,500 kc on "A" band. Read instructions under "Alignment Procedure."

RCA MFG. CO., INC.

MODELS TRK-90, TRK-120
Ch. RC-427 (Receiver)

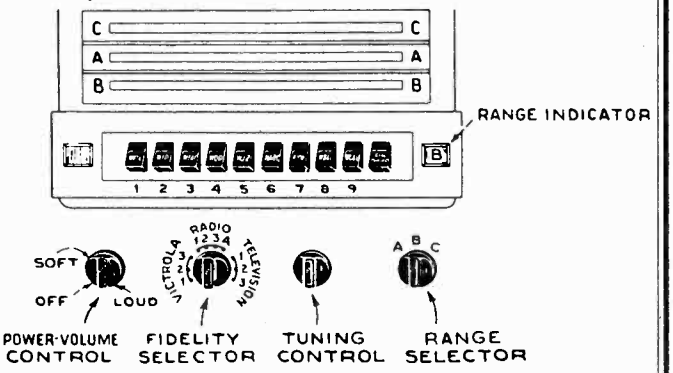
General Description

Radio receiver chassis No. RC-427 is used in RCA Victor Television Console Models TRK-90 and TRK-120.

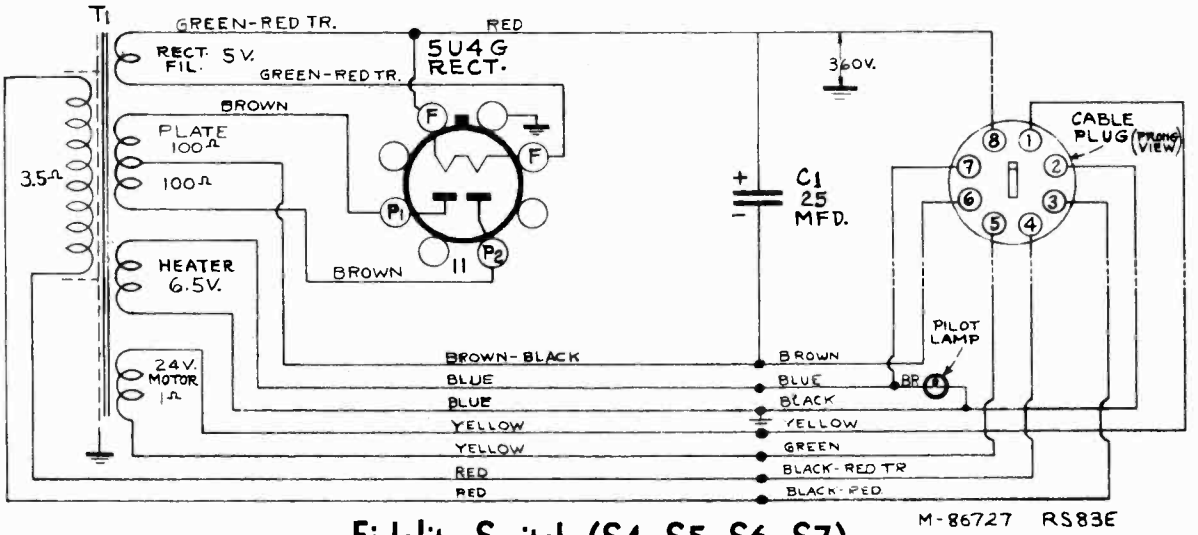
The audio output of the television chassis is connected to the audio input of the radio chassis by means of jack X-17 and section S7 of the fidelity switch. The functions of this switch are tabulated on the following page.

A separate plug-in power unit, RS-83E, is used to supply heater and plate voltages to the radio chassis. Service data and diagram for this power unit are shown below.

At Right—Location of Controls (Radio)



SPU Schematic Diagram, RS-83E



Fidelity Switch (S4, S5, S6, S7)

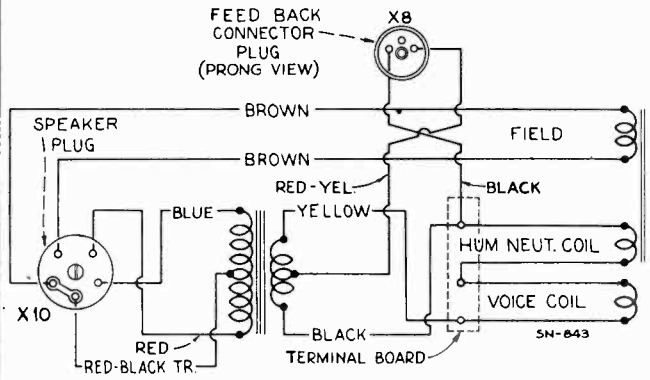
Switch Position	For	I-F Amp.	Audio Amp.	110-V. Supply for Tele. Chassis *	Osc. +B Supply	Dial Lamps **
No. 1 (Counter-clockwise)	Victrola	—	Min. Highs	Off	Off	On
No. 2	Victrola	—	Max. Highs Reduced Lows	Off	Off	On
No. 3	Victrola	—	Full Range	Off	Off	On
No. 1	Radio	Sharp	Min. Highs Max. Lows	Off	On	On
No. 2	Radio	Sharp	Max. Highs Reduced Lows	Off	On	On
No. 3	Radio	Sharp	Max. Highs Full Lows	Off	On	On
No. 4	Radio	Broad	Full Range	Off	On	On
No. 1	Television	—	Min. Highs	On	Off	Off
No. 2	Television	—	Med. Highs Reduced Lows	On	Off	Off
No. 3	Television	—	Full Range	On	Off	Off

* Controlled by switch (S12) on rear of fidelity switch.
** The 1st-I.F. heater is opened on television positions 1, 2 and 3.

MODELS TRK-90, TRK-120
Chas. RC-427

RCA MFG. CO., INC.

Miscellaneous Data for Radio Chassis



Connections and Colors of Loudspeaker and Cable

Precautionary Lead Dress

(1) All A-C leads should be twisted together and dressed away from parts in chassis to prevent hum pickup.

(2) Keep pilot light leads away from 6R7 grid.

(3) Yellow, green, and black leads from fidelity switch to 1st i-f transformer must be twisted together and dressed away from chassis. The same applies to the 2nd i-f transformer leads.

Victrola Attachment

A jack (X-16) is located near the antenna terminal board for convenience in plugging in a Victrola Attachment. The cable from the Victrola Attachment should be terminated in a Stock No. 31048 plug to fit the jack.

TRK-120 for 105-125 Volts—50-60 Cycle Power Supply

General differences are as follows:

Chassis KC-4J

1. Tube No. 21 formerly RCA-5V4G changed to RCA-25Z6 and socket wiring revised.
2. Circuit changes are indicated on the schematic diagram (Fig. 9).

Chassis KK-7J

1. Capacitors C-118 (80 mfd.) and C-119 (10 mfd.) added in parallel with C-110.
2. Capacitor C-128 (0.25 mfd.) added in parallel with resistor R-166.
3. Capacitors C-113 (0.03 mfd.) and C-114 (0.03 mfd.) changed to C-121 (0.1 mfd.) and C-122 (0.1 mfd.)
4. Power transformer (T-5) changed to (T-8) having a 25v. heater winding to supply the RCA-25Z6 horizontal damping tube.
5. High voltage power transformer (T-6) changed to (T-9).
6. Resistor R-165 is added.
7. Inductance L-50 is 100 ohms in this model.
8. An RCA-5T4 replaces the RCA-5U4-G.

In addition Kinescope shielding is provided as follows:

1. A metallic conical section is installed in the cabinet to shield the Kinescope bulb.
2. A double metallic cylindrical section is installed with the deflecting yoke mounting assembly to shield the deflecting yoke proper. The accompanying illustration shows its assembly.

CAUTION: The conical shield is of the proper size to permit installing the 1803P4 Kinescope with its protective cardboard sleeve. The latter should **never** be removed.

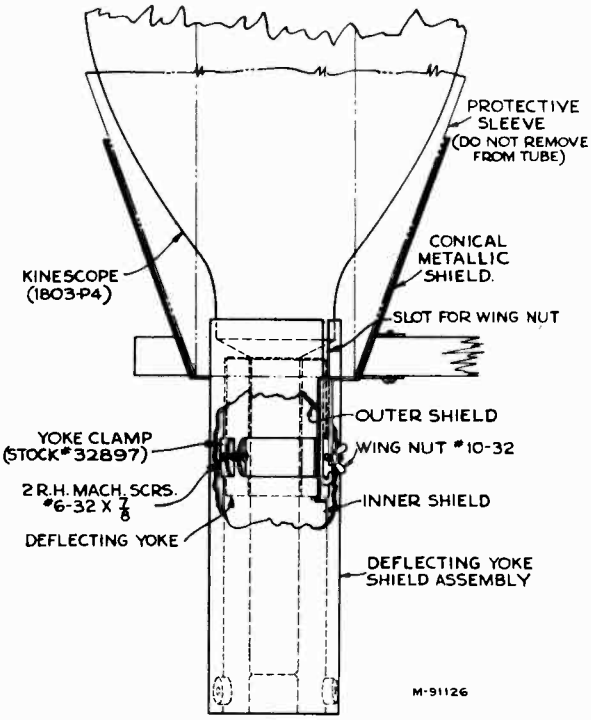
To prevent Kinescope breakage, when installing a Kinescope, the deflecting yoke and shield assembly must be in place. To prevent breakage of Kinescope when removing the deflecting yoke and shield assembly the Kinescope must be removed first.

Replacing or orienting deflecting yoke:

1. Remove Kinescope.
2. Loosen yoke support bracket wing nuts and remove complete yoke and shield assembly.
3. Remove outer shield. Loosen yoke clamp screws to permit removal or orientation of yoke. If it is necessary to orient yoke, pull yoke out so it extends about one inch. Tighten screws just enough to hold yoke but not too tight as it may be necessary to turn it in this extended position. Replace the inner shield and yoke in the yoke mounting brackets.
4. Replace Kinescope and protective glass cover.
5. Move the inner shield and yoke assembly vertically until yoke is gently touching Kinescope bulb. Tighten yoke bracket wing nuts.
6. Rotate yoke carefully with one hand to orient raster or picture.
7. Remove Kinescope.
8. Remove carefully (so as not to disturb yoke adjustment) the inner shield and yoke assembly. Place the latter on a flat surface with the extended yoke end flush to surface. Press inner shield gently down until yoke edge is flush with inner shield edge. Tighten yoke clamp screws evenly by first pulling one up and then the other.
9. Assemble outer shield to inner shield and yoke assembly so bottoms of shields are flush.
10. Replace complete shield and yoke assembly in the yoke support bracket.
11. Replace Kinescope and tighten protective glass cover.
12. Push gently complete assembly up flush against the Kinescope bulb. Tighten wing nuts.

IMPORTANT: 1. The hole in the conical metallic shield must line up with the hole in the protective sleeve to permit connection of the second anode cable.

2. Do not jar or drop the shields and keep away from the loudspeaker field coil to prevent magnetization.



Assembly Details, Showing Kinescope and Deflecting Yoke Shielding

RCA MFG. CO., INC.

IMPORTANT PRECAUTIONS

A good ground should be connected to the receiver at all times.

Always wear gloves and shatter-proof goggles when handling Kinescope tubes.

Do not eliminate the protection afforded by the interlock switches.

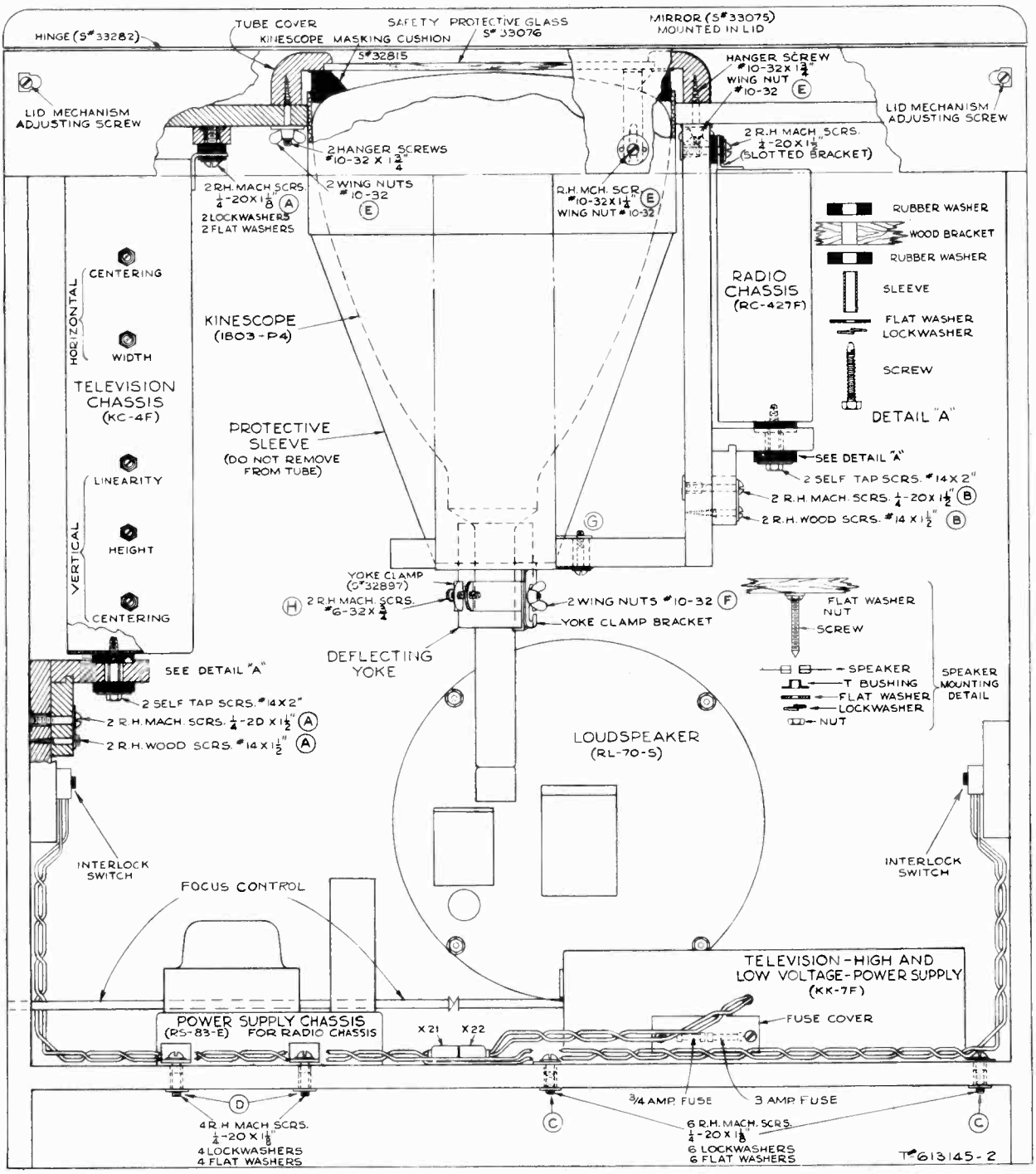
ALWAYS replace the shield can over the 2V3-G high voltage rectifier. The most dangerous portion of the H.V. supply is the plate lead of the 2V3-G tube.

Do not measure any voltages on the video chassis unless the primary leads of the high voltage transformer have been unsoldered from the supply line, and taped.

Use only one hand when working on the video or high voltage SPU chassis, and always connect a shorting lead to ground (first), then to the high side of both high voltage filter capacitors.

Make no voltage measurements on the high voltage (7,300 volts) SPU chassis.

Work on a television receiver should not be attempted by anyone who is not thoroughly familiar with the precautions necessary when working on high voltage equipment.



Operation

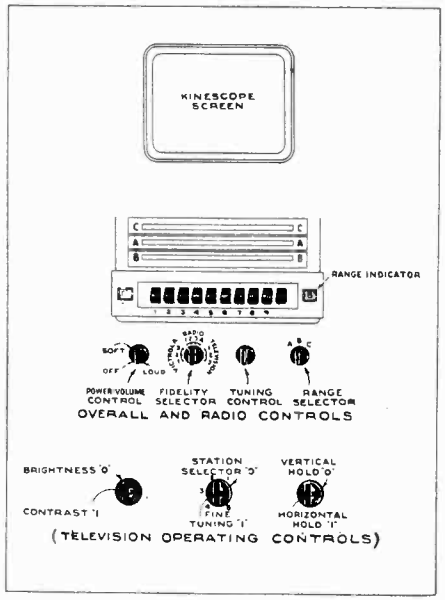


Figure 1—Operating Controls, TRK-90

The "Power Volume" control on the radio receiver turns on the power for the complete receiver. The "Victrola, Radio, Television" control selects the type of operation desired. There are three Victrola fidelity positions, four radio fidelity positions and three Television sound fidelity positions on this switch. The furthermost clockwise position being the highest fidelity position for Television sound.

Television Operation:

Station Selector and Fine Tuning.—The outer ring "O" section of the central dual control knob on the Television panel selects the station from which it is desired to receive television transmissions.

Five television channels are covered as follows:

(1) 44 to 50 mc.
(2) 50 to 56 mc.
(3) 66 to 72 mc.
(4) 78 to 84 mc.
(5) 84 to 90 mc.

Set the station selector to the number corresponding to the frequency of the station from which it is desired to receive Television broadcasts.

The inner section "I" of this knob is used for fine tuning and may eliminate moving ripples or distortion if due to interfering radio signals. A slight downward pressure must be exerted while turning the knob on the TRK-120, and an inward pressure on the TRK-90.

Before the Television portion of the receiver is turned "ON" it is advisable to turn the Brightness and Contrast controls completely counter-clockwise to reduce the illumination of the spot which appears on the Kinescope before the sweep circuits have started functioning.

Contrast and Brightness Controls.—The inner "I" section of the "Contrast"—"Brightness" controls is the "Contrast" control and varies the black and white tones of the picture being received. Too much contrast gives blurred details and a lack of half-tones, while too little contrast makes it all half-tones or grays. Turning clockwise increases contrast from grays, to black and white. See Operating Instructions for this receiver.

The outer ring "O" is the Brightness Control and affects the average illumination of the picture. Turning clockwise increases the brightness. See Operating Instructions for this receiver.

An approximate adjustment for proper contrast is to turn the "Contrast" control fully counter-clockwise, then turn the "Brightness" control until the screen is slightly illuminated. Then reduce the Brightness control just sufficient to make the screen dark, then bring up the Contrast Control until the picture appears. A slight further adjustment of the Brightness or Contrast control may be necessary in some cases. A slight readjustment of the contrast control may aid synchronization of the picture.

Hold Controls.—The dual knobs on the Television panel marked "Horizontal" and "Vertical" Hold, control the picture stability. The inner section designated by a "I" is the Horizontal Hold Control and when being set should be turned slowly to the point at which the picture "locks in" horizontally. See Operating Instructions for this receiver.

The outer ring section designated by "O" is the vertical Hold Control and when being set should be turned to the point where the picture "locks in" vertically.

These two controls on this dual knob should not ordinarily require readjustment after good picture reception has once been obtained. An occasional resetting may be necessary due to changing to a different station, and to the gradual aging of the tubes.

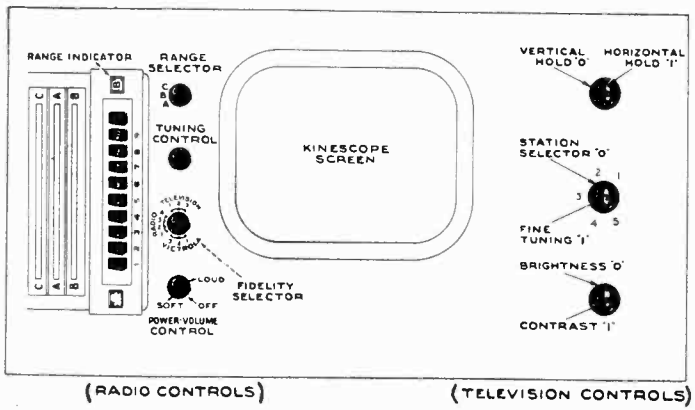


Figure 2—Operating Controls, TRK-120

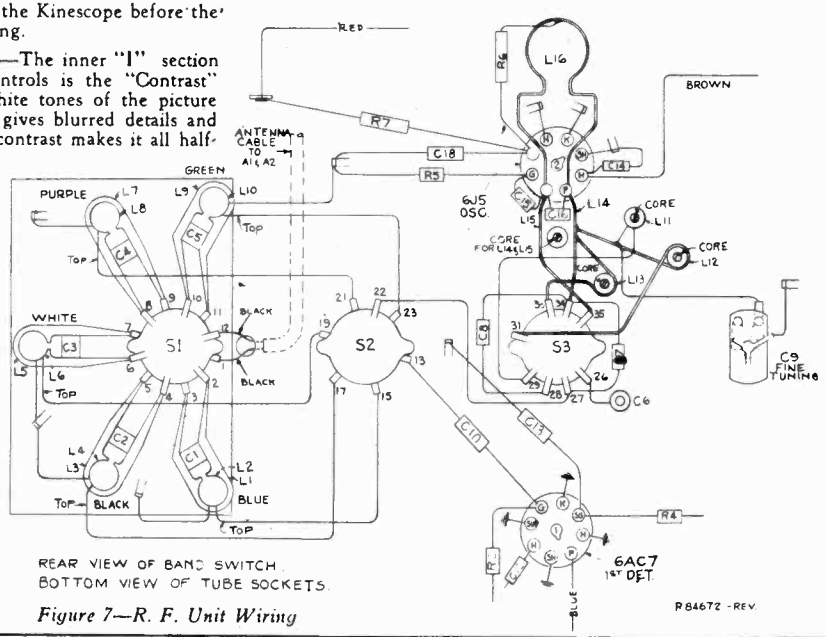


Figure 7—R. F. Unit Wiring

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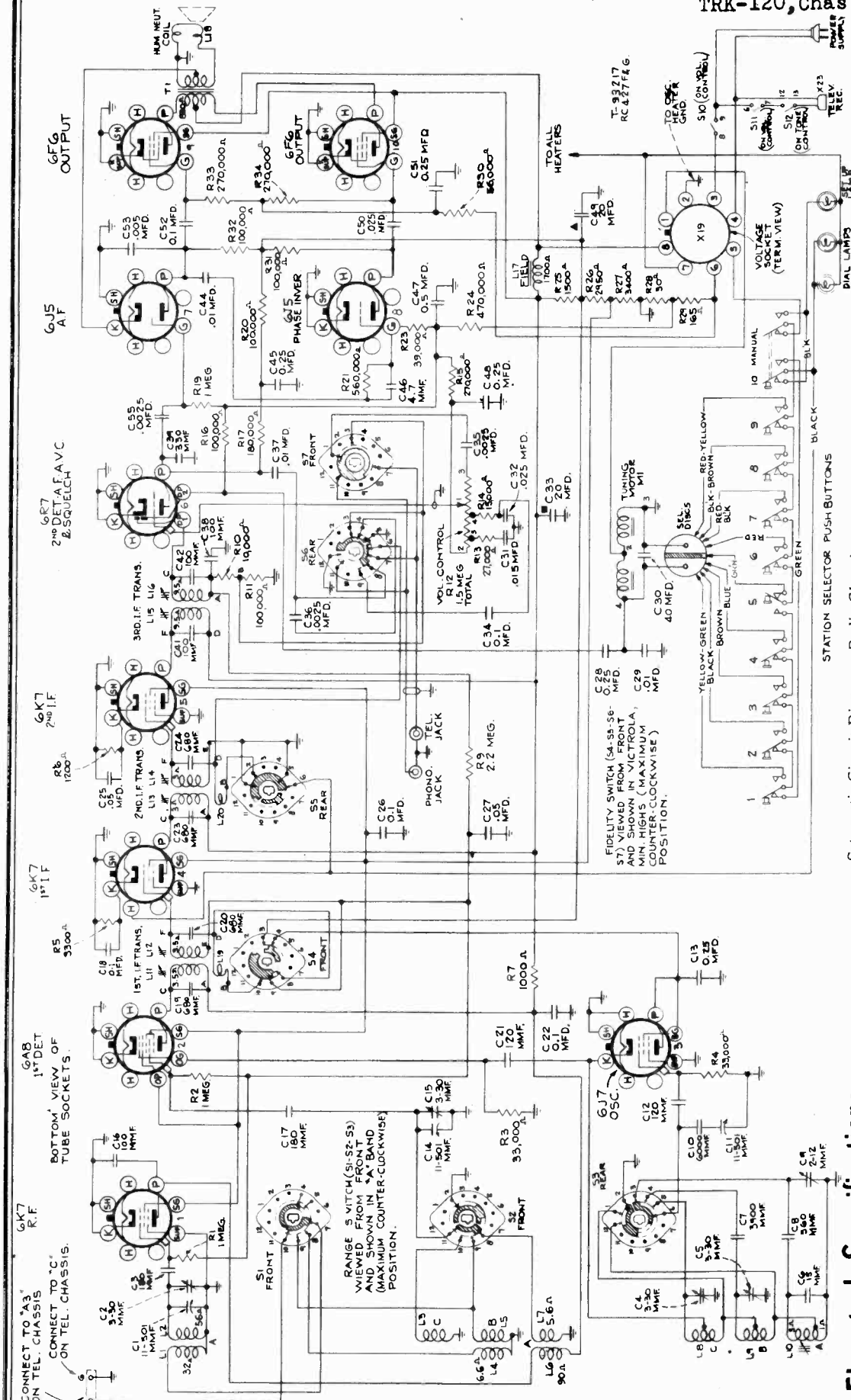
MODELS TRK-90, Chas. RC-427G; TRK-120, Chas. RC-427F



Schematic Circuit Diagram, Radio Chassis

Electrical Specifications

FREQUENCY RANGES

Standard Broadcast ("A" band) ..... 540-1,720 kc
Medium Wave ("B" band) ..... 2.3-7.0 mc
Short Wave ("C" band) ..... 7.0-22 mc

Intermediate Frequency ..... 455 kc

Dial Lamps ..... { Two Mazda No. 44, 6.3 volts, .25 amp.
(The Mazda No. 47 is the electric tuning set-up lamp, located at center of dial.) { One Mazda No. 47, 6.3 volts, .15 amp.

Power Supply Rating ..... 105-125 volts, 60 cycles, 120 watts

POWER OUTPUT

Undistorted ..... 10 watts
Maximum ..... 12 watts

LOUDSPEAKER (RL-70F-5)

Type ..... 12-inch electrodynamic
Voice-Coil Impedance ..... 2.2 ohms at 400 cycles

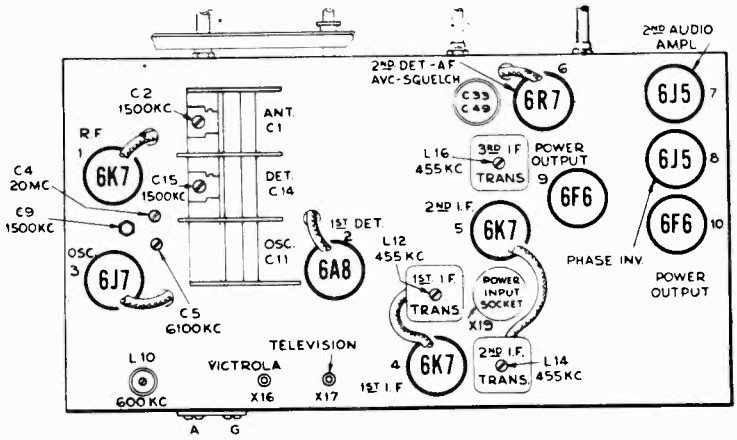
MODELS TRK-90, TRK-120
Chas. RC-427G, 427F

RCA MFG. CO., INC.

Alignment Procedure

(RADIO CHASSIS)

At Right—Tube and Trimmer Locations



Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the chassis drawing.

Output Meter Alignment. — If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Calibration Scale on Indicator-Drive-Cord Drum.—The tuning dial is fastened in the cabinet and cannot be used for reference during alignment, therefore a calibration scale is attached to the rear of the indicator-drive-cord drum which is mounted on the front shaft of the gang condenser. The setting of the gang condenser is read on this scale, which is calibrated in degrees. The correct setting of the gang in degrees, for each alignment frequency, is given in the alignment table.

As the first step in r-f alignment, check the position of the drum. The "O" mark on the drum scale must be vertical, and directly over the center of the gang-condenser shaft when the plates are fully meshed. The drum is held to the shaft by means of two set screws, which must be tightened securely when the drum is in the correct position.

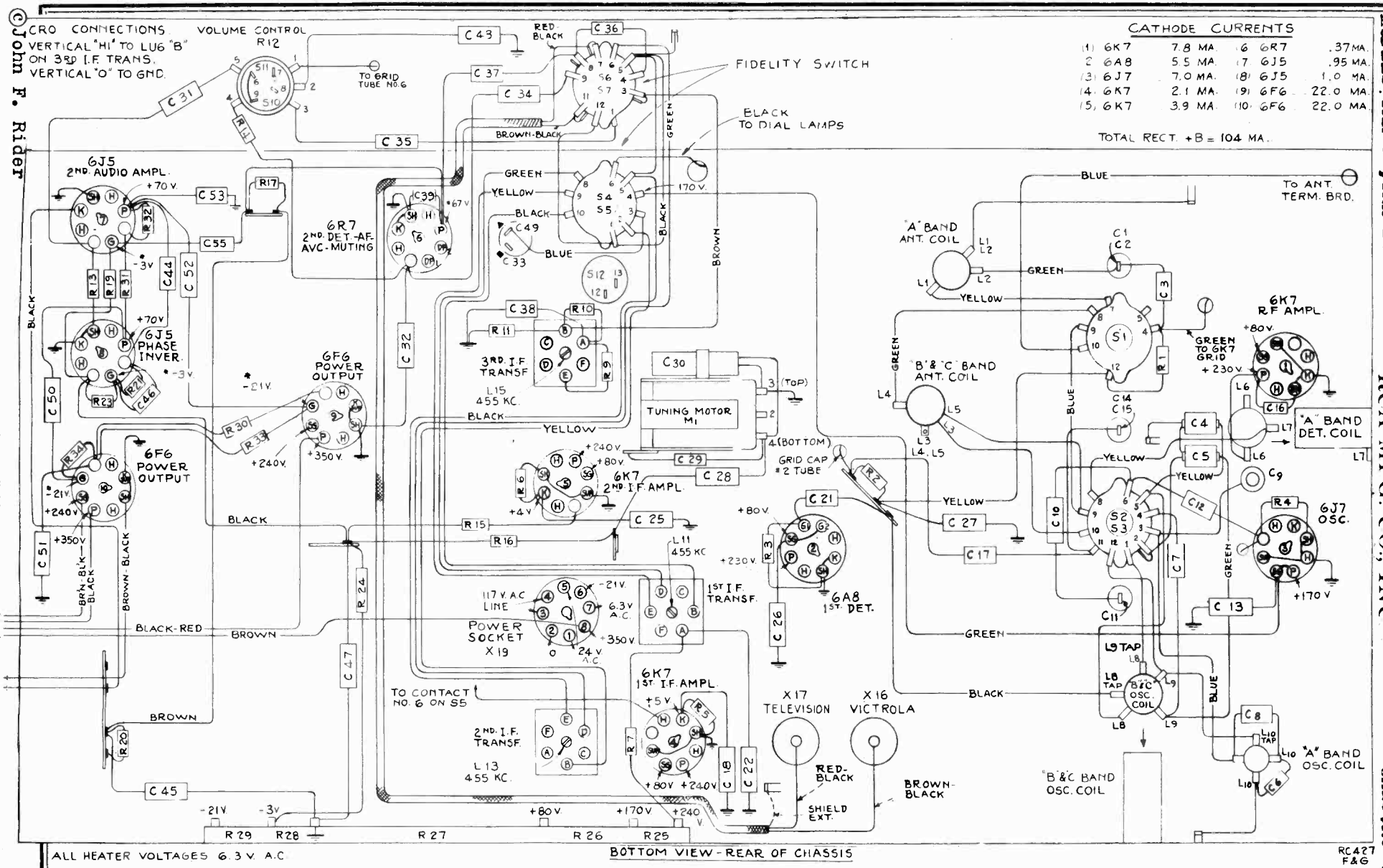
To determine the corresponding frequency for any setting of the calibration scales, refer to the accompanying drawing which shows the dial with O-180° calibration scales drawn at top and bottom.

Pointer for Calibration Scale.—Improvise a pointer for the calibration scale by fastening a piece of wire to the gang-condenser frame, and bend the wire so that it points to the "O" mark on the calibration scale when the plates are fully meshed.

Dial-Indicator Adjustment.—After fastening the chassis in the cabinet, attach the dial indicator to the drive cable with indicator approximately 1/16-inch above end dots at low-frequency ends of bands with gang condenser fully meshed. See that pointer does not rub background screen or dial face. The indicator has a spring clip for attachment to the cable.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Set tuning gang to—	Adjust the following—	To obtain—
1	Turn fidelity switch to No. 3 radio (sharp).				
2	6K7 2nd I-F grid cap, in series with .01 mfd.	455 kc	Quiet point on "B" band	L15, L16 (3rd I-F Trans.)	Coincidental images on cathode-ray oscillograph, or max. output on output meter.
3	6K7 1st I-F grid cap, in series with .01 mfd.			L13, L14 (2nd I-F Trans.)	
4	6A8 1st Det. grid cap, in series with .01 mfd.			L11, L12 (1st I-F Trans.)	
5	Turn fidelity switch to No. 4 radio (broad). The curve on CRO should broaden out to a double peak and reduce gain nearly 50%.				
6	Turn fidelity switch to No. 3 radio for the following adjustments. Back out the "B" and "C" oscillator trimmers, C5 and C4. Preset "A" band oscillator trimmer, C9, approximately an inch out.				
7	Antenna terminal, in series with 100 mmf.	600 kc	600 kc (31°) "A" band	L10 (osc.)	Max. Output
8		1,500 kc	1,500 kc (151°) "A" band	C9 (osc.) C2 (ant.) C15 (det.)	Max. Output
9		600 kc	600 kc "A" band	L10 (osc.)	Rock in for Max. Output
10	Repeat step No. 8.				
11	Antenna terminal, in series with 300 ohms	6,100 kc	6,100 kc (140°) "B" band	C5 (osc.)	Max. Output *
12		20 mc	20 mc (146°) "C" band	C4 (osc.)	Rock in for Max. Output *
	Follow "Adjustments for Electric Tuning."				

* Use minimum capacitance peak if two peaks can be obtained.
Note: The oscillator tracks 455 kc above the signal on all bands.



R-F Wiring Diagram and Socket Voltages (Radio Chassis)

Measurements made to chassis unless otherwise indicated, with set tuned to quiet point, volume control at minimum. Values should hold within approximately ±20% with 117-volt a-c supply.

***NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

MODELS TRK-90, TRK-120 RCA MFG. CO., INC.

Electric Tuning Mechanism

When a station button is pushed in, it completes the 24-volt circuit through the corresponding station-setting contact and one-half of the brass selector disc, which is connected to one side of the motor field coil. This energizes the motor, and the rotor is pulled forward, engaging with the gear train that drives the tuning condenser and selector disc. The condenser and disc rotate until the insulation line comes under the particular station-setting contact, and the motor circuit is broken.

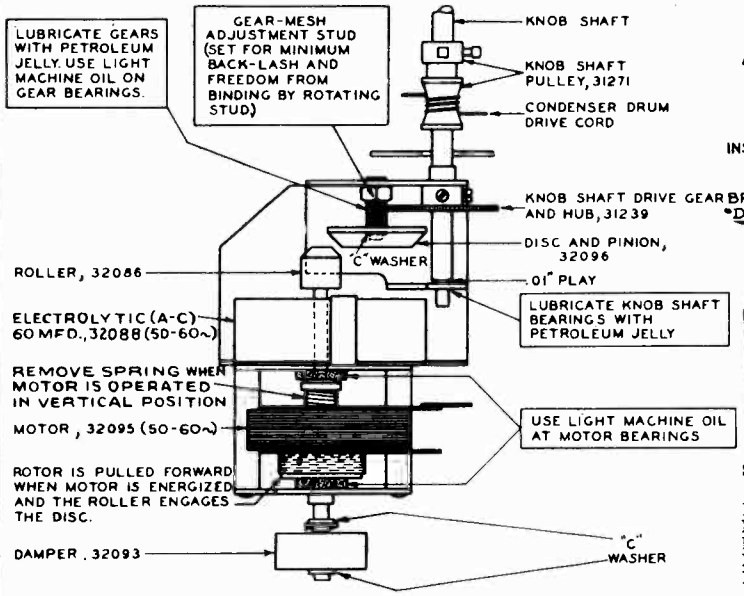
When the electric tuning mechanism is in action, the motor-supply voltage is fed into a diode rectifier circuit which applies a high bias to the first-audio amplifier. This prevents audio amplification and makes the set quiet or "mute" while the mechanism is operating.

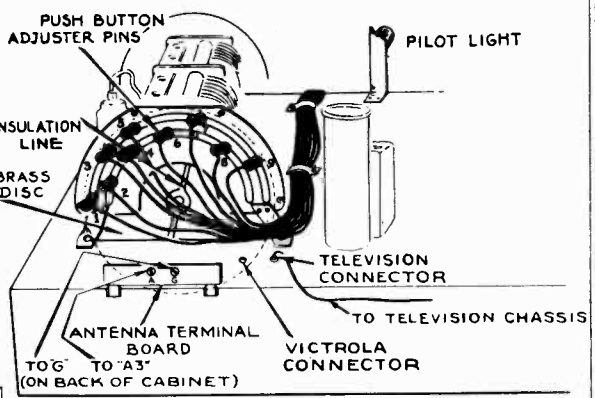
The brass selector disc is fastened to the rear shaft of the tuning condenser by means of two set-screws. When the condenser is at maximum (plates fully meshed) the insulation line should be horizontal, with the operating-end at the left (viewed from rear). The brass is beveled at this end.

The selector disc should be set so that the contact-tip plungers in the station-setting contacts project not more than 1/16-in. from the body of the contacts.

LUBRICATION

Motor bearings and **gear bearings;** use light machine oil.
Gear faces; use "Pure Oil No. 611" or petroleum jelly.
Dial-indicator pulleys and **rails;** use "Castordag" or petroleum jelly.
Selector disc; apply ***thin*** film of petroleum jelly.



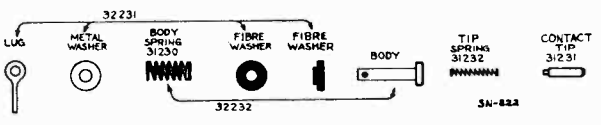


Station Button	Color of Lead To Station-Setting Contact	Station Button	Color of Lead To Station-Setting Contact
No. 1	Yellow-green	No. 6	Red
No. 2	Black	No. 7	Red-black
No. 3	Brown	No. 8	Brown-black
No. 4	Blue	No. 9	Red-yellow
No. 5	Green		

Adjustments for Electric Tuning

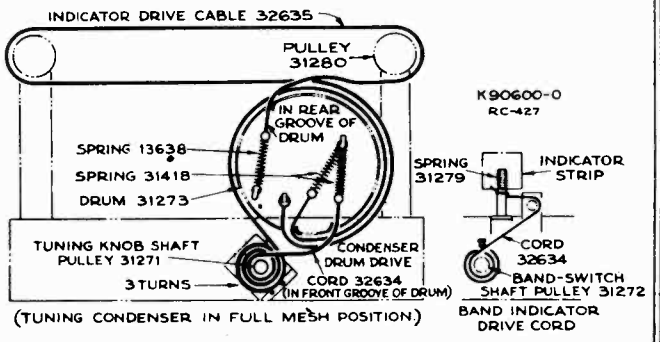
With power turned off, disconnect the antenna transmission line and ground connection, turn fidelity control to radio (3rd radio position—6th position from full counter-clockwise). Remove the back from the cabinet and reconnect the antenna transmission line and ground connection. The two interlock switches on the side panels should not be touched and care should be taken not to press on them when making the push-button set-up. Then turn on power, set range selector to "A," allow a few moments warm-up period and proceed as follows:

1. Make a list of the desired nine stations, arranged in order from low to high frequencies.
2. Turn on power-volume control, turn range selector to "A" band, and allow a few minutes for warming up.
3. Press down the "dial-tuning" (right-hand) button.
4. Manually tune in the first station on the list.
5. Hold down the "dial-tuning" button and press down station button No. 1 (left-hand). Both buttons will stay down. Move station adjuster contact pin No. 1 to the insulating line on the disc at rear of gang. When the pin is correctly centered on the insulating line, the central dial lamp will go out completely.
6. Press down any other button in order to release the dial tuning button and station button No. 1. Tune to some other section on the dial, and then press down station button No. 1 again; the electric tuning mechanism will function to tune in the first station, and the central dial lamp will stay on.
7. Repeat this process for the remaining stations.



Components of Station Setting Contact

At Right—Dial Mechanism



MODELS TRK-90, TRK-120

RCA MFG. CO., INC.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	TELEVISION CHASSIS ASSEMBLIES KC-4F in TRK 120 (60 cycle) KC-4J in TRK 120 (50 cycle) KC-4H in TRK 90 (60 cycle)	
33387	Adjuster—Magnetite core and stud in tube for high frequency oscillator circuit adjustment (Used with L11, L12, L14, L15)	.55
33835	Adjuster—Magnetite core and stud in tube, for high frequency oscillator circuit adjustment (Used with L13)	.55
31253	Board—4 terminal antenna-ground terminal board	.25
12884	Capacitor—Adjustable plunger type air trimmer (C6)	.60
33097	Capacitor—4.7 mmfd. (neg. temp. coeff.) (C69)	.35
33478	Capacitor—5.6 mmfd., 500 volts (C7)	.40
33476	Capacitor—8.2 mmfd., 500 volts (C8)	.40
33381	Capacitor—8.2 mmfd., (neg. temp. coeff.) (C71)	.40
33380	Capacitor—12 mmfd., 500 volts (C24)	.40
33100	Capacitor—18 mmfd., 500 volts (neg. temp. coeff.) (C19, C23)	.40
33101	Capacitor—22 mmfd., (neg. temp. coeff.) (C64)	.40
33102	Capacitor—47 mmfd., (neg. temp. coeff.) (C30, C35, C66, C72)	.45
33103	Capacitor—68 mmfd., 500 volts (C31, C36, C15, C25, C40, C44, C49) (neg. temp. coeff.)	.35
33477	Capacitor—80.5 mmfd., 500 volts (C16)	.45
33104	Capacitor—82 mmfd. (neg. temp. coeff.) (C21, C22)	.45
33106	Capacitor—115 mmfd. (C5)	.30
33107	Capacitor—135 mmfd. (C4)	.30
12725	Capacitor—150 mmfd., 400 volts (C10, C87)	.35
33108	Capacitor—190 mmfd. (C3)	.30
12488	Capacitor—270 mmfd. (C81)	.35
33109	Capacitor—320 mmfd. (C2)	.30
33110	Capacitor—390 mmfd. (C1)	.30
31730	Capacitor—820 mmfd. (C123)	.40
32788	Capacitor—820 mmfd., 400 volts (C84, C89)	.40
12635	Capacitor—1,000 mmfd., 400 volts (C90)	.50
4881	Capacitor—3,300 mmfd., 400 volts (C102)	.60
34459	Capacitor—.0025 mfd., 1,400 volts (C124)	.20
33584	Capacitor—.005 mfd., 1,200 volts (C11, C12, C13, C14, C18, C20, C26, C27, C29, C32, C33, C34, C37, C38, C39, C41, C42, C43, C45, C46, C47, C48, C52, C60, C62, C63, C65, C67, C68, C70, C75, C98, C99, C100)	.25
4937	Capacitor—.01 mfd., 1000 volts (C74)	.25
4870	Capacitor—.025 mfd., 400 volts (C107)	.20
30882	Capacitor—.05 mfd., 200 volts (C94, C95)	.20
32787	Capacitor—.05 mfd., 400 volts (C28)	.20
4886	Capacitor—.05 mfd., 400 volts (C91)	.20
4839	Capacitor—0.1 mfd., 400 volts (C73, C53, C77, C78, C85, C59, C88, C103)	.30
12484	Capacitor—0.25 mfd., 350 volts (C86, C93, C101, C106, C80, C76, C105)	.30
12741	Capacitor—.5 mfd. (C57)	.30
32145	Capacitor—4 mfds., 450 volts—(Used in 50 cycle chassis only)	.70
33158	Capacitor—10 mfd., 150 volts, 20 mfd., 25 volts, (C97, C104)	1.00
33878	Capacitor—10 mfd., 450 volts, 10 mfd., 450 volts, 10 mfd., 150 volts (C125, C126, C127)	1.85
33160	Capacitor—10 mfd., 350 volts, 10 mfd., 150 volts, 20 mfd., 25 volts, 20 mfd., 25 volts (C92, C79, C82, C83)	1.60
32045	Capacitor—15 mfd. (C96)	.70
33161	Capacitor—20-50 mfd., 35 volts (C51, C108)	1.45
33243	Coil—Oscillator coil with core and stud (L11)	.65
35582	Coil—1½ turn antenna coil, core, stud, and capacitor assembly (C5, L9, L10)	1.10
33647	Coil—2 turn antenna coil, core, stud and capacitor assembly (C4, L7, L8) (yellow or purple)	1.10
33646	Coil—3 turn antenna coil, core, stud and capacitor assembly (C3, L5, L6) (orange or white)	1.10
33645	Coil—5½ turn antenna coil, core, stud and capacitor assembly (C2, L3, L4) (red or black)	1.10
33644	Coil—7½ turn antenna coil, core, stud and capacitor assembly (C1, L1, L2) (brown or blue)	1.10
35820	Coil—Peaking coil (L51, R156)	.55
35821	Coil—Peaking coil (L52, R146)	.55
35818	Coil—Peaking coil (L53, R148)	.55
35817	Coil—Peaking coil (L54, R150)	.55
35815	Coil—Peaking coil (L55, R154)	.55
35819	Coil—Peaking coil (L56, R153)	.55
35816	Coil—Peaking coil (L57, R155)	.55
33228	Condenser—Oscillator "Fine tuning" condenser, located on range switch (C9)	2.10
33164	Control—Dual 1.2 meg. and 30,000 ohms "Vertical hold" and "Horizontal hold" controls (R106, R92)	2.00
33206	Control—6 ohm tapped "Horizontal centering" control (R98)	1.50
33210	Control—20 ohm tapped "Vertical centering" control (R114)	1.50
33209	Control—5,600 ohm, "Vertical linearity" control (R113)	1.00
35566	Control—50,000 ohm "Brightness" and 4,000 ohm "Contrast" dual control	2.00
33207	Control—560,000 ohm "Width" control (R94)	1.00
33516	Transformer—"2nd pix P1" I-F transformer (L26, L27, L28, L29) (orange and orange)	2.60
33339	Transformer—"2nd sound" I-F transformer (L47, L48) (orange and orange)	2.60
33333	Transformer—"3rd pix" I-F transformer (L31, L32, L33) (orange and blue)	2.40
33336	Transformer "4th pix" I-F transformer (L34, L35, L36) (brown and black)	2.00
33208	Control—2.7 meg. "Height" control (R108)	1.00
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	.48
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	.25
14671	Resistor—33 ohms, ½ watt (R152)	.20
35568	Resistor—Voltage divider comprising a 70, 7.4 and 5 ohm section (R162, R163, R164)	.60
14074	Resistor—82 ohms, ½ watt (R64, R67, R14, R21, R28, R34)	.20
13428	Resistor—150 ohms, ½ watt (R39)	.20
13454	Resistor—270 ohms, ½ watt (R141)	.20
13219	Resistor—270 ohms, 2 watts (R97)	.25
30499	Resistor—470 ohms, ½ watt (R90, R95)	.20
35567	Resistor—Voltage divider comprising a 900-3,100-6,600-7,800 and 1,470 ohm section (R158, R159, R160, R161)	1.00
14720	Resistor—1,000 ohms, ½ watt (R9, R65, R70, R18, R41, R25, R31, R37, R42)	.20
14993	Resistor—1,200 ohms, 1/10 watt (R17)	.15
12267	Resistor—1,200 ohms, ½ watt (R115)	.20
14499	Resistor—1,500 ohms, ½ watt (R8, R24)	.20
31920	Resistor—1,800 ohms, 1/10 watt (R16, R23, R30)	.15
12194	Resistor—1,800 ohms, ½ watt (R112)	.20
11863	Resistor—2,200 ohms, 1/10 watt (R36)	.15
13486	Resistor—2,200 ohms, 1 watt (R6)	.22
13031	Resistor—3,300 ohms, 1/10 watt (R19, R26)	.15
12312	Resistor—3,300 ohms, ½ watt (R77, R87)	.20
30150	Resistor—3,300 ohms, 1 watt (R7, R57)	.22
12955	Resistor—3,900 ohms, ½ watt (R109)	.20
35943	Resistor—3,900 ohms, ½ watt (R139)	.20
30146	Resistor—4,700 ohms, ½ watt (R83, R99)	.20
31789	Resistor—5,600 ohms, 1/10 watt (R12, R142, R143)	.15
12265	Resistor—6,800 ohms, ½ watt (R11, R140)	.20
14075	Resistor—8,200 ohms, ½ watt (R101, R102, R103)	.20
14559	Resistor—10,000 ohms, ½ watt (R20, R27, R33, R13, R82, R84, R88, R100, R74, R147)	.20
13097	Resistor—10,000 ohms, 1 watt (R79, R80)	.22
13594	Resistor—15,000 ohms, 1/10 watt (R43)	.15
35944	Resistor—15,000 ohms, ½ watt (R149)	.20
14284	Resistor—22,000 ohms, 1/10 watt (R71)	.15
13998	Resistor—22,000 ohms, ½ watt (R47, R49)	.20
12738	Resistor—27,000 ohms, ½ watt (R91)	.20
11300	Resistor—33,000 ohms, 1/10 watt (R10) (early production only)	.15
35945	Resistor—33,000 ohms, ½ watt (R5, R138)	.20
12412	Resistor—47,000 ohms, ½ watt (R93) (R10—late production only)	.20
12010	Resistor—68,000 ohms, 1/10 watt (R32, R38, R69)	.15
13715	Resistor—68,000 ohms, ½ watt (R63, R66)	.20
14138	Resistor—68,000 ohms, ½ watt (R15, R22, R29, R35, R40, R68)	.20
14023	Resistor—82,000 ohms, ½ watt (R78)	.20
30435	Resistor—82,000 ohms, 1 watt (R144)	.22
14560	Resistor—100,000 ohms, ½ watt (R72, R85, R86, R89, R104, R145)	.20
30180	Resistor—120,000 ohms, ½ watt (R4)	.20
12264	Resistor—220,000 ohms, ½ watt (R51, R111)	.20
12285	Resistor—470,000 ohms, ½ watt (R46, R59, R96)	.20
12486	Resistor—560,000 ohms, ½ watt (R151)	.20
13730	Resistor—1 meg., ½ watt (R1, R2, R76, R75, R73, R52, R60, R81)	.20
2546	Resistor—1 meg., 1 watt (R3)	.22
30208	Resistor—1.2 meg., ½ watt (R105)	.20
5028	Resistor—1.8 meg., ½ watt (R107)	.20
12679	Resistor—2.2 meg., ½ watt (R110)	.20
33229	Roller—Rubber friction roller for oscillator condenser drive. Part of range switch assembly	.10
33165	Socket—2-prong female socket for Video output to Kinescope (X3)	.25
33011	Socket—4-contact female socket for Kinescope deflecting yoke (X1)	.25
31251	Socket—8-contact octal type socket	.25
18007	Socket—Ceramic octal socket for 6L6 "Hor. out" and 6J5 "Osc."	.65
14278	Socket—Television audio output pin socket (X5)	.15
33227	Switch—Range switch with shield plate and mounting studs—less coils, condenser and friction roller (S1, S2, S3)	4.65
33330	Transformer—"1st det. P1" I-F transformer (L17, L18) (br. and br.)	2.60
33331	Transformer—"1st det. P2" I-F transformer (L19, L20) (brown and red)	2.80
33334	Transformer—"1st pix P1" I-F transformer (L21, L22, L23, L24) (brown and green)	2.50
33335	Transformer—"1st pix P2" (L25) or "2nd pix P2" (L30) I-F transformer (brown and blue)	1.65
33338	Transformer—"1st sound" I-F transformer (L45, L46) (orange and red) (Used in early production)	2.40
33526	Transformer—"1st sound" I-F transformer (L45, L46) (red and white) (Used in late production)	2.50
33337	Transformer—"5th pix" I-F transformer (L37, L38) (brown and white)	1.80
32899	Transformer—Horizontal oscillation transformer (T1)	1.75
9862	Transformer—Horizontal output transformer (T2)	17.50
32900	Transformer—Vertical output transformer (T4)	5.50
32898	Transformer—Vertical oscillation transformer (T3)	1.75

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODELS TRK-90, TRK-120

RCA MFG. CO., INC.

STOCK No.	DESCRIPTION	Unit List Price
	3-BAND RADIO RECEIVER CHASSIS RC-427F in TRK-120 (60 cycle) RC-427F in TRK-120 (50 cycle) RC-427G in TRK-90 (60 cycle)	
31863	Board—Antenna-ground terminal board	.20
32232	Body—Station setting contact body and spring	.15
32090	Bracket—Motor mounting bracket	.40
32635	Cable—Indicator pointer drive cable—60-in. length	.24
14392	Capacitor—4.7 mmfd. (C46)	.35
31353	Capacitor—15 mmfd. (C6)	.40
31270	Capacitor—100 mmfd. (C41, C42)	.35
12720	Capacitor—100 mmfd. (C38, C16)	.35
12724	Capacitor—120 mmfd. (C12, C21)	.35
13003	Capacitor—180 mmfd. (C3, C17)	.35
12952	Capacitor—330 mmfd. (C39)	.35
31433	Capacitor—560 mmfd. (C8)	.35
31552	Capacitor—680 mmfd. (C19, C20, C23, C24)	.40
32197	Capacitor—3,900 mmfd., 500 volts (C7)	.55
31405	Capacitor—6,000 mmfd., 500 volts (C10)	.75
5107	Capacitor—.0025 mfd., 700 volts (C35, C36, C55)	.20
33584	Capacitor—.005 mfd., 1,200 volts (C53)	.25
11315	Capacitor—.015 mfd., 400 volts (C31)	.20
4870	Capacitor—.025 mfd., 400 volts (C32, C50)	.20
32787	Capacitor—.05 mfd., 400 volts (C27, C25)	.20
4839	Capacitor—0.1 mfd., 400 volts (C22, C18, C26, C34, C52)	.30
12484	Capacitor—.25 mfd., 350 volts (C13, C28, C48, C45, C51)	.30
12741	Capacitor—0.5 mfd., 150 volts (C47)	.30
18530	Capacitor—20-20 mfd., 350 volts (C33, C49)	2.00
32088	Capacitor—Motor capacitor 60 mfd., 40 volts (C30)	.90
31263	Coil—"A" band antenna coil (L1, L2)	.95
31265	Coil—"A" band detector coil (L6, L7)	1.20
31296	Coil—"A" band oscillator coil (L10)	1.05
31980	Coil—"B" and "C" band antenna coil (L3, L4, L5)	.80
31783	Coil—"B" and "C" band oscillator coil (L8, L9)	1.05
31234	Condenser—3-gang variable condenser (C1, C11, C14, C2, C15)	6.45
12714	Condenser—Air trimmer condenser (C9)	.50
31292	Condenser—Double section trimmer capacitor 3-30 mmfd., each section (C4, C5)	.40
31971	Contact—Push button switch contacts comprising 11 contacts riveted on insulating strip	.65
31972	Contact—Push button switch contacts comprising 14 contacts riveted on insulating strip	1.25
31231	Contact—Station setting contact tip	.06
33446	Control—"Power-volume control"—1½ meg. (R12, S10, S11)	2.00
32634	Cord—Band indicator and variable condenser drive cord	.10
31269	Core—Core and stud for 1st, 2nd, or 3rd I-F transformer	.15
32093	Damper—Flywheel for rear end of motor shaft	.25
32096	Disc—Friction disc and pinion gear	.35
32091	Drive—Friction drive gear assembly	1.50
31273	Drum—Variable condenser drive drum	.70
31239	Gear—Knob shaft drive gear and hub	.65
31532	Indicator—Band indicating strip (Model TRK-12 only)	.15
31304	Indicator—Band indicating strip (Model TRK-9 only)	.15
31480	Lamp—6.3 volt electric tuning set-up lamp Mazda No. 47	.20
11891	Lamp—6.3 volt dial lamp Mazda No. 44	.17
31969	Lockplate—Push button switch lockplate comprising 10 contact locks in 1 strip	.75
32095	Motor—Electric tuning drive motor complete (M1)	5.25
31228	Plate—Station selector contact plate—less plungers	.45
31227	Plate—Station selector mounting plate—mounts on rear of variable condenser	.50
12493	Plug—Female connector for speaker cable (X9)	.30
31271	Pulley—Drive pulley fastens on station selector knob shaft	.25
31280	Pulley—Indicator pointer drive cord pulley	.10
31272	Pulley—Range switch pulley	.20
14720	Resistor—1,000 ohms, ½ watt (R7)	.20
12267	Resistor—1,200 ohms, ½ watt (R6)	.20
12312	Resistor—3,300 ohms, ½ watt (R5)	.20
14559	Resistor—10,000 ohms, ½ watt (R10)	.20
12695	Resistor—15,000 ohms, ½ watt (R14)	.20
12738	Resistor—27,000 ohms, ½ watt (R13)	.20
12454	Resistor—33,000 ohms, ½ watt (R3, R4)	.20
12266	Resistor—39,000 ohms, ½ watt (R23)	.20
12286	Resistor—56,000 ohms, ½ watt (R30)	.20
14560	Resistor—100,000 ohms, ½ watt (R11, R16, R20, R32, R31)	.20
13698	Resistor—180,000 ohms, ½ watt (R17)	.20
12199	Resistor—270,000 ohms, ½ watt (R15, R33, R34)	.20
18020	Resistor—470,000 ohms, 1 watt (R24)	.22
12486	Resistor—560,000 ohms, ½ watt (R21)	.20
12013	Resistor—1 meg., 1/10 watt (R8)	.15
13730	Resistor—1 meg., ½ watt (R1, R2, R19)	.20
12679	Resistor—2.2 meg., ½ watt (R9)	.20
31548	Resistor—Voltage divider consisting of one 1,500, one 2,950, one 3,400, one 30 and one 3,165 ohm section (R25, R26, R27, R28, R29)	.90
14887	Retainer—Drive cord pulley retainer	.01
32086	Roller—Rubber friction roller for front end of motor shaft	.10
31233	Rotor—Station selector rotor disc—mounts on rear of variable condenser shaft	1.16
5042	Screw—No. 8-32 set screw for drive pulley	.03
14350	Screw—No. 8-32 square head set screw for rotor disc, Stock No. 31233	.03
31681	Shaft—Dial drive knob shaft	.20
31364	Socket—Dial or electric tuning set-up lamp socket	.20
31251	Socket—Octal type Radiotron or power supply socket	.25
14278	Socket—Pin socket for phono or television input with mounting plate (X16) (X17)	.25
31279	Spring—Band indicator tension spring	.03
13638	Spring—Indicator drive cord tension spring	.08
31970	Spring—Push button switch lock bar spring	.05
31232	Spring—Station setting tip spring	.01
12007	Spring—Stud retaining spring for I-F adjuster	.02
31418	Spring—Variable condenser drive cord tension spring	.05
33447	Switch—H. F. tone control phono-radio-television and power switch (S4, S5, S6, S7, S12)	2.65
31979	Switch—Range switch (S1, S2, S3)	1.55
31968	Switch—Station selector push button switch complete	3.95
31565	Transformer—1st I-F transformer complete (L11, L12, C19, C20, L19)	2.40
31551	Transformer—2nd I-F transformer complete (L13, L14, C23, C24, L20)	2.40
31549	Transformer—3rd I-F transformer complete (L15, L16, C41, C42)	2.10
32231	Washers—Comprising one metal washer, two fibre washers and one solder lug or retainer for station setting body	.03
32094	Washers—Assorted washers for mounting damper on motor shaft	.10
	POWER SUPPLY UNIT TELEVISION AUDIO RECEIVER RS-83E in TRK-120 (60 cycle) RS-83E in TRK-120 (50 cycle) RS-83E in TRK-90 (60 cycle)	
14531	Capacitor—25 mfd. filter capacitor (C1)	1.55
33606	Plug—8-contact male plug for power supply cable (X20)	.45
31251	Socket—5U4G Radiotron socket	.25
33445	Transformer—110 V. 60 cycle power transformer (T1)	10.30
	7,500 VOLT TELEVISION POWER UNIT KK-7F in TRK-120 (60 cycle) KK-7J in TRK-120 (50 cycle) KK-7H in TRK-90 (60 cycle)	
33016	Bushing—Porcelain bushing and spring	.25
33288	Cable—Insulated connector complete with cable for Kinescope (2nd anode)	2.10
30036	Capacitor—.005-.005 mfd., 1,000 v. (C115, C116)	1.15
33018	Capacitor—0.03 mfd., 7,500 volt (C113, C114)	3.75
34331	Capacitor—0.1 mfd., 7,500 volt (C121, C122) (Used in 50 cycle model only)	7.50
18388	Capacitor—0.25 mfd., 600 volt (C128)	.35
32400	Capacitor—20 mfd., 450 volt (C111, C112)	1.05
33023	Capacitor—80-10 mfd., 400 volt (C109, C110, C118, C119)	2.80
14854	Choke—Filter choke (L49)	1.80
32940	Choke—Filter choke (L50) (Used in TRK-120, 50 cycle only)	3.75
35887	Choke—Filter choke (L50) (Used in TRK-90 and TRK-120, 60 cycle only)	XX
30314	Clip—Plate connector for 2V3G Radiotron	.03
33037	Control—Focus control, 400,000 ohms (R129) (Used in TRK-90 only)	1.00
33971	Control—Focus control, 400,000 ohms (R129) (Used in TRK-120 only)	1.00
33002	Coupling—Flexible bronze coupling	.10

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10907	Fuse—3 ampere, 250 volt	.08
34527	Fuse—¾ ampere glass type fuse	.18
33015	Insulator—Stand-off insulator only — less hardware	.30
32937	Knob—Focus control knob	.20
33244	Plug—2-prong male connector for A.C. power cord (X22)	.45
33166	Plug—2-prong male plug for Kinescope grid-cathode cable (X4)	.20
35897	Resistor—60 ohms, 10 watt (R165)	.30
33501	Resistor—330,000 ohms, 1W (1,000V.) (R126, R130)	.20
33502	Resistor—470,000 ohms, 1W (1,000V.) (R127, R137, R166)	.20
33593	Resistor—560,000 ohms, 1 watt (1,000V.) (R128)	.20
33554	Resistor—820,000 ohms, 1W (1,000V.) (R131, R132, R133, R134, R135, R136)	.20
33024	Shaft—Bakelite shaft for focus control	.50
18007	Socket—Ceramic octal base socket and retaining ring for high voltage rectifier	.65
33245	Socket—Kinescope socket, less cable (X11)	.35
31251	Socket—Octal base 5T4 rectifier, or television power supply socket (X13)	.25
12143	Socket—6-prong television power supply socket (X15)	.50
32909	Support—Rectifier socket, plate, and stand-off insulator assembly	2.00
32939	Transformer—Filament power transformer (T7), 105-125 volts, 60 cycle (Used in TRK-90, TRK-120, 60 cycles and TRK-120 50 cycles)	5.65
32938	Transformer—Low voltage power transformer (T5), 105-125 volt, 60 cycle (Used in TRK-90 and TRK-120, 60 cycles only)	10.00
34302	Transformer—Low voltage power transformer (T5), 105-125 volts, 50 cycle (Used in TRK-120, 50 cycle only)	10.00
9861	Transformer—High voltage power transformer (T6), 105-125 volts, 60 cycle (Used in TRK-90 and TRK-120, 60 cycle only)	22.50
35888	Transformer—High voltage power transformer (T6), 105-125 volts, 50 cycle (Used in TRK-120, 50 cycle only)	XX

SPEAKER ASSEMBLY
RL-70F-5

31825	Cap—Cone center dust cap	.02
11469	Coil—Hum neutralizing coil (L21)	.30
11234	Coil—Speaker field coil (L17)	3.85
31275	Cone—Speaker cone assembly (L18)	1.50
31567	Plug—3-prong male feed back cable plug (X8)	.15
31539	Plug—5-prong speaker plug (X10)	.25
31556	Speaker—Speaker complete (RL-70F-5)	13.45
31557	Transformer—Speaker output transformer (T1)	3.20

MISCELLANEOUS ASSEMBLIES
TRK-120
TRK-90

31358	Button—Station selector push button	.15
33676	Cable—17½-inch shielded audio lead with plugs (X6, X18) (Model TRK-9 only)	.85
33480	Cable—38-inch shielded audio lead with plugs (Model TRK-12 only) (X6, X18)	1.30
34600	Cable—Kinescope cable and socket (TRK-120 only)	2.50
34601	Cable—Kinescope cable and socket (TRK-90 only)	3.25
33246	Cable—Low capacity Kinescope grid cable (Model TRK-120 only)	1.25
33605	Cable—Low capacity Kinescope grid cable (Model TRK-90 only)	1.35
33597	Cap—Blue pilot lamp "Bulls Eye"	.20
32897	Clamp—Deflecting yoke clamp assembly	.65
4573	Connector—2-prong female connector for power supply circuit (X23)	.30

STOCK No.	DESCRIPTION	Unit List Price
33363	Connector—2-prong female connector, used on interlock cable (X21)	.45
31456	Cover—Eight protective covers for push button markers	.08
32815	Cushion—Kinescope masking cushion (Model TRK-120 only)	2.30
33019	Cushion—Kinescope masking cushion (Model TRK-90 only)	1.90
33643	Cushion—Television chassis mounting cushion with screw, spacer and washer (sufficient for one chassis)	.40
35894	Decalcomania—"1-2-3-4-5" decal	.10
35890	Decalcomania—"Contrast-Brightness" decal	.05
35893	Decalcomania—"Fine Tuning" decal	.05
35891	Decalcomania—"Horizontal and Vertical Holding" decal	.05
35896	Decalcomania—"Power-Volume, tone, tuning, range" decal	.20
35392	Decalcomania—"RCA Victor" decal	.05
35892	Decalcomania—"Station selector" decal	.05
35895	Decalcomania—"Victrola-Radio-Television" decal	.10
33442	Dial—Three-band glass dial scale	1.25
35889	Escutcheon—Dial escutcheon less buttons, button shaft and dial scale	2.60
32083	Frame—Dial frame with screen less pointer, carriage and rod	1.20
33074	Glass—6⅛ by 8¼ inch safety protective glass (Model TRK-90 only)	2.40
33076	Glass—8¾ by 11⅛ inch safety protective glass (Model TRK-120 only)	3.90
33282	Hinge—Piano type lid hinge and screws	2.50
33468	Knob—Radio tuning, volume or range selector knob	.15
33470	Knob—Television "Contrast," "Hor. hold" or "Fine Tuning" knob	.20
33471	Knob—Television "Brightness" or "Vert. hold" knob	.25
33472	Knob—Television "Station selector" knob	.25
33469	Knob—"Victrola-Radio-Television-Fidelity selection" knob	.20
11891	Lamp—6.3 V. pilot lamp, Mazda No. 44	.17
31589	Marker—Complete set of call letter markers	.35
31458	Marker—"Dial Tuning" push button marker	.01
31457	Marker—"Victrola" push button marker	.01
33075	Mirror—20½ by 14¾ in. viewing mirror	9.00
33225	Nut—Speed nut for mounting high frequency coil assemblies	.01
4577	Plug—2-prong male plug for power supply circuit (X24)	.45
33244	Plug—2-prong male plug, used on interlock cable (X22)	.45
33166	Plug—2-prong male plug for Kinescope grid-cathode cable (X4)	.20
32816	Plug—4-prong male plug for deflecting yoke cable (X2)	.20
12493	Plug—5-prong female speaker cable plug (X9)	.30
4574	Plug—6-prong male plug for Television chassis power supply cable (X14)	.48
16836	Plug—8-prong male plug for Television chassis power supply cable (X12)	.25
31542	Pointer—Station selector pointer with carriage	.35
31287	Rod—Dial frame pointer slide rod	.15
32083	Screen—Dial frame diffusing screen with rivets	1.20
4560	Screw—¼-20 by 1¼ in. long, machine screw, washer and lockwasher for chassis mounting (12 required)	.06
33517	Sleeve—Bell mouth sleeve for screw-driver adjustments (Model TRK-90 only)	.05
14270	Spring—Knob spring for Stock Nos. 33468, 33471, 33472, 33469 knobs	.05
30330	Spring—Knob spring for Stock Nos. 33470, knob	.03
33384	Switch—Interlock switch and cover	.55
31522	Support—Left hand lid support	2.25
31478	Support—Right hand lid support	2.20
9857	Yoke—Deflecting yoke complete with cable and 4-prong plug (L43, L44, R62)	17.50

XX—Price upon application to your RCA Parts Distributor.

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL R-91 Phono.

RCA MFG. CO., INC.

General Description and Service Data

The model R-91 Electric Victrola consists of a crystal pickup, a four tube audio amplifier, a five-inch dust-proof dynamic speaker, and a motor turntable mechanism all combined in a hinged-top, table type walnut veneer cabinet. Any record, up to and including the 12-inch size, may be played on this instrument.

The crystal pickup unit is securely sealed in a metal casing, against extreme changes of climate. If failure occurs due to a defective crystal unit, no attempt should be made to repair it, but a new replacement crystal unit should be installed.

Phonograph Motor

The synchronous motor used in this instrument is designed to be simple and foolproof. The parts that may require attention are plainly shown in figure 2. The motor is started by turning "on" the power switch and giving the turntable a clockwise spin with the hand. Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration.—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make certain that the leather washer is above the steel washer.)
3. Motor not properly supported from motor board.
4. Burrs on poles of rotor or stator. Remove with fine emery cloth.
5. Stator should be free to rotate between limits of damping assembly.

Removing Rotor.—The rotor and turntable assembly simply rests on the ball bearing at bottom of vertical bearing. Remove by lifting upward.

Rotor Adjustment.—Remove motor from cabinet. Loosen the three screws that hold the rotor to the turntable, insert three 16-mil shims at equal distances around the gap between the rotor and stator, and then carefully tighten the three screws. The top of rotor must be flush with top of stator; add additional steel washers beneath the stator if necessary.

Pilot Lamp.—To replace pilot lamp, remove the screws from the small raised block at the front of the motor board, and remove the wooden block. The pilot lamp compartment is then accessible.

POWER SUPPLY RATING

A-5 ..... 105-125 volts, 50 cycles, 65 watts
A-6 ..... 105-125 volts, 60 cycles, 65 watts

POWER OUTPUT

Undistorted ..... 1.5 watts
Maximum ..... 2.0 watts

LOUDSPEAKER

Type ..... Electrodynamic
Voice Coil Impedance ..... 4.9 ohms at 400 cycles

MOTOR BOARD

Motor ..... Manual Starting Synchronous
Turntable Speed ..... 78 r.p.m.

PICKUP

Type ..... Crystal
Impedance ..... 80,000 ohms at 1,000 cycles

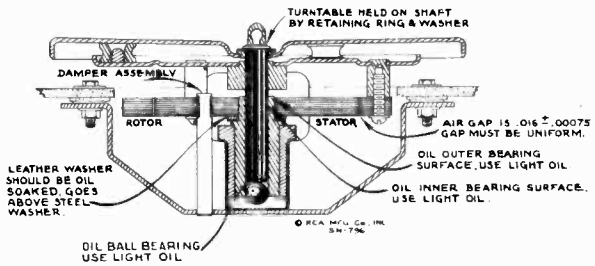


Figure 2—Motor Details

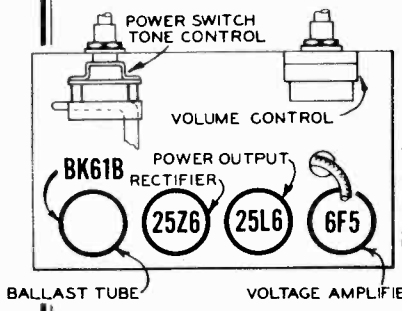


Figure 3—Tube Layout

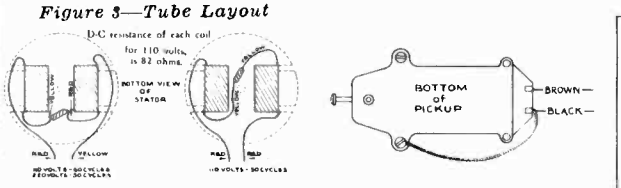


Figure 1—Motor Coil and Pickup Wiring

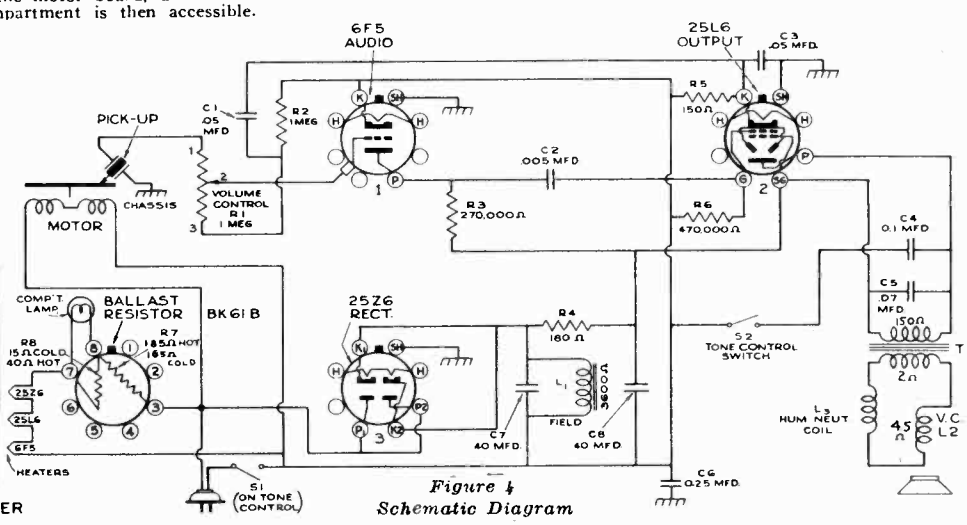


Figure 4
Schematic Diagram

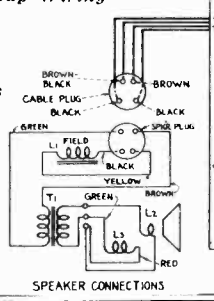
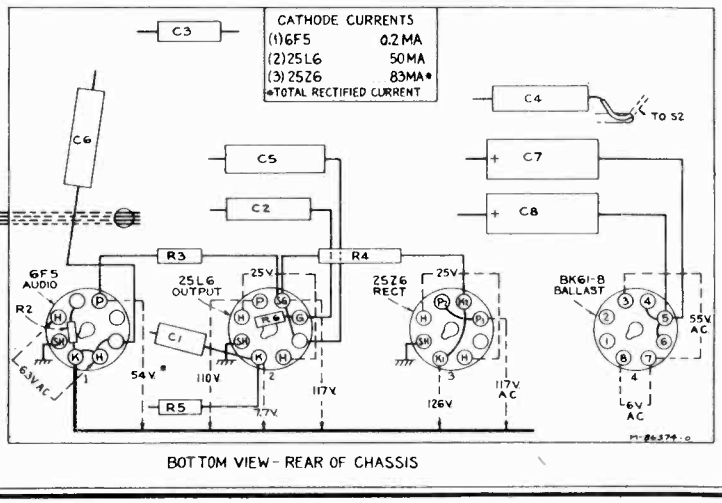


Figure 5
Wiring and Socket Voltages



*** NOTE:** Values with star (*) are operating voltages in circuits with high series-resistance, and when measured will read lower depending on the voltmeter loading.

Measurements made to chassis unless otherwise indicated, volume control at minimum. Values should hold within approximately ± 20% with 117-volt a-c supply.

RCA MFG. CO., INC.

MODELS R-93B, R-93C
Phono

General Description

These instruments employ a crystal pickup unit which depends upon torsional vibration to provide the necessary output voltage. The crystal unit is contained in a metal case, securely sealed against extremes of climate. An offset mounting for the pickup head gives an ideal tracking angle between the needle and record grooves.

The motor is a manual starting, synchronous type, designed to operate with good regularity of speed at the standard 78.26 r.p.m. Mechanically, the motor consists of a laminated stator having a large number of salient poles; a laminated rotor with a corresponding number of poles, which is affixed to the turntable; and two field coils, installed on the stator to furnish the energizing magnetic flux. The rotor, stator, and their bearing assembly are mechanically isolated from the turntable, motor mounting, and cabinet by adequate flexible couplings and supports.

A volume control unit is associated with the record player, and its output is terminated in a twisted-pair cord with a pin-plug connector.

The two models are electrically and mechanically similar; they differ in that Model R-93B has a molded plastic cabinet, whereas Model R-93C has a veneer wood cabinet.

VOLTAGE RATINGS

A-6	105-125 volts, 60 cycles, 9 watts
A-5	105-125 volts, 50 cycles, 9 watts
B-2	105-125 volts, 25 cycles, 9 watts
C-5	200-250 volts, 50 cycles, 9 watts

MOTOR AND PICKUP

Type of Motor	Synchronous (Manual Starting)
Turntable Speed	78 r.p.m.
Type Pickup	Crystal
Pickup Impedance	80,000 ohms at 1,000 cycles
Average Output Voltage	1½ volts at 1,000 cycles with 250,000 ohm load
Volume Control Resistance	250,000 ohms

RCA VICTOR RECEIVERS—DETAILS OF LEAD CONNECTIONS

MODEL	METHOD OF CONNECTION	GREEN	YELLOW	RED	BLUE	SHIELD	SWITCH
5BT, 5T, 5T1, 5T4, 5T5, 5T6, 5T7, 5T8, 6K, 6K1, 6T, 6T5, 8BK, 8BK6, 8BT, 8BT6, 8K11, 8T2, 8T11 85T5, 86X4, 86T, 86T4, 86T44, 86BK, 86BT, 85BK, 85BT	Term. Board	1	2	Tape	Tape	3	†
6BK, 6BK6, 6BT, 6BT6	Term. Board	1	2	Tape	Tape	3	††
7K, 7T, 7X, 7X1, 8K, 8K1, 8T, 8T10, 87K1, 88K, 812X, 810T4, 813K, 816K, 811K, 87EY, 87X, 87Y, 810T, 810K, 812K	Term. Board	1	2	Tape	Tape	3	†
6K2, 6K3, 6K10, 6T2, 6T10, 7K1, 7X1, 86T3, 87T1,	Term. Board	2	1	Tape	Tape	3	†
T9-7, T9-8	Term. Board	2	3	Tape	Tape	1	†
9K, 9K1, 9K2, 9K3, 9K10, 9T, 10K, 10K1, 10K11, 10T, 10T11, 13K, 15K	Term. Board	2	1	4	3	3	††
C6-12, C7-14, C8-19, C8-20, T6-11, T7-12, T8-18, T9-10	Grid Clip	Grid Cap Tube	Grid Clip	Tape	Tape	Chassis	†
C11-3, C13-3, C15-4	Adapter	1st Audio Cathode	Cathode Socket Contact	I-F Cathode *	I-F Cathode Socket Contact	Chassis	††
C6-8, T6-7	Adapter	Grid Cap Tube	Grid Clip	Tape	Tape	Both Adapter Cathode Terms.	†
85E	Wired On	R5 §	~~R5~~ 16 22,000 ω	Tape	Tape	Chassis	†
85BT6	Wired On	R5 §	Junction of R10 & R14 22,000 ω - 2.2 meg	Tape	Tape	Chassis	†
86X	Wired On	R5 §	R11 2.2 meg	Tape	Tape	Chassis	†
85T1	Wired On	R5 §	Junction of R16 & R11 22,000 ω - 2.2 meg.	Tape	Tape	Chassis	†
85T	Wired On	R5 §	R2 2.2 meg	Tape	Tape	Chassis	†

† Add Jumpers J1 and J2 to Phono-Radio Switch if not present.
†† Remove Jumpers J1 and J2 to Phono-Radio Switch if present.
§ Open circuit between R5 and other resistors named, and wire-in cable as instructed. See Figure 4.
* Use a second adapter. * R5 is the volume control.

MODELS R-93B, R-93C

RCA MFG. CO., INC.

CONNECTING RECORD PLAYER TO RADIO RECEIVER—In connecting this player to the radio, care must be exercised to connect it at a point where sufficient gain is between it and the speaker to give normal output. Usually two or more stages of audio amplification are required. The radio part must be thoroughly disconnected or "killed" when playing records, else the radio signals will be heard with the record's music. Attention should be given to the possibility of introducing hum and feedback voltage into the radio when connecting the player. A radio-phonograph switch, Stock No. 9824 is recommended for a switching system. Its connections are shown in Figure 1. With it, radio or phonograph may be selected by simply turning the switch.

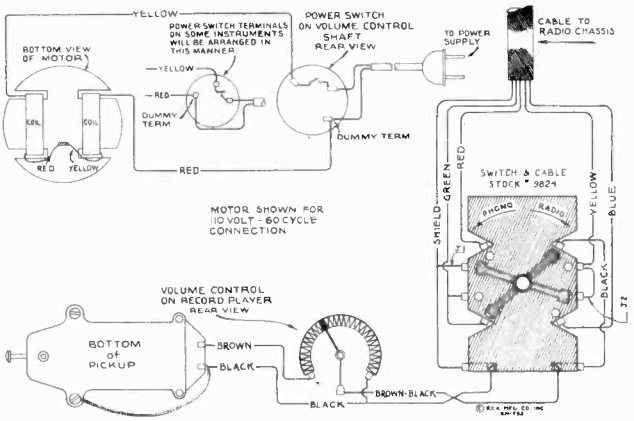


Figure 1—Wiring Diagram

When the radio is equipped with a phonograph terminal board, the player is easily connected. One should follow the instructions pertaining to that particular radio. In general, the player's output should be applied to the grid circuit of the first audio tube in the same manner as the second detector is connected. Use a switching arrangement that grounds the radio as it connects the phonograph.

When using the radio phonograph switch Stock No. 9824 on radios using a 6B7 or some similar tube for second detector, the yellow and green leads are connected in series with the grid cap connections of this tube. The green lead is connected to the grid cap.

RECORD PLAYER SWITCH JUMPERS—Some record player switches do not have jumpers J1 and J2 attached. When the switch is so connected and turned to phonograph position, the voltage developed by the pickup is fed into the radio receiver through the green wire and shield, and at the same time the yellow wire is connected to shield. The jumpers J1 and J2 permit the yellow lead to kill radio by connection to shield. The jumpers should be removed where the yellow lead connects in such a position as to short bias batteries, etc. Check the switch to be used for the method chosen and use the jumpers accordingly.

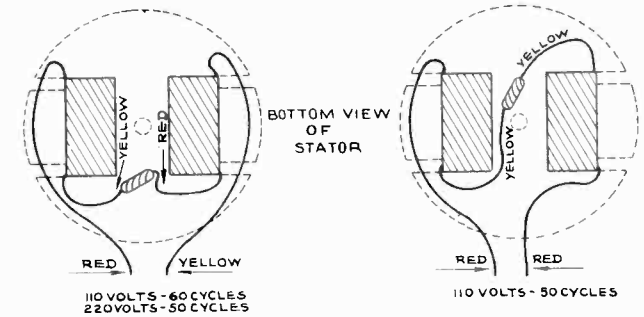


Figure 3—Motor Coil Assembly and Connections

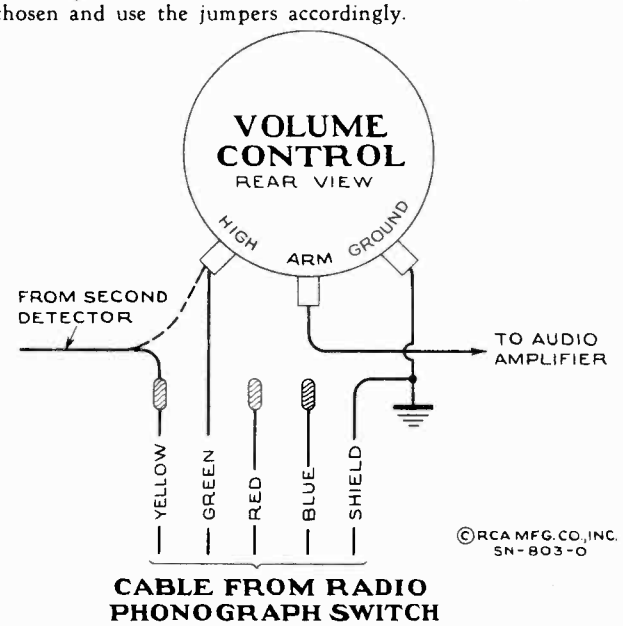


Figure 4—Typical Connections to Radio Receiver Volume Control

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLIES	
31045	Base—Motor support, damper, and bearing cup assembly	.60
31046	Bearing—Bearing assembly	.70
31041	Cap—Rubber spindle cap	.05
31047	Cushion—Rubber cushion for bearing	.15
31035	Motor—110 volt, 25 cycle—less mounting (M1)	9.50
31034	Motor—110 volt, 50 cycle—less mounting (M1)	8.90
9841	Motor—110 volt, 60 cycle—complete with mounting (M1)	6.50
31040	Mountings—Turntable top rubber mountings sufficient for one turntable	.25
31038	Rotor—Turntable and rotor lamination assembly complete for 25 cycle operation	4.55
31037	Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation	4.55
31036	Rotor—Turntable and rotor lamination assembly complete for 60 cycle operation	4.55
31044	Stator—Stator assembly complete with coils and laminations for 25 cycle operation	3.10
31043	Stator—Stator assembly complete with coils and laminations for 50 cycle operation	2.50
31042	Stator—Stator assembly comprising coils and laminations for 60 cycle operation	2.50
31039	Turntable—Finished turntable top plate only—less rubber mountings	.95
4083	Washer—Leather washer	.02
14231	Washer—Metal spacing washer	.02
	PICKUP AND ARM ASSEMBLIES	
31049	Base—Pickup arm pivot shaft and base assembly	.65
31050	Crystal—Pickup crystal and needle screw	3.75
9842	Pickup crystal and arm complete with mounting	4.95
12539	Screw—Pickup needle screw	.22
	MISCELLANEOUS ASSEMBLIES	
31055	Cabinet—Model R-93B cabinet with bottom cover—less rubber feet	2.05
31051	Foot—Rubber foot for cabinet	.04
3961	Knob—Volume control knob	.10
31054	Mounting—Pickup arm mounting nuts, washer, and rubber spacer	.15
31053	Mounting—Motor mounting screw assembly complete	.30
31048	Plug—2-contact male plug for output cable	.15
31052	Volume Control and on-off switch (R1, S1)	1.50

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL R-93F Phono.
2nd Edition

RCA MFG. CO., INC.

Electrical and Mechanical Specifications

MOTOR

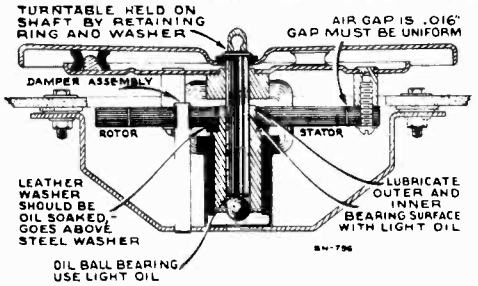
78 r.p.m. ..... Synchronous (Manual Starting)

POWER SUPPLY RATINGS

105-125 volts, 60 cycles	10 watts
105-125 volts, 50 cycles	10 watts
105-125 volts, 25 cycles	10 watts

CRYSTAL PICKUP

Impedance	100,000 ohms at 1,000 cycles
Average Output Voltage	1⅛ volts, at 1,000 cycles Across 250,000 ohms load
Cabinet Dimensions	3 x 9¾ x 11⅜ inches
Weight	6¼ lbs. (net), 8¼ lbs. (shipping)

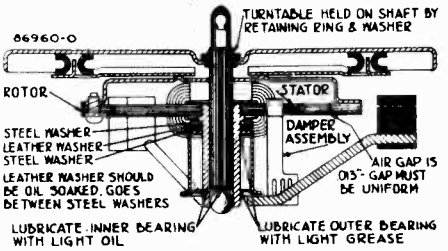


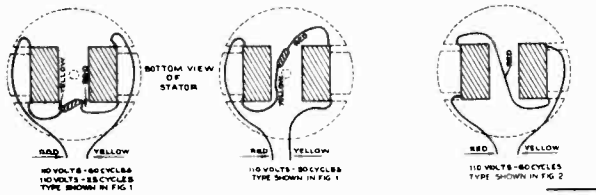
At Left—Fig. 1

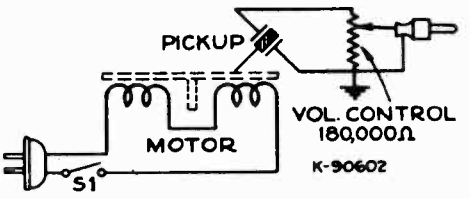
At Right—Fig. 2

Lower Left—Motor Coil Connections

Lower Right—R-93F Schematic Diagram



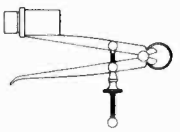




ROTOR CENTERING CALIPERS

A special calipers (Stock No. 36950) is now available for quickly and accurately centering the rotor in these motors.

Exact centering is essential for minimum hum and "wow." The precision of manufacture of these calipers provides checking and centering with an accuracy of .0005 inch.



Rotor Centering Calipers

To use the calipers, lift out the turntable and rotor, slide the caliper onto the rotor shaft, and adjust the calipers to fit the internal radius of the rotor. Rotate the calipers and check for run out, or widening of the radius. Tap the edge of the rotor to move it in the desired direction. Recheck and tap as necessary until rotation of the calipers indicates accurate centering.

Motor Data

Smooth starting and running will be insured by keeping the bearings well cleaned and oiled.

Hum and Vibration—A small amount of hum when starting, decreasing to a negligible amount when running, is normal. If excessive vibration occurs, it may be due to:

1. Insufficient lubrication, or any failure that will cause binding.
2. Leather washer not oiled. (Check to make sure that the leather and steel washers are arranged in proper sequence, as shown in the drawings.)
3. Motor not properly fastened in cabinet.
4. Burrs on poles of motor or stator.
5. Slight eccentricity of rotor or spindle.
6. Loose laminations of the stator.
7. Improper horizontal alignment of the rotor and stator (pertaining only to the type motor shown in Figure 1). Correct horizontal alignment is as shown in the motor assembly drawing. The position of the stator is raised or lowered by adding or removing washers below the leather washer. In the type motor shown in Figure 2, no adjustment is necessary because correct horizontal alignment is provided by the design of the motor.

The damper spring must fit without binding or chattering, in the slot in the stator. The stator must be free to deflect in either direction between the limits of the damper spring. Any binding in the washers or stator bearing which prevents the movement of the stator may cause speed variations in the motor. The damper spring must exert equal force in restoring the stator to its mid-position when the stator is deflected manually in either direction.

Tone Compensation

Because of the widely varying frequency characteristics of various types of audio amplifiers with which the Player may be used, it may be desirable in some cases to make refinements in the pickup circuit of the Player to compensate for the characteristics of the amplifier. The following circuits show means of making such refinements.

In Figure 3, R1 controls the low-frequency response; larger values of R1 give increased lows. For maximum low-frequency response, remove R1. R2 controls pickup output, smaller values of R2 giving increased output. C1 controls high-frequency response; to increase highs, increase C1.

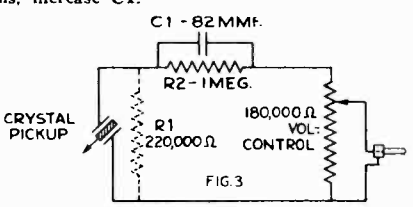


FIG. 3

Where a decrease in high-frequency response may be desired (for example, as an aid in reducing "needle scratch" on worn records), the circuit in Figure 4 is applicable. In this circuit, C2 acts as loading on the pickup and is also a controlling factor on the high-frequency response. Smaller values of C2 give more pickup output and also more highs. R3 gives a sharper high-frequency reduction; increasing R3 decreases highs.

The suggested values shown in Figures 3 and 4 should serve as a basis from which slight alterations may be made to suit individual cases.

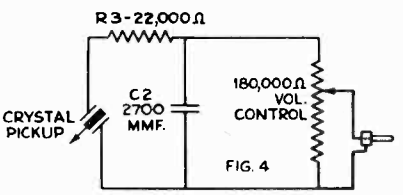


FIG. 4

MODEL R-93FPhono
2nd Edition

RCA MFG. CO., INC.

Connecting Record Player to Radio Receivers

This Record Player consists of a motor-turntable mechanism, a crystal pickup unit and a volume control with motor switch. The player may be connected to the audio amplifier system of practically any type of radio receiver for the reproduction of records.

For convenience in connecting the player to receivers without the conventional phono-jack, a new type switch (Stock No. 9824-A) is recommended.

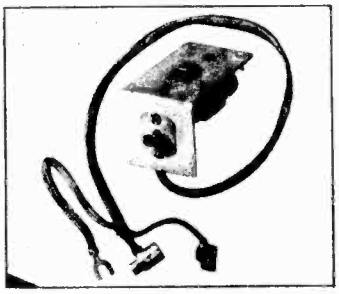
This switch may be used for quickly connecting Record-Players, Television Attachments, Frequency-Modulation Attachments, Microphones, and similar devices into the audio amplifier of the receiver.

The great majority of receivers in use have a grid-cap type 1st-audio tube, and the new switch is **designed for rapid connection to the grid cap, without removing the chassis from the cabinet.** On other receivers, the switch can be readily installed by means of socket adapters or connection into the audio circuit.

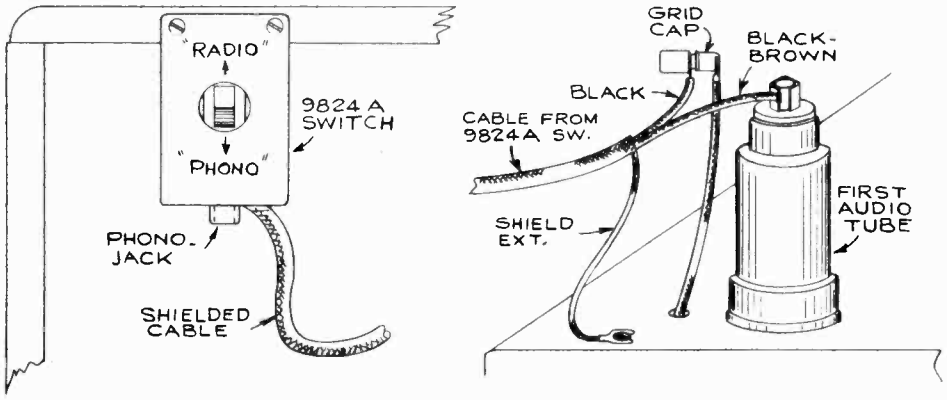
The new switch is designed to provide:

1. Changeover from radio to record player, with retention of the original tone quality, and without introducing hum.
2. Suppression of radio on the "phono" position.
3. Maintenance of all original bias conditions in the radio circuit.

Complete instructions are furnished with the switch.



Stock No. 9824-A
Record-Player Switch



A typical hook-up as used on receivers with a grid-cap 1st-audio tube. *(On a.c.-d.c. sets, a .25 mfd. condenser should be connected in the cable shield lead.)*

Methods of connecting receivers (without the grid-cap 1st-audio tube) thru the use of adapters, etc. are explained in detail in the instructions packed with each switch.

Replacement Parts

Insist on genuine factory-tested parts, which are readily identified and may be purchased from authorized dealers.

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLIES (See Figure 1) (110 volts, 25 cycle) (110 volts, 50 cycle)	
31045	Base—Motor support, damper, and bearing cup assembly	.60
31046	Bearing—Bearing assembly	.70
31041	Cap—Rubber spindle cap	.05
31047	Cushion—Rubber cushion for bearing	.15
32077	Motor—110 volt, 25 cycle—less mounting	14.60
31034	Motor—110 volt, 50 cycle—less mounting	8.90
31040	Mountings—Turntable top rubber mountings sufficient for one turntable	.25
32073	Rotor—Turntable and rotor lamination assembly complete for 25 cycle operation	7.70
31037	Rotor—Turntable and rotor lamination assembly complete for 50 cycle operation	4.55
32072	Stator—Stator coil, laminations, and weights for 105-120 volts, 25 cycles	5.00
31043	Stator—Stator assembly complete with coils and laminations for 50 cycle operation	2.50
31039	Turntable—Finished turntable top plate only—less rubber mountings	.95
4083	Washer—Leather washer	.02
14231	Washer—Metal spacing washer	.02
	MOTOR ASSEMBLIES (See Figure 2) (110 volts, 60 cycle)	
30244	Bushing—Rubber bushing for turntable center	.25
33345	Cap—Rubber cap for turntable spindle	.15
33346	Coil—Motor field coil	.65
33350	Frame—Motor mounting frame and bearing cup assembled	.45
33344	Frame—Rotor frame, spindle shaft and laminations	2.45
34480	Hanger—Rubber hanger for mounting motor	.10
34479	Lamination—Stator laminations and bearing assembled	1.30
33041	Ring—Retaining ring for turntable	.06
31039	Turntable	.95
	PICKUP AND ARM ASSEMBLIES	
33591	Arm—Pickup arm only—less cartridge, base and cable	.50
34481	Arm—Pickup pivot arm and shaft	.70
34482	Base—Pickup mounting base	.30
33122	Crystal—Pickup crystal cartridge and needle screw	3.75
33123	Damper—Viscoloid damper for pickup armature	.15
34311	Ring—Retaining ring for pivot shaft	.05
33529	Screw—Needle screw	.10
	MISCELLANEOUS ASSEMBLIES	
31051	Foot—Rubber foot for cabinet	.04
3961	Knob—Volume control knob	.10
31054	Mounting—Pickup arm mounting nuts, washer, and rubber spacer	.15
31048	Plug—2-contact male plug for output cable	.15
33359	Volume control and switch	1.50

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.

MODEL R-94B Phono
MODEL O-3

RCA MFG. CO., INC.

MODEL R-94B

MOTOR

Type ..... Self-starting Induction
Turntable Speed ..... 78 r.p.m. (Adjustable)
Turntable Diameter ..... 10 inches
D-C Resistance ..... 110 volts, 60 cycles, 96.3 ohms; 110 volts, 50-60 cycles, 72.3 ohms

POWER SUPPLY RATING

A-6 ..... 105-125 volts, 60 cycles, 25 watts
A-5-6 ..... 105-125 volts, 50-60 cycles, 25 watts

PICKUP

Type ..... Crystal
Impedance ..... 80,000 ohms at 1,000 cycles
Volume Control Resistance ..... 250,000 ohms
Average Output Voltage ..... 1½ volts at 1,000 cycles across 250,000 ohm load

CABINET DIMENSIONS

Height ..... 7-13/16 inches
Depth ..... 12-31/32 inches
Width ..... 15¼ inches
Net Weight ..... 12¾ pounds
Shipping Weight ..... 18 pounds

General Description

The RCA Victor Record Player Model R-94B consists of a self-starting motor turntable mechanism, a crystal pickup, an aurally compensated volume control, and a motor switch. This record player can be adapted to play records through the audio amplifier—loudspeaker system of practically every type of radio receiver. The cabinet is of walnut veneer, and has a hinged lid, which locks in the "open" position—but should be closed while records are being played. Any record up to and including the 12-inch diameter size may be played on this instrument. An automatic switch turns the motor "off" when the end of a record has been reached.

Service Data

The crystal pickup unit is thoroughly sealed in a metal casing, against extreme changes of climate. The offset mounting of the crystal unit in the pickup arm insures ideal tracking between needle and record grooves. If failure occurs due to a defective crystal unit, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed.

The turntable drive, is a self-starting, variable-speed, governor-type, induction motor. The motor speed adjusting screw is located under the turntable, which must be removed for speed adjustment. The motor speed should be 78 r.p.m., and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding beyond the edge of the record, and then counting the number of revolutions of the turntable per minute. The motor is designed to be simple and foolproof in operation. Occasionally, however, lubrication and certain adjustments may be required. These are illustrated and explained in figure 1. In addition, an application of oil to the felt pad, which rubs against the governor disc, will insure smooth operation.

The turntable is started by pushing to the rear the motor starting lever, which appears to the right of the turntable. The adjustment on the automatic motor stopping switch should be made so that the switch will snap to the "off" position when the needle in the pickup head is 1¾ inches away from the center of the turntable. The locking screw and details of the switch mechanism are shown in figure 2.

The volume control is of the potentiometer type, tapped to give aural compensation at low volume settings. The output lead from the volume control is a single shielded wire, terminating in a small, male, pin plug. See figure 3. This pin plug fits into the female jack receptacle on most of the RCA Victor 1939 "90" series of radio receivers.

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLIES	
11703	Governor—Motor governor complete	3.05
30475	Motor—105-125 volts, 50-60 cycle (M50)	22.75
14800	Motor—105-125 volts, 60 cycle (M50)	19.75
	PICKUP AND ARM ASSEMBLIES	
31212	Base—Pickup arm pivot shaft, trip lever, and base assembly	.95
31050	Crystal—Pickup crystal and needle screw	3.75
31211	Pickup and arm complete—less rubber mounting and nut	7.10
12539	Screw—Pickup needle screw	.22
	MISCELLANEOUS ASSEMBLIES	
14803	Brake—Automatic brake complete	2.95
4870	Capacitor—.025 mfd. (C1)	.20
11704	Damper—Turntable rubber damper and damper plate	.25
31051	Foot—Rubber foot for cabinet	.04
13085	Hinge—Lid hinge	.22
3961	Knob—Volume control knob	.10
31054	Mounting—Pickup mounting nut, washer, and rubber cushion	.15
14559	Resistor—10,000 ohms, ½ watt (R2)	.20
12264	Resistor—220,000 ohms, ½ watt (R3)	.20
13573	Screw—Motor mounting screws, washers and rubber cushions	.30
30100	Spring—Tension springs for automatic brake—one long and one short spring	.08
31213	Support—Lid support	.40
14804	Switch—Motor switch—located on automatic brake (S1)	.60
14801	Turntable	4.35
31108	Volume control (R1)	1.00
	ACCESSORIES	
9824	Switch and cable assembly — for use with receivers requiring a switch for changing from Phonograph to Radio—complete with mounting screws, washers, and knob	1.00
14179	Adapter—Special octal base adapter with grid connection (pin No. 5) split and a 2,700 ohm resistor internally connected from cathode (pin No. 8) to shell (pin No. 1), 3 terminals on side	1.85
14180	Adapter—Special octal base adapter with grid connection (pin No. 5) split, 2 terminals on side	1.60

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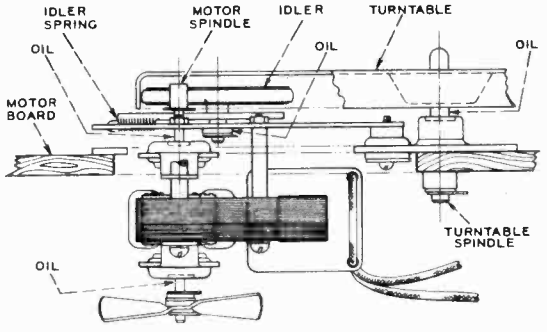
105-125 volts, 60 cycles constant speed motor
Turntable Rim Driven ..... 78 rpm.
Mechanical Reproducer

Lubrication.—Motor drive bearings should be lubricated with a good grade of oil at least twice a year.

Caution.—Keep all rubber drive parts free from oil.



O-3 PHONOGRAPH MOTOR

MODEL O-3

Electric Motor Driven Portable

STOCK No.	DESCRIPTION	Unit List Price
	MOTOR ASSEMBLY	
39526	Motor—Complete motor including mounting plate, spacers, screws, washers, and nuts	5.25
39530	Plate—Idler wheel plate	.90
39531	Retainer—Retaining clip for turntable spindle	.02
39533	Retainer—Retaining clip for idler wheel	.02
39528	Spindle—Turntable spindle	.30
39534	Spring—Idler wheel tension spring	.02
39527	Turntable	1.50
39532	Washer—Fibre washer for turntable spindle	.02
39529	Wheel—Idler wheel and tire	.90
	MISCELLANEOUS ASSEMBLIES	
33691	Arm—Tone arm—less neck, base, washer, ring, screw and lockwasher	1.35
33678	Cover—Needle cup cover	.30
33680	Cup—Needle cup	.15
36574	Foot—Cabinet foot (glide)	.10
36575	Handle—Carrying handle (black)	1.40
36577	Hinge—Cabinet lid hinge	.40
33692	Neck—Tone arm neck	.70
33690	Screw—Screw and lockwasher to fasten neck on tone arm	.10
30368	Sound Box	3.00
39522	Spring—Conical spring to hold turntable	.15
33694	Support—Cabinet lid support	.30
33684	Support—Sound box support	.15
33689	Support—Taper tube support	.35
39523	Switch—Motor switch	.60
33688	Washer—Tone Arm Bearing washer and retaining snap ring	.10

MODLE R-94B Phono

RCA MFG. CO., INC.

Connecting Record Player to Radio Receivers

A table giving methods of connecting the Record Player to various types of audio systems is shown in the following text. Also included are the model numbers of the various RCA Victor Receivers to which the particular method shown applies. The data given in the table requires that an RCA Stock No. 9824 "Radio"-"Phono" switch be used for switching from radio to phonograph, as desired. For ease in connecting the "phono" lead to the Stock No. 9824 switch, the male plug on the end of the shielded lead should be removed by unsoldering, or cutting it off.

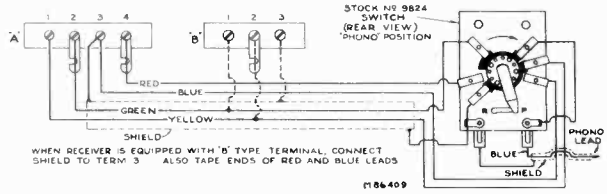
In general, the Record Player must be used with radio receivers having at least two stages of high-gain audio amplification. The Record Player output should be connected to the grid of the first audio tube, and at the same time the output of the radio receiver portion of the chassis should be shorted or opened, to prevent radio signals being heard while the Record Player is in operation.

CONNECTING RECORD PLAYER TO:

1939 RCA RADIO RECEIVERS OF "90" SERIES:

Plug male jack on end of Record Player into female receptacle on receiver chassis. Push or turn "Phono" switch to "Phono" position, and operate Record Player according to instructions.

RADIO RECEIVERS HAVING "PHONO" TERMINAL BOARDS.



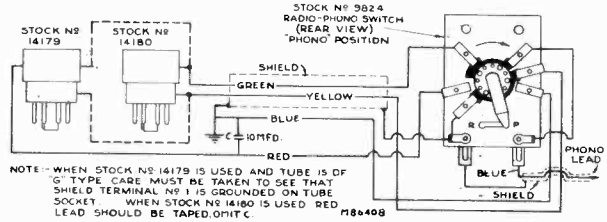
RCA Radio Receivers to which the above illustration applies: 5T1, 5T4, 5T5, 5T6, 5T7, 5T8, 6T5, 8T2, 8T11, 8K11, 85T5, 86E, 86K, 86T, 86T1, 86T4, 86K7, 86T44, 87K, 87T, 87K1, 87K2, 87T2, 88K, 810K, 810K1, 810T, 810T4, 811K, 812K, 813K, 816K, 811T.

For following Receivers, Yellow lead should go on Terminal No. 1, Green lead on Terminal No. 2: 6K2, 6T2, 6K3, 6T10, 7T1, 7K1, 85T8, 86T3, 87T1, 86T2, 86T6, 6K10.

Insulate shield of switch wires from chassis, on following RCA Receivers: 5T, 6T, 6K, 6K1, 7T, 7K, 7X, 8T, 8K, 86X4, 87EY, 87X, 87Y, 8T10, 7X1, 8K1.

Receivers having a Four Terminal Board: 9K, 9T, 9K1, 9K2, 9K3, 9K10, 10T, 10K, 10K1, 13K, 15K. Reverse Red and Blue leads to Terminal Board of C9-6, T9-9, T8-16, C8-17.

RADIO RECEIVERS USING 6C5 OR 6J5, 6C5G OR 6J5G. TUBE FOR FIRST AUDIO AMPLIFIER.



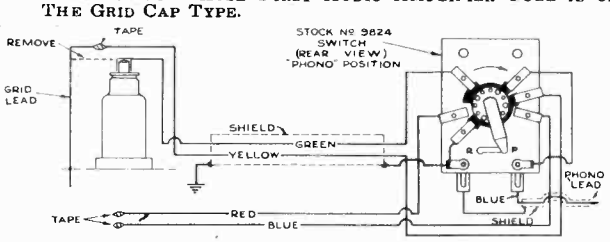
Stock No. 14179 Adaptor opens grid circuit, and inserts 2,700 ohm resistor in cathode of 6C5 or 6J5 tubes, for bias on Phono reproduction.

Stock No. 14180 Adaptor opens grid circuit of 6C5 or 6J5 tube.

Stock No. 14180 Adaptor necessary for RCA: C11-1, C13-2, T10-1, C11-3, C13-3.

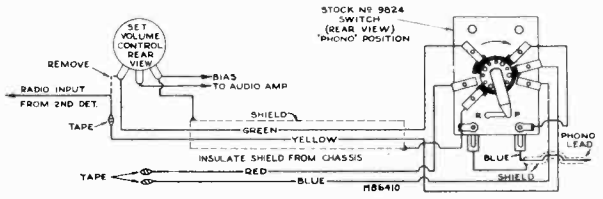
Stock No. 14179 Adaptor necessary for RCA: C15-3, C15-4.

RADIO RECEIVERS WHOSE FIRST AUDIO AMPLIFIER TUBE IS OF THE GRID CAP TYPE.

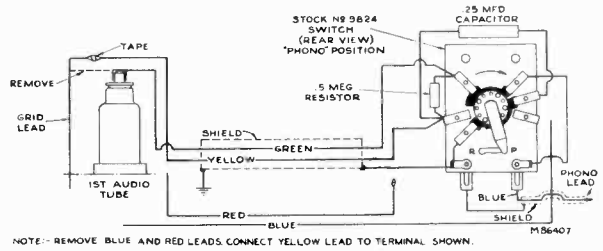


RCA Receivers for which above method applies: 125, 128, 128E, 224E, 225, 226, T6-1, C6-2, T6-9, T7-5, C7-6, T7-12, C7-14, T8-14, C8-15, T8-18, C8-19, C8-20, C9-4, T9-10.

RADIO RECEIVERS WHERE RECEIVER VOLUME CONTROL IS TO BE USED TO ALSO CONTROL "PHONO" VOLUME.



RADIO RECEIVERS WHOSE FIRST AUDIO TUBE IS OF THE GRID CAP TYPE, AND FIXED BIAS FOR TUBE IS OBTAINED THROUGH GRID LEAD.



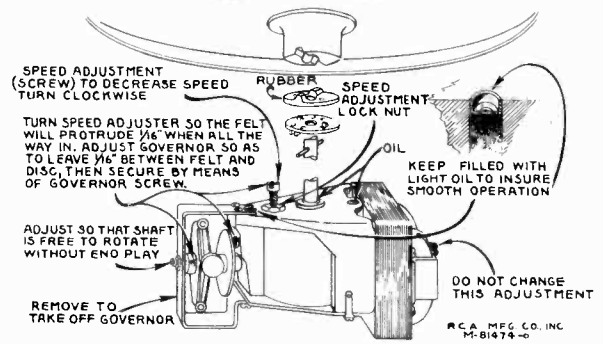


Figure 1—Motor Adjustments

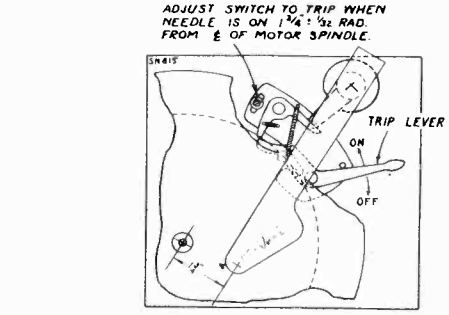


Figure 2—Motor Switch Adjustment

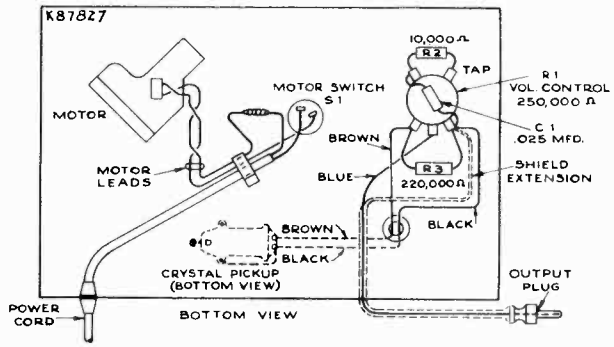


Figure 3—Wiring Diagram

RCA MFG. CO., INC.

MODEL V-105, Ch. RC-517C

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F transformer
3	Ant. terminal in series with 200 mmfd.	1,650 kc	Gang at minimum	C25 (osc.) C31 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C23 (ant.)
5	Repeat steps 3 and 4.			

FREQUENCY RANGE ..... 540-1,650 kc

INTERMEDIATE FREQUENCY ..... 455 kc

PILOT LAMP ..... 1—Mazda No. 51, 6-8 volts, 0.2 amps.

POWER SUPPLY RATING

105-125 volts, 50 cycles ..... 55 watts
105-125 volts, 60 cycles ..... 55 watts

LOUDSPEAKER (RL-81B-4)

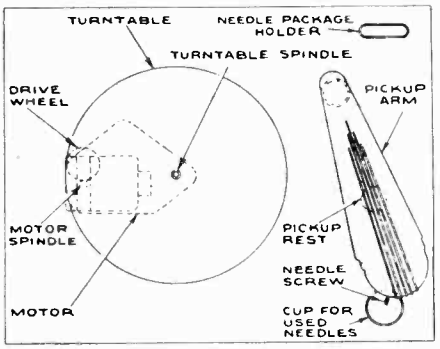
Type ..... 5-inch electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

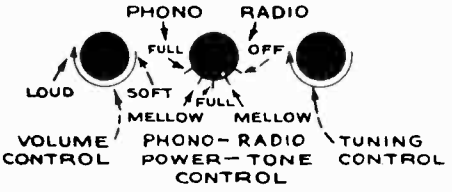
Phonograph Motor Service Data:—

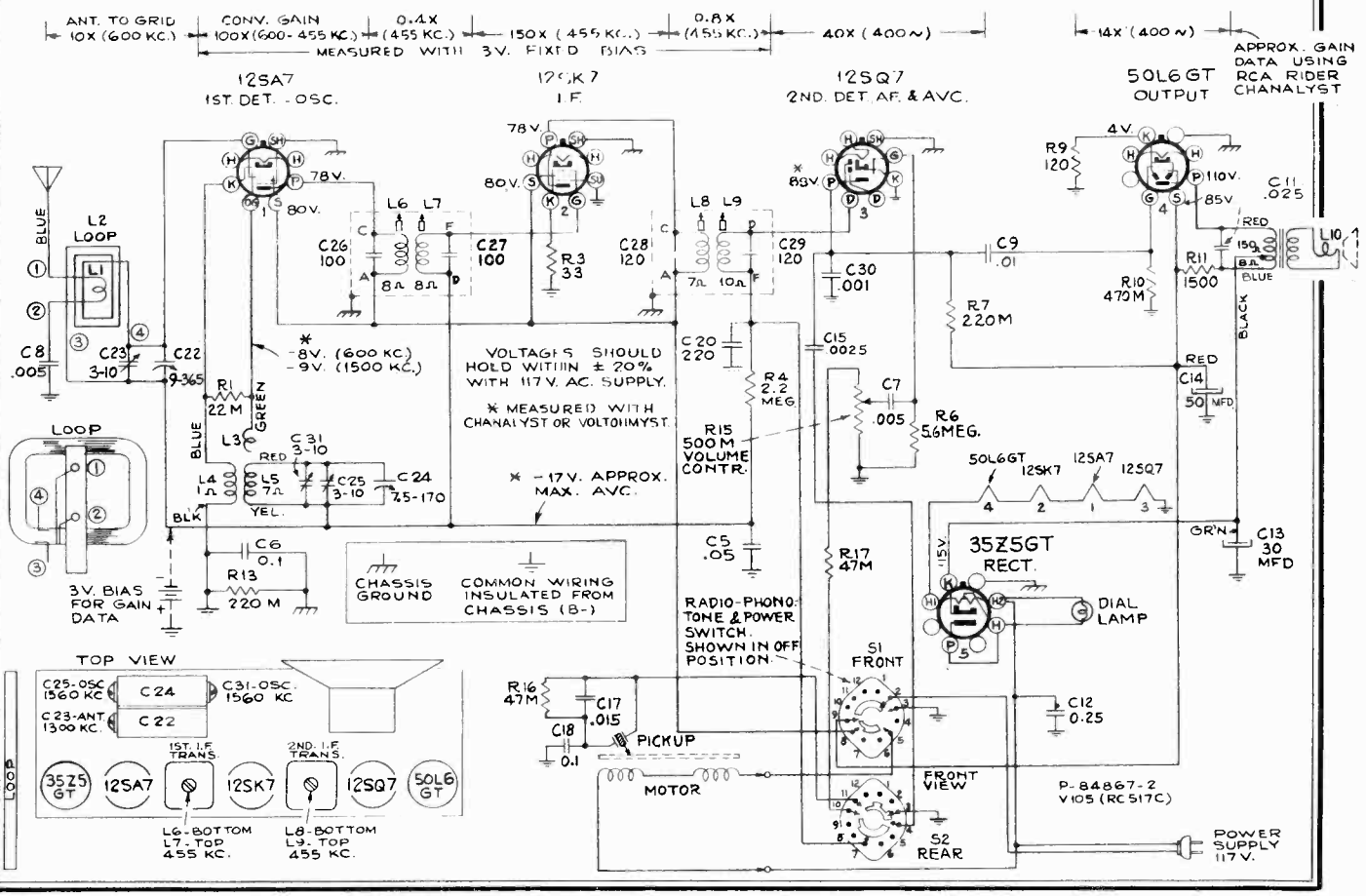
The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on d.c., as this would damage the motor.







MODEL V-135, Ch. RC-517H

RCA MFG. CO., INC.

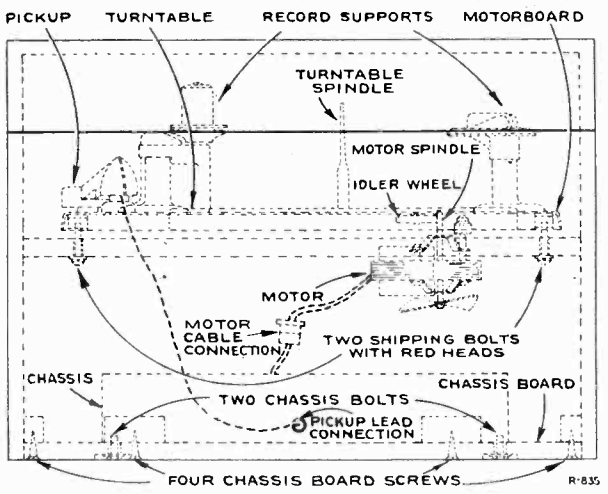
POWER OUTPUT
Undistorted ..... 1.6 watts
Maximum ..... 3 watts
Pilot Lamp ..... (1) Mazda No. 51, 6.3 volts, 0.20 amps.

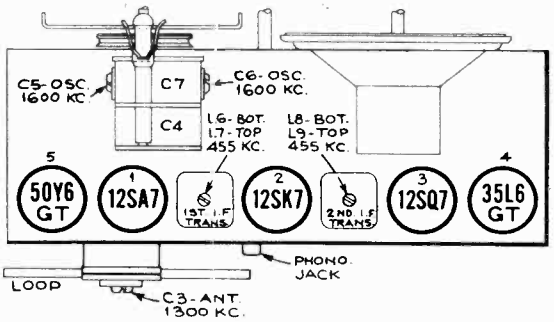
POWER SUPPLY RATING
105-125 Volts, 60 Cycles ..... 65 watts

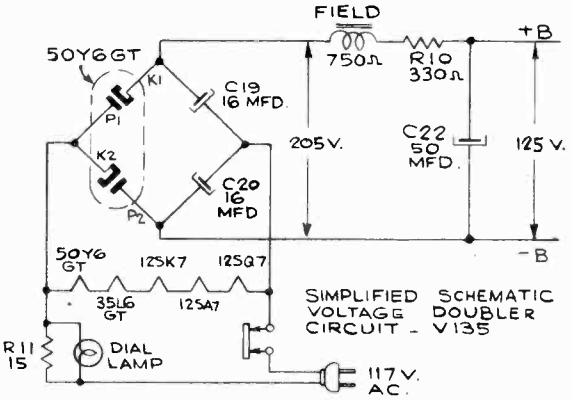
LOUDSPEAKER (RL86B6)
Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

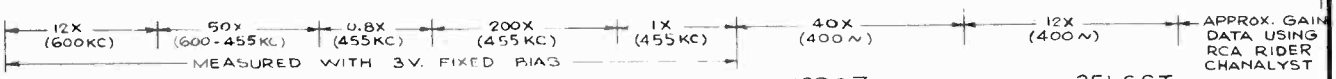
Frequency Range ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

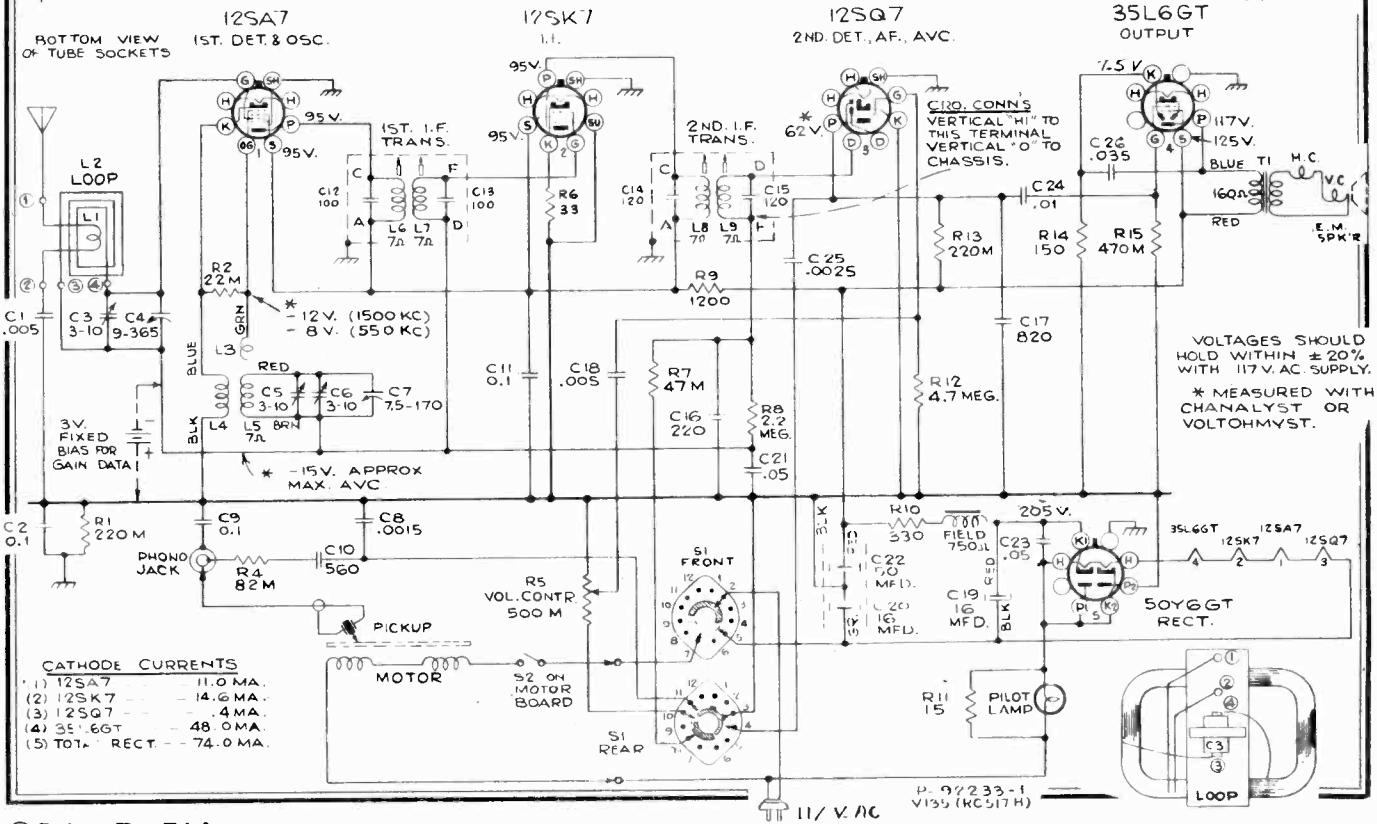
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F transformer
3	Ant. terminal in series with 200 mmfd.	1,600 kc	Gang at minimum	C5 (osc.) C6 (osc.)
4	Radiated signal 1,300 kc		Signal Frequency	C3 (ant.)
5	Repeat steps 3 and 4.			

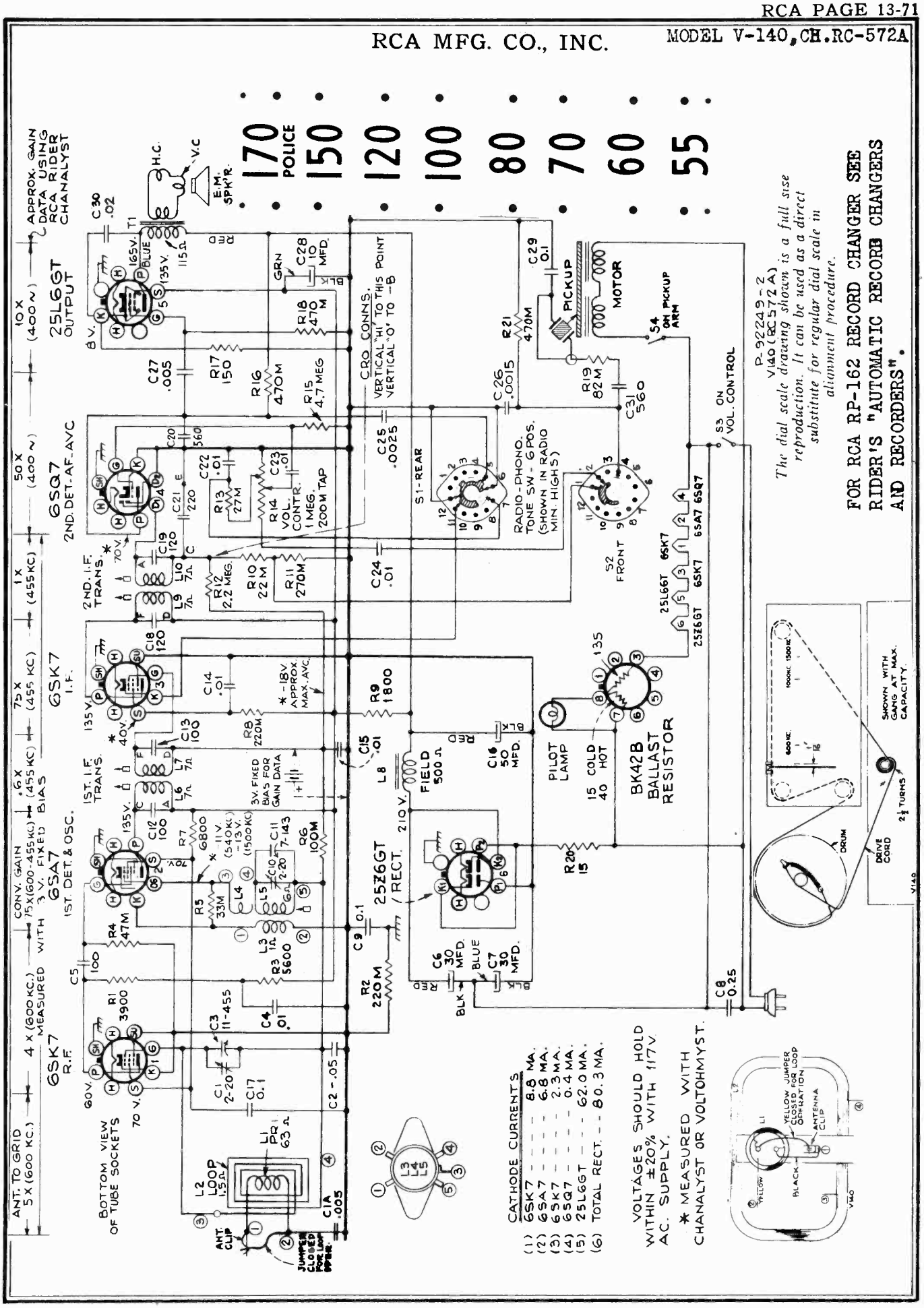












MODEL V-140, Ch. RC-572A

RCA MFG. CO., INC.

Alignment Procedure

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator. — For all alignment operations, connect the low side of the test oscillator to the common negative, and keep the output as low as possible to avoid a-v-c action.

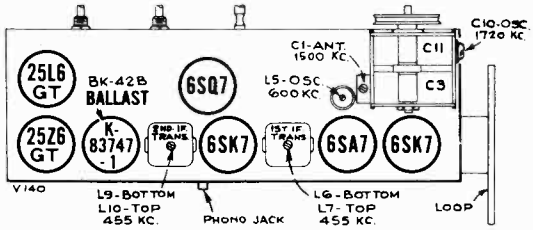
Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

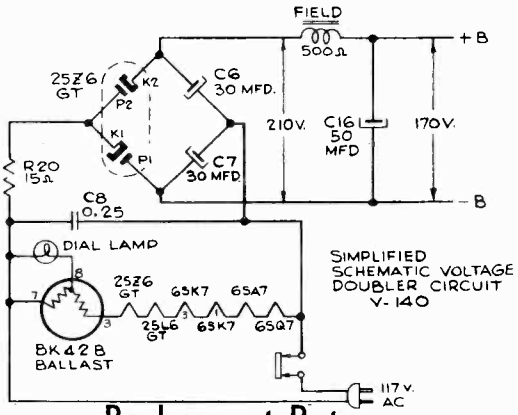
Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the scale printed in this service note can be used as an accurate and convenient substitute for the regular dial. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate. Place the dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the dial in place.

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L9 and L10 2nd I-F transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F transformer
3	Ant. terminal in series with 200 mmfd.	1,720 kc	Gang at minimum	C10 (osc.)
4	Radiated signal 1,500 kc		Signal Frequency	C1 (ant.)
5	Radiated signal near 600 kc		Signal Frequency	L5 (osc.) (Rock gang)
6	Repeat steps 3, 4 and 5.			

Critical Lead Dress:

1. Lead from 6SK7 i-f plate to last i-f transformer to be dressed close to chassis and under all other leads. Prevents i-f beats.
2. 22,000 ohm R-10 i-f to audio isolating resistor to have end connecting to last i-f transformer as short as possible. Prevents i-f beats.
3. First audio grid coupling capacitor C-23 and C-24 to be dressed close to chassis and away from heater wiring. Prevents hum.
4. Dress phono power leads away from phono socket.

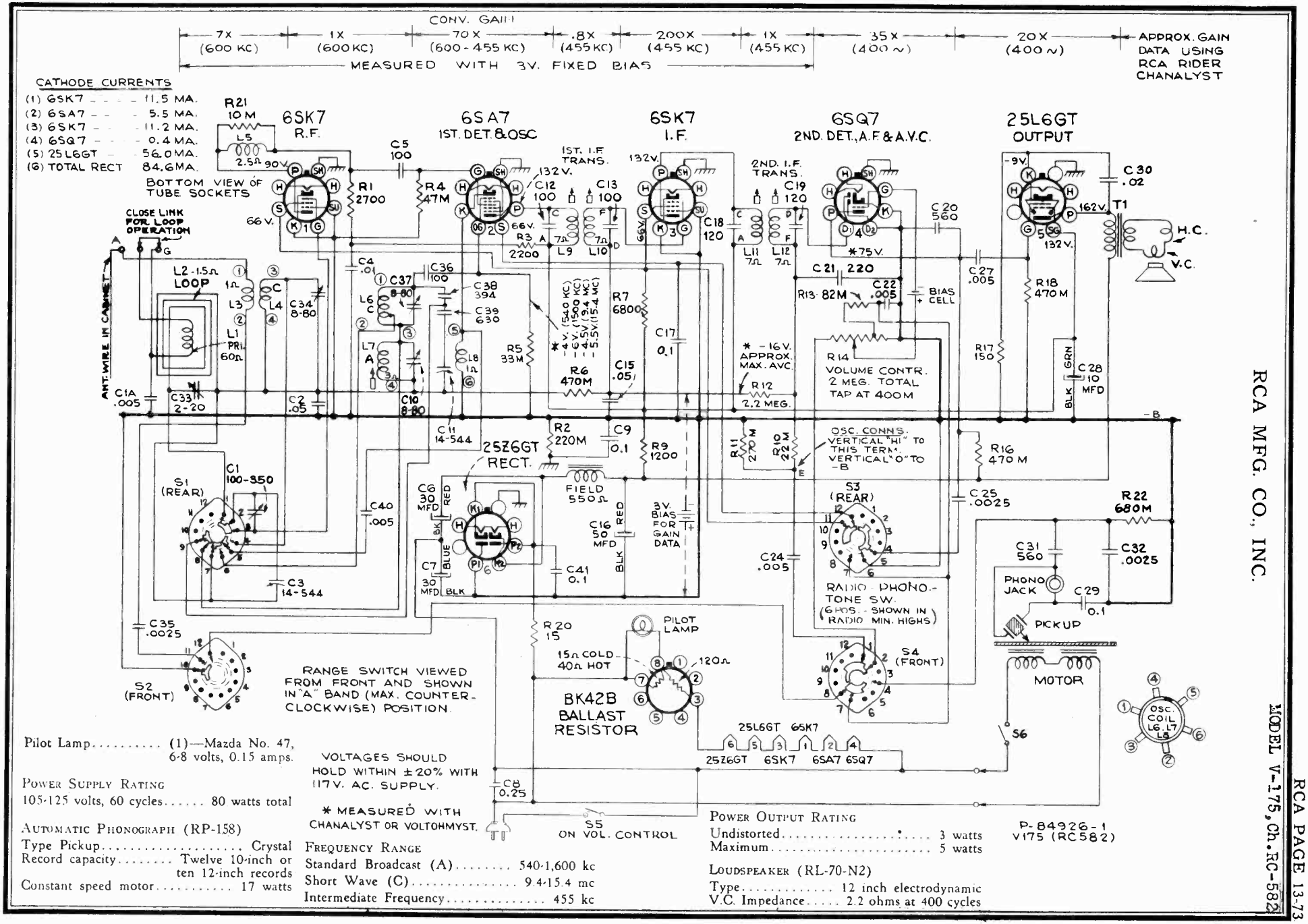




Replacement Parts

STOCK No.	DESCRIPTION	Unit List Price
	CHASSIS ASSEMBLIES (RC-572-A)	
14649	Ballast—Ballast tube resistor	.80
37846	Capacitor—Electrolytic—30 mfd., 150 volts	.50
37845	Capacitor—Electrolytic comprising 1 section of 50 mfd., 250 volts, 1 section of 10 mfd., 250 volts, and 1 section of 30 mfd., 150 volts	1.00
12720	Capacitor—100 mmfd., moulded	.35
34699	Capacitor—100 mmfd., unmoulded	.30
31813	Capacitor—120 mmfd.	.30
36616	Capacitor—220 mmfd.	.30
12537	Capacitor—560 mmfd.	.35
33806	Capacitor—.0015 mfd.	.25
34459	Capacitor—.0025 mfd.	.20
4838	Capacitor—.005 mfd., 1,000 volts	.25
33584	Capacitor—.005 mfd., 1,200 volts	.25
14393	Capacitor—.01 mfd.	.30
36248	Capacitor—.02 mfd.	.20
32787	Capacitor—.05 mfd.	.20
32786	Capacitor—0.1 mfd., 300 volts	.25
4839	Capacitor—0.1 mfd., 400 volts	.30
30965	Capacitor—0.25 mfd.	.30
39491	Coil—Loop primary coil	.40
39487	Coil—Oscillator coil	.75
39489	Condenser—Variable tuning condenser	3.40
38408	Control—Volume control and power switch	2.00
32634	Cord—Drive cord (approx. 33-in. overall lgth.)	.10
36093	Core—Adjustable core and stud for oscillator coil	.15
39493	Indicator—Station selector indicator	.20
37982	Insulator—Phono socket insulator	.04
39490	Loop—Antenna loop complete	1.80
30868	Plug—2-contact female plug for motor cable	.35
5119	Plug—3-contact female plug for speaker cable	.25
36230	Pulley—Drive cord pulley	.04
14649	Resistor—Ballast tube resistor	.80
38859	Resistor—15 ohms, 1 watt	.22
30785	Resistor—150 ohms, 1 watt	.22
36743	Resistor—1,800 ohms, 2 watt	.25
30694	Resistor—3,900 ohms, ½ watt	.20
30734	Resistor—5,600 ohms, ½ watt	.20
22993	Resistor—6,800 ohms, 1 watt	.22
30492	Resistor—22,000 ohms, ½ watt	.20
30409	Resistor—27,000 ohms, ½ watt	.20
12454	Resistor—33,000 ohms, ½ watt	.20
12412	Resistor—47,000 ohms, ½ watt	.20
14023	Resistor—82,000 ohms, ½ watt	.20
14560	Resistor—100,000 ohms, ½ watt	.20
14583	Resistor—220,000 ohms, ½ watt	.20
30651	Resistor—270,000 ohms, ½ watt	.20
30648	Resistor—470,000 ohms, ½ watt	.20
30649	Resistor—2.2 meg., ½ watt	.20
30931	Resistor—4.7 meg., ½ watt	.20
35862	Shaft—Tuning knob shaft	.20
31365	Socket—Dial lamp socket	.30
33742	Socket—Phono input socket	.20
31251	Socket—Tube socket	.25
31418	Spring—Drive cord spring	.05
31261	Spring—Retaining spring for oscillator coil core and stud	.01
39492	Switch—Tone switch	1.30
35636	Transformer—First I.F. transformer	1.70
36615	Transformer—Second I.F. transformer	1.60
14649	Tube—Ballast tube resistor	.80
33726	Washer—"C" washer for tuning knob shaft	.02
	AUTOMATIC RECORD CHANGER	
	See separate Service Bulletin RP-162 Record Changer.	
	SPEAKER ASSEMBLIES (RL-79B-6)	
31825	Cap—Dust cap	.02
37850	Coil—Field coil—500 ohms	1.70
39495	Cone—Cone complete with voice coil	1.10
5118	Plug—3-prong male plug for speaker	.25
37844	Transformer—Output transformer	1.70
	MISCELLANEOUS ASSEMBLIES	
38354	Clamp—Dial clamp	.15
39497	Decalcomania—Control panel decal	.15
36386	Decalcomania—Trade mark decal (His Master's Voice)	.25
35467	Decalcomania—Trade mark decal (RCA Victrola)	.05
39496	Dial—Glass dial scale	.90
13085	Hinge—Cabinet lid hinge	.22
35814	Knob—Control knobs	.25
31480	Lamp—Dial lamp	.20
39351	Mounting—Spring mounting hardware for motorboard (2 required)	.25
38873	Spring—Conical mounting spring for motorboard	.05
30900	Spring—Retaining spring for knobs	.05
39545	Support—Lid support	.40

ALL PRICES ARE SUBJECT TO CHANGE OR WITHDRAWAL WITHOUT NOTICE.



Pilot Lamp..... (1)—Mazda No. 47, 6-8 volts, 0.15 amps.

POWER SUPPLY RATING

105-125 volts, 60 cycles..... 80 watts total

AUTOMATIC PHONOGRAPH (RP-158)

Type Pickup..... Crystal
Record capacity..... Twelve 10-inch or ten 12-inch records
Constant speed motor..... 17 watts

VOLTAGES SHOULD HOLD WITHIN ±20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

FREQUENCY RANGE

Standard Broadcast (A)..... 540-1,600 kc
Short Wave (C)..... 9.4-15.4 mc
Intermediate Frequency..... 455 kc

POWER OUTPUT RATING

Undistorted..... 3 watts
Maximum..... 5 watts

LOUDSPEAKER (RL-70-N2)

Type..... 12 inch electrodynamic
V.C. Impedance..... 2.2 ohms at 400 cycles

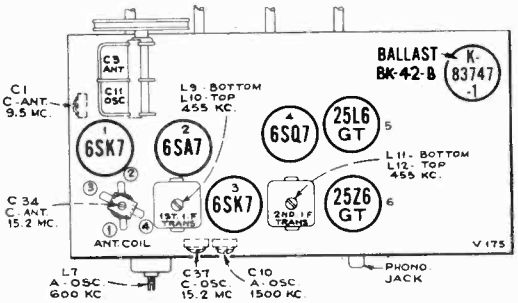
MODEL V-175, Ch. RC-582

RCA MFG. CO., INC.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the common negative wiring, and keep the output as low as possible to avoid a-v-c action.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.



Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the calibration scale printed full size in this service note can be used as an accurate and convenient substitute for the regular dial.

Each method is described below.

Using Tuning Dial.—

1. Remove the glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in this position.
4. After completion of alignment, replace the glass dial in cabinet.

Using Calibration Scale.—

1. With gang in full mesh, move the dial pointer to the reference mark at the left-hand end of the dial backing plate.
2. Temporarily fasten the dial scale drawing in this service note, to the dial backing plate with scotch tape, so that the extreme left scale graduation coincides with the pointer.

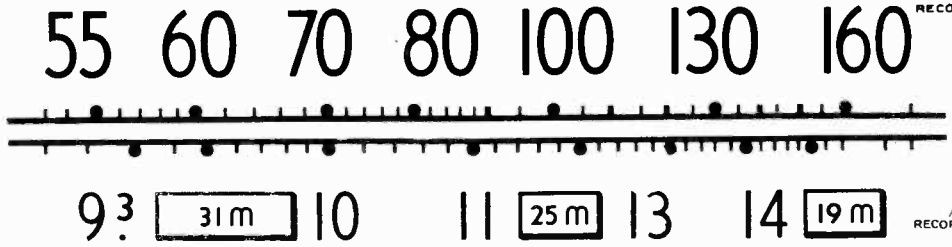
Dial Pointer Adjustment.—After the chassis is replaced in cabinet move the dial pointer (if necessary) so that it is at the left-hand graduation on the dial with the gang in full mesh.

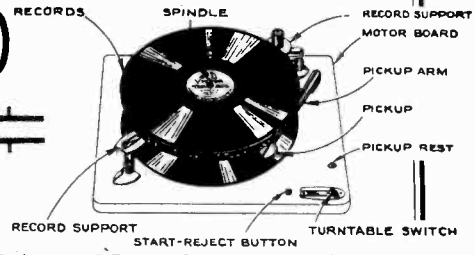
Critical Lead Dress

(1) Dress bias cell up from chassis and away from A.C. switch.
(2) Dress R13 (volume control compensation circuit) close to front apron.
(3) Dress C9 between osc. coil and side apron.
(4) Black lead from AC switch should be kept away from tone control leads and switch.
(5) Dress R22, C32 (pickup compensation circuit) close to front apron.
(6) Keep R4 and C5 bus (1st det. grid circuit) (socket end) as short as possible.
(7) Blue lead to antenna terminal board should be dressed in back of I-F'S.
(8) Dress brown lead from volume control to tone switch close to front apron.
(9) Dress R18 (output grid cricuit) away from A.C. switch and A.C. leads.
(10) Dress lead to phono. socket up from chassis.

Steps	Connect the high side of test-osc. to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F Grid in series with .01 mfd.	455 kc	"A" Band 540 kc	L11, L12 (2nd I-F Trans.)
2	1st-Det. Grid in series with .01 mfd.			L9, L10 (1st I-F Trans.)
3	"A" terminal on ant. terminal board in series with 47 mmf. (link open)	15.2 mc	"C" Band 15.2 mc	C37 (osc.)* C34 (ant.)
4		9.5 mc	"C" Band 9.5 mc	C1 (ant.) (Rock Gang)
5		Repeat steps 3 and 4.		
6	Middle terminal on ant. terminal board in series with 200 mmf. (link open)	1,500 kc	"A" Band 1,500 kc	C10 (osc.) C33 (ant.) (on loop)
7		600 kc	"A" Band 600 kc	L7 (Rock Gang)
8		Repeat steps 6 and 7.		

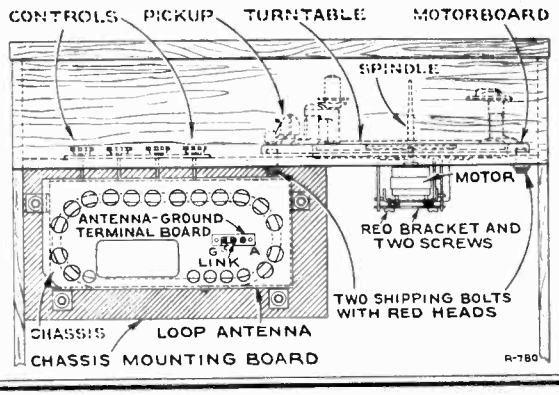
* Use minimum capacity peak.
Oscillator tracks 455 kc above signal on both bands.

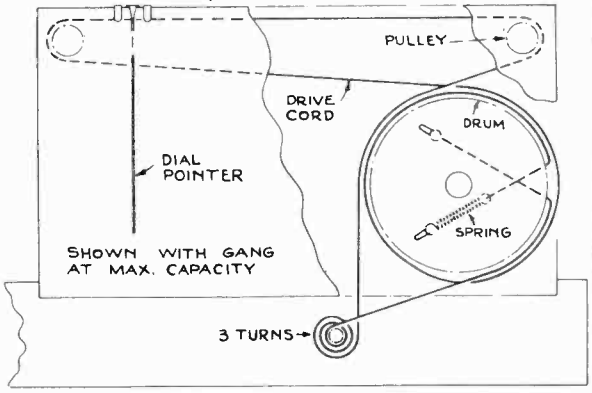




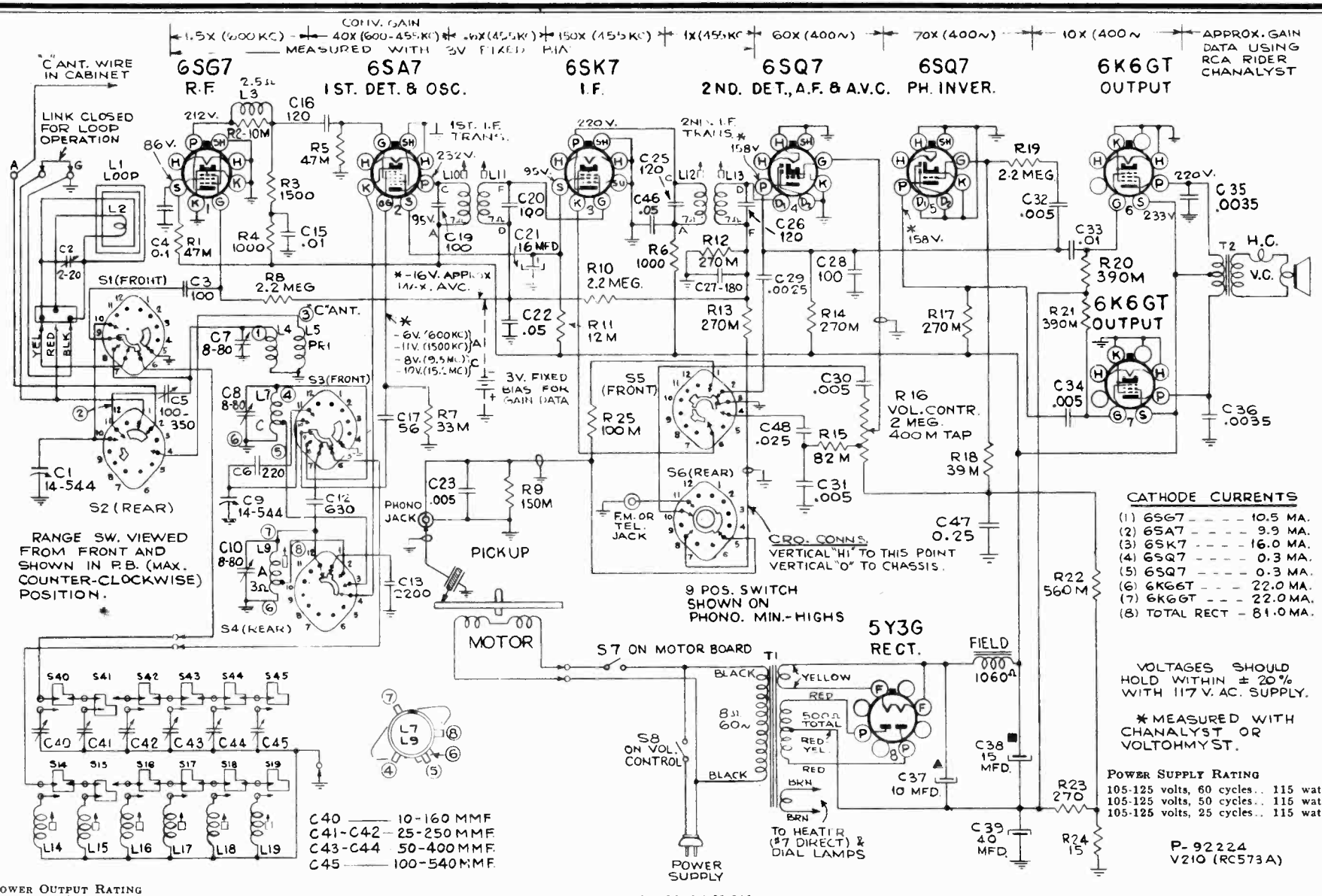
Refer to RP-158 Service Note for Data on Automatic Mechanism.

The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.





RCA MFG. CO., INC.
MODELS V-209, ChRC-573;
V-210, Ch. RC-573A



CATHODE CURRENTS

(1) 6SG7	10.5 MA.
(2) 6SA7	9.9 MA.
(3) 6SK7	16.0 MA.
(4) 6SQ7	0.3 MA.
(5) 6SQ7	0.3 MA.
(6) 6K6GT	22.0 MA.
(7) 6K6GT	22.0 MA.
(8) TOTAL RECT	81.0 MA.

VOLTAGES SHOULD HOLD WITHIN ± 20% WITH 117 V. AC. SUPPLY.

* MEASURED WITH CHANALYST OR VOLTOHMYST.

Power Supply Rating

105-125 volts, 60 cycles	115 watts total
105-125 volts, 50 cycles	115 watts total
105-125 volts, 25 cycles	115 watts total

P-92224
V210 (RC573A)

Schematic for Model V-210

Power Output Rating

Undistorted	5 watts
Maximum	5.5 watts

Phonograph

Type	Automatic (RP-158)
Record Capacity	Twelve 10-in., Ten 12-in.
Turntable Speed	78 r.p.m.
Type Pickup	Crystal
Motor Power Consumption	17 watts

Pilot Lamps	(2) Mazda No. 51, 6-8 volts, 0.2 amps.
Compartment Lamps	(2) Mazda No. 55, 6-8 volts, 0.4 amps.

Loudspeaker

Electrodynamic	(RL-70L6)
Size	12-inch
V.C. impedance at 400 cycles	2.2 ohms

Frequency Ranges

Standard Broadcast "A"	540-1,600 kc
Short Wave "C"	9.4-15.4 mc
Intermediate Frequency	455 kc

MODELS V-209, V-210

RCA MFG. CO., INC.

Push Button Adjustments

The push buttons connect to separate magnetite-core oscillator coils and separate ant. circuit trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow about five minutes warm-up period before making adjustments.

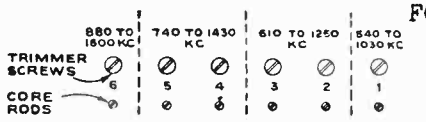
The procedure is as follows:

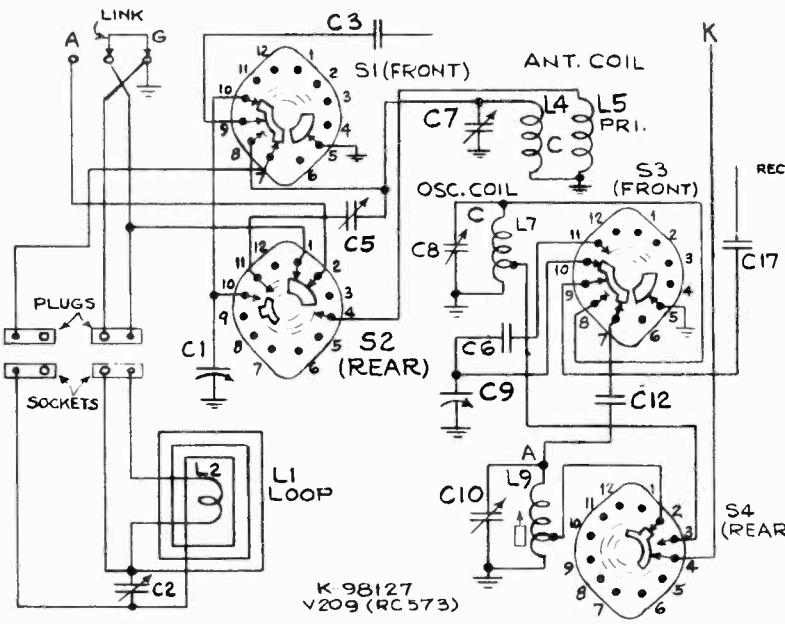
1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range switch to the broadcast position and manually tune in the first station on the list.
3. Turn range switch to push-button position and press in the left-hand button.
4. Adjust No. 1 oscillator core to receive the first station. To secure the best adjustment, rotate the set for least pickup, and adjust core for peak output.
5. Adjust No. 1 antenna trimmer capacitor for peak output on the first station.
6. Proceed in the same manner to adjust for the remaining stations.

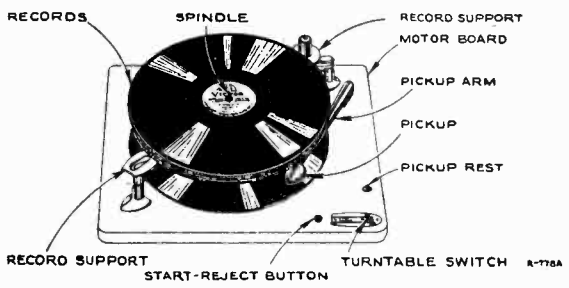
On the 880 to 1,600 kc push-button, the higher frequency stations may be received with osc. core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

NOTE: Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

FOR CHANGE IN MODEL V-209 SEE NEXT PAGE

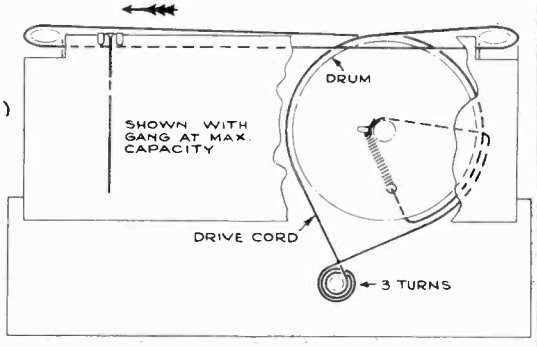


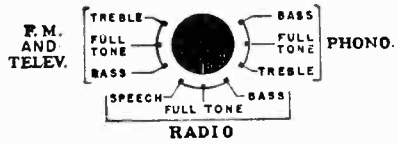


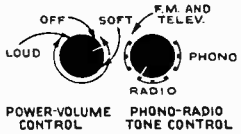


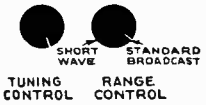
Refer to RP-158 Service Note for Data on Automatic Mechanism

Schematic diagram of antenna and oscillator switch connections for Model V-209. This model does not include push-button tuning. Otherwise the same as schematic of V-210.



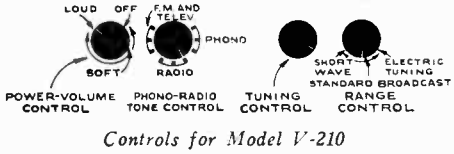




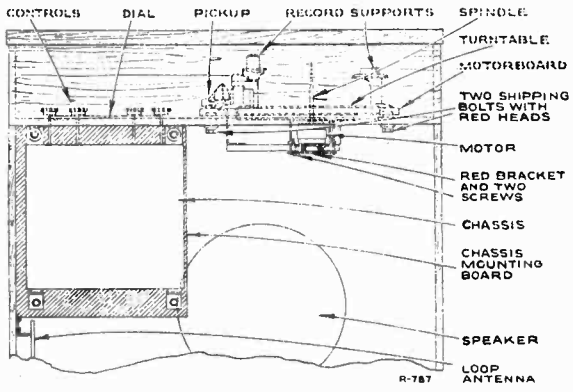


Control for both Models

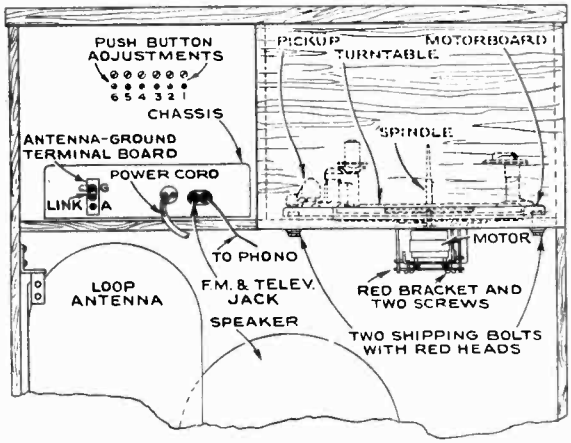
Controls for Model V-209



Controls for Model V-210

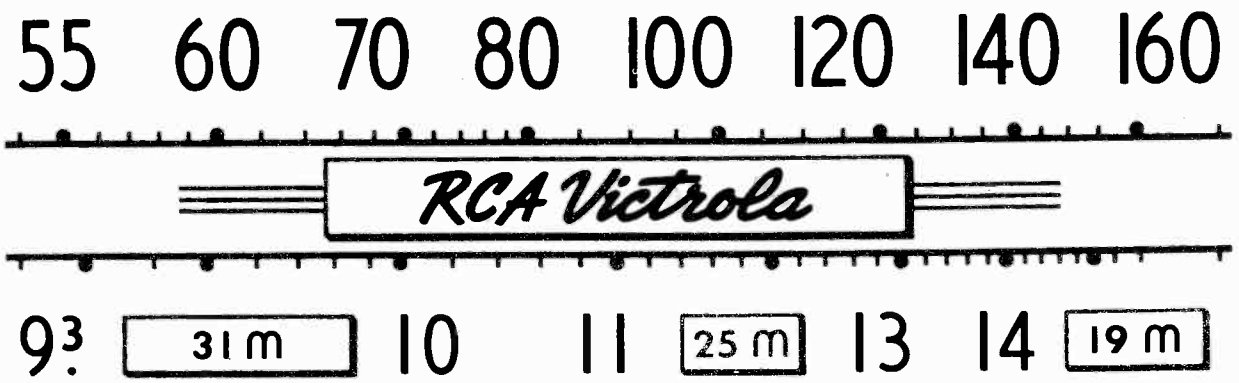


Model V-209



Model V-210

RCA MFG. CO., INC.



The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

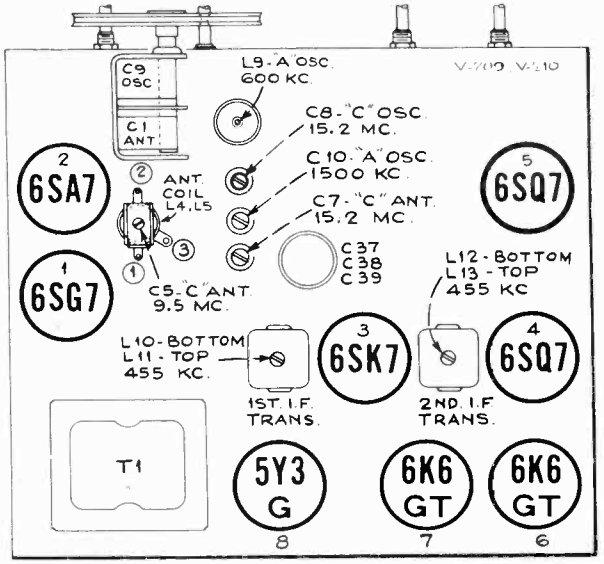
Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

Using Tuning Dial.—

1. Remove glass dial from the cabinet.
2. With gang in full mesh, move the dial pointer to a point 1/16 inch to left of reference mark at left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduation coincides with the pointer. Use scotch tape to hold the glass dial in place.

"C" Band Reception—For best reception on "C" band with an outside antenna, adjust the trimmer screw on the RF coil on the chassis. Turn screw carefully with a special screwdriver (RCA Stock No. 31031) while the receiver is tuned to a station in the 31-meter band, and make setting for best reception. If returning to internal antenna at any time, close the link on the center terminal and adjust "C" band antenna trimmer for best reception on 31-meter band.



Steps	Connect test-osc. output to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" band 540 kc	L12 and L13 (2nd I-F trans.)
2	1st Det. grid in series with .01 mfd.			L10 and L11 (1st I-F trans.)
3	A-Terminal in series with 47 mmfd. (link closed)	15.2 mc	"C" band 15.2 mc	C8 (osc.)* C7 (ant.)
4		9.5 mc	"C" band 9.5 mc	C5 (ant.) (Rock gang)
5		Repeat steps 3 and 4		
6	Yellow loop lead in series with 200 mmfd. (link closed)	1,500 kc	"A" band 1,500 kc	C10 (osc.)
7		600 kc	"A" band 600 kc	L9 (osc.)
8		Repeat steps 6 and 7		
9	Install and connect chassis in cabinet with antenna link closed. Tune in a radiated oscillator signal at 1,500 kc. and peak the "A" band trimmer C2 (on loop). Rock in L9 for peak output at 600 kc.			

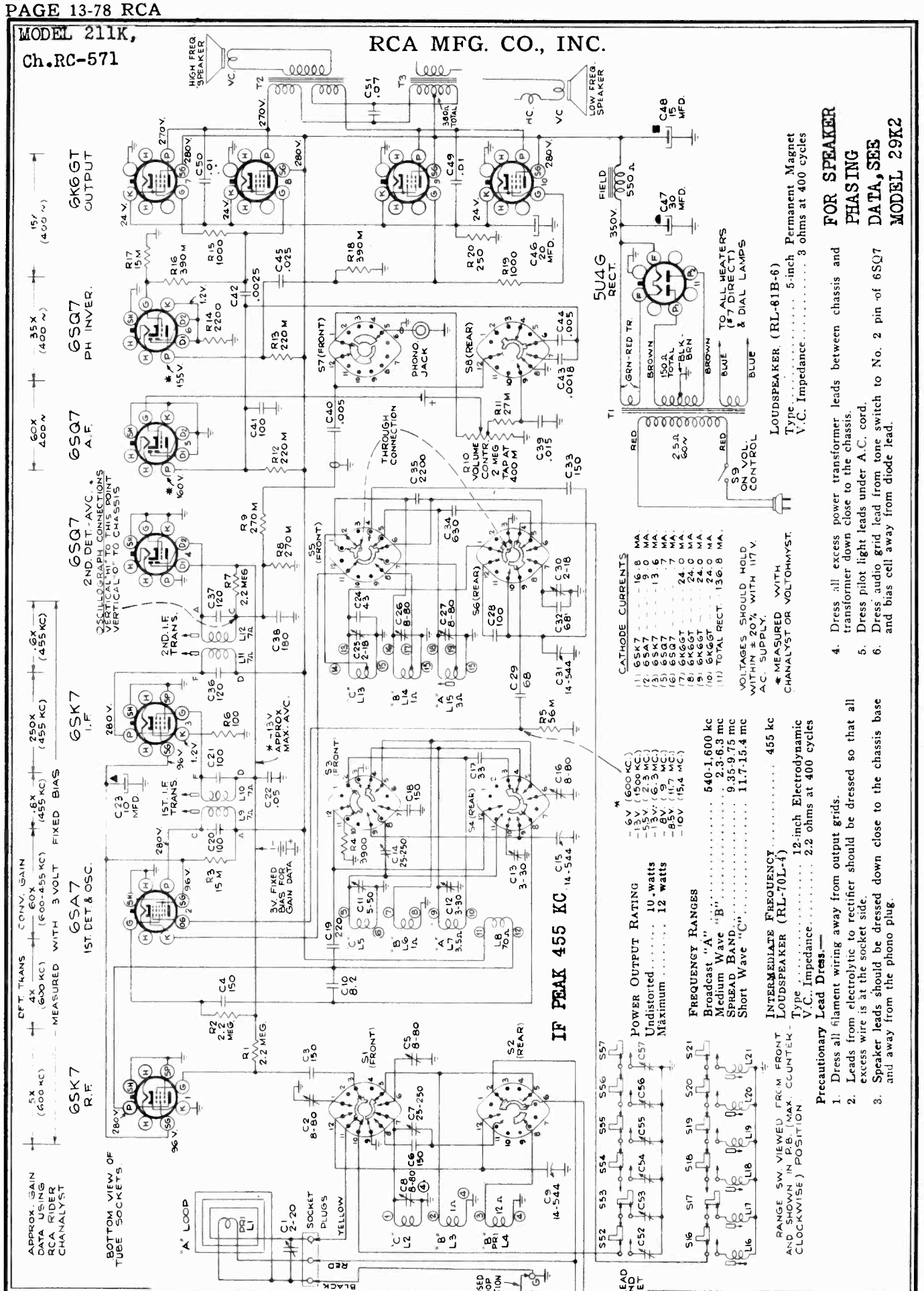
*Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc. above signal on all bands.

Critical Lead Dress:

1. Bus from "C" oscillator coil to range switch must be held to length and dressed close to coil.
2. C30 (audio coupling capacitor to volume control) should be dressed close to front apron.
3. A.C. cord and motor leads must be dressed away from phono and F.M. jack.
4. Excess trans. leads to be dressed between trans. and rectifier socket.
5. Keep R5, C16 bus (in grid circuit of 6SA7 tube) as short as possible.
6. Dress C28 (in plate circuit of 1st A.F.) close to socket.
7. Keep R15 (grid resister) C34 (coupling capacitor of output tube) close to socket.
8. Keep C23 (tone compensating capacitor) close to back apron.
9. Keep R15, C48 (in tone compensating circuit) close to front apron.
10. Dress green lead from osc. coil to trimmer close to oscillator coil.
11. Dress cable from phono. socket to phono. switch up away from base.
12. Dress red A.C. leads away from I.F. trans. and 6SQ7 socket.
13. RF choke in plate of 6SG7 must be dressed toward back apron.

MODEL 211K,
Ch.RC-571

RCA MFG. CO., INC.



RCA MFG. CO., INC.

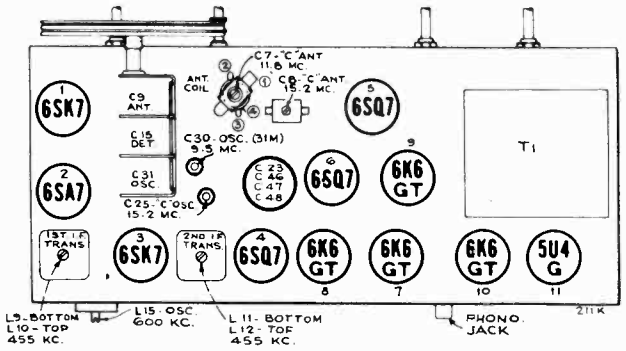
MODEL 211K, Ch. RC-571

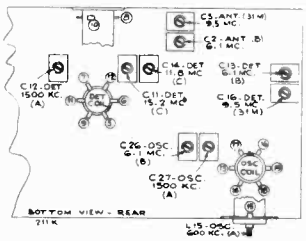
Calibration for Alignment.—

A calibration scale is attached to the tuning drum. The correct setting of the gang, in degrees, for each alignment frequency is given in the alignment table. Check the position of the drum, making sure that the 140 degree scale mark is directly above condenser shaft when the gang is at minimum setting.

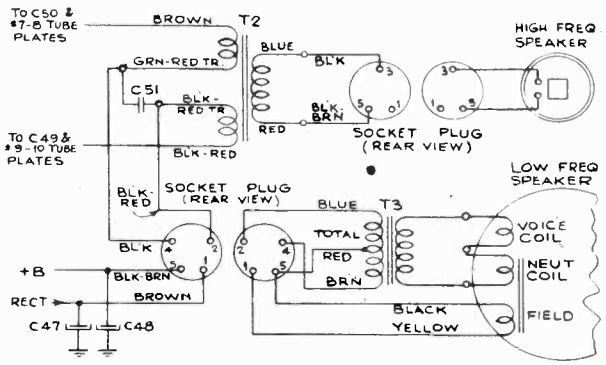
Pointer for Calibration Scale.—

Improvise a pointer for the calibration scale by fastening a piece of wire to the chassis, and bend the wire so that it points to 0 degree mark on the calibration scale when the plates are fully meshed.





Below.—Speaker Wiring Diagram.

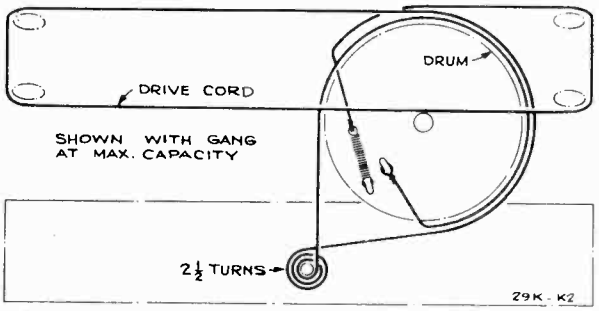


Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

POWER SUPPLY RATINGS

105-125 volts, 50-60 cycles ..... 140 watts
105-125 volts, 25-60 cycles ..... 140 watts



External Antenna.—When using an External Antenna, Peak C7 for max. output on a station in the 31-meter band.

Steps	Connect the high side of the test oscillator to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	Quiet Point on "A" Band	L-11 and L-12 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L-9 and L-10 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf.	1,500 kc	1,500 kc (160°) "A" Band	C-27 (osc.) C-12 (det.)
4		600 kc	600 kc (30.5°)	L-15 (osc.) Rock
5		Repeat steps 3 and 4.		
6	Antenna terminal (A) in series with 47 mmfd. (link open)	6,100 kc	6,100 kc (161°) "B" Band	C-26 (osc.)* C-13 (det.) Rock C-2 (ant.) Gang
7		15.2 mc	15.2 mc (165°) "C" Band	C-25 (osc.)* C-11 (det.) Rock C-8 (ant.) Gang
8		11.8 mc	11.8 mc (52°) "C" Band	C-7 (ant.) C-14 (det.) Rock Gang
9		Repeat steps 7 and 8.		
10		9.5 mc	9.5 mc (87.5°) 31M-Band	C-30 (osc.)* C-5 (ant.) Rock C-16 (det.) Gang
11	Fasten chassis in cabinet, close ant. link, adjust indicator to left-hand end of dial scales with gang closed.			
12	Radiation loop consisting of two turns of wire 18 inches in diameter located 4 to 6 feet from receiver	1,500 kc	1,500 kc signal "A" Band	C-1 (ant.) on loop
13		600 kc	600 kc signal "A" Band	L-15 (osc.) Rock Gang
14	Repeat steps 12 and 13.			

* Use minimum capacity peak if two peaks can be obtained.

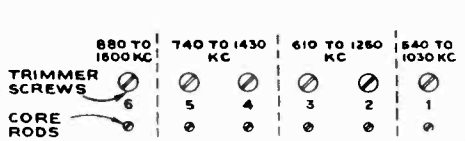
Note: Oscillator tracks 455 kc above signal on all bands.

Push Button Adjustment

The station push buttons connect to separate magnetite-core oscillator coils and separate antenna trimmers which must be adjusted for the desired stations. Use an insulated screwdriver or alignment tool such as RCA Stock No. 31031. Allow at least five minutes warm-up period before making adjustments.

In the event that the receiver is to be used with an external antenna use one or two feet of wire (as an antenna) to ensure sharp peaking during the final adjustment procedure. For loop operation, the link should be strapped across terminals on back of set. In either case the procedure is as follows:

1. Make a list of the desired stations, arranged in order from low to high frequencies.
2. Turn the range selector to "A" band, and manually tune in the first station on the list.
3. Turn range selector to "PB" position, push in station button No. 1 (extreme left). Then adjust the No. 1 oscillator core to receive the station.
4. After oscillator core is set correctly, adjust No. 1 antenna trimmer for maximum output.



Clockwise adjustment of cores and trimmers tunes the circuits to lower frequencies.

5. Adjust for each of the remaining stations in the same manner.
6. Make a final careful adjustment of the oscillator cores and antenna trimmers.

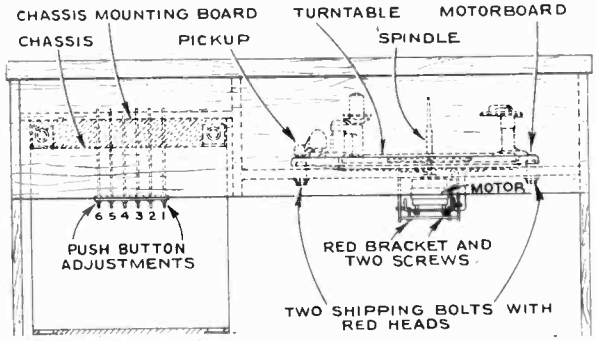
On the 880 to 1,600 kc push-button, the higher frequency stations may be received with No. 1 oscillator core either in or out (oscillator frequency either 455 kc below or 455 kc above the station frequency). The adjustment with this core in its out position (oscillator frequency 455 kc above the station frequency) is the correct one.

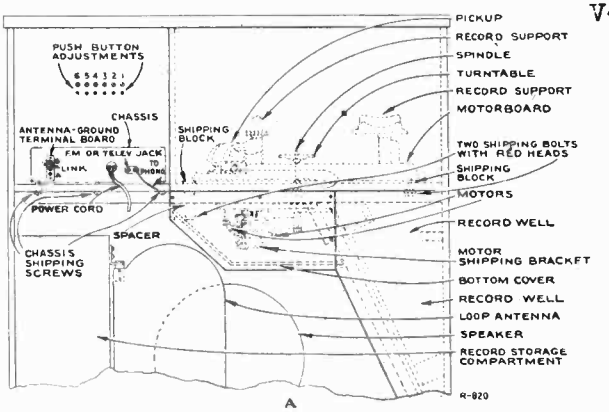
MODELS V-215,V-221,Ch.RC-564; V-219,Ch.RC-564A;V-225,Ch.RC-564B

RCA MFG. CO., INC.

FOR PUSH-BUTTON DATA SEE MODEL V-210

MODEL V-219





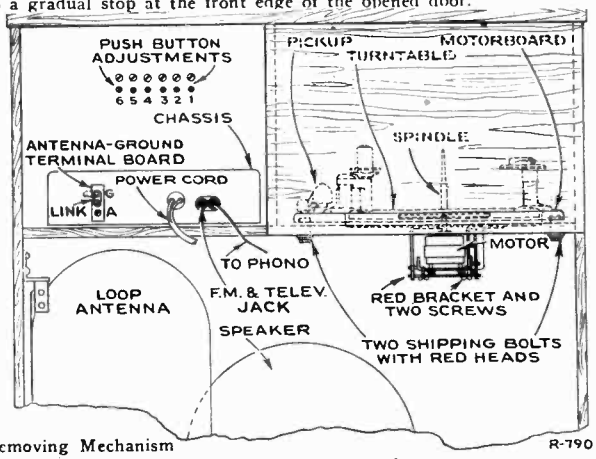
Model V-225

RECORD CHANGER SLIDE MECHANISM

(Models V-215, V-221)

An adjustment is located on each of the rear legs so that the angle of the cabinet may be adjusted to allow the record changer to slide out easily. Adjust so that the changer rolls out of the cabinet to a gradual stop at the front edge of the opened door.

MODELS V-215 V-221



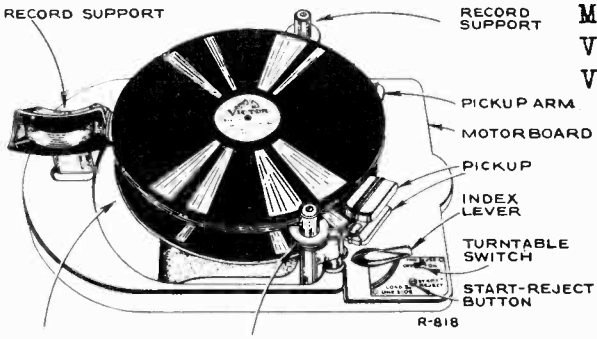
Removing Mechanism

(a) Unplug the power cord and pickup cord.

(b) Reach in behind the motor board and lift up the two metal tabs which act as stops and prevent the record changer from sliding out.

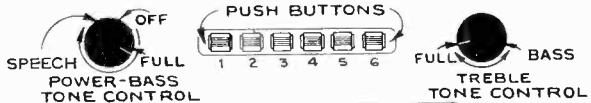
(c) Loosen the cable clamp holding the two cables in place.

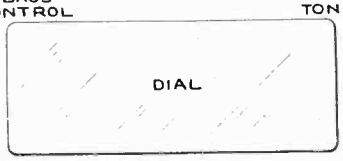
(d) Pull the record changer out of the instrument.



AUTOMATIC PHONOGRAPH RP-151 for V-225

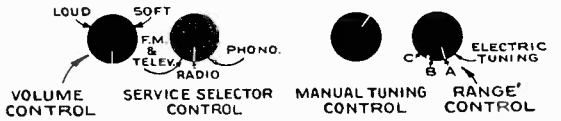
Type Pickups	(2) Crystal
Record Capacity	Fifteen 10-in or Twelve 12-in.
Power consumption turntable drive motor	(14) watts
Power consumption cycle motor	(38) watts

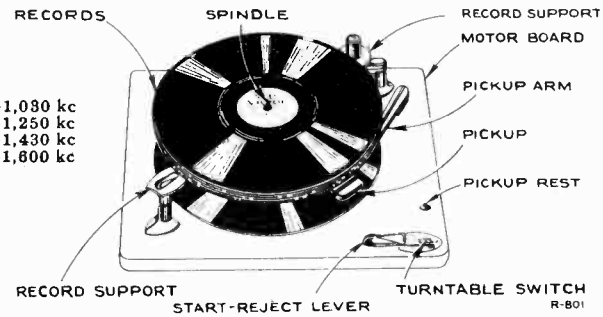




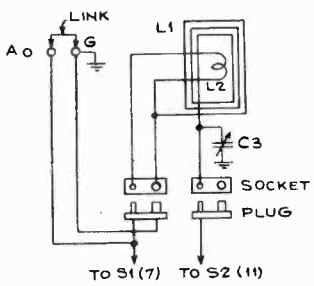
ELECTRIC TUNING

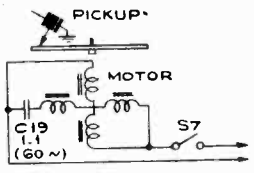
No. of Stations	
1	540-1,030 kc
2	610-1,250 kc
2	740-1,430 kc
1	880-1,600 kc





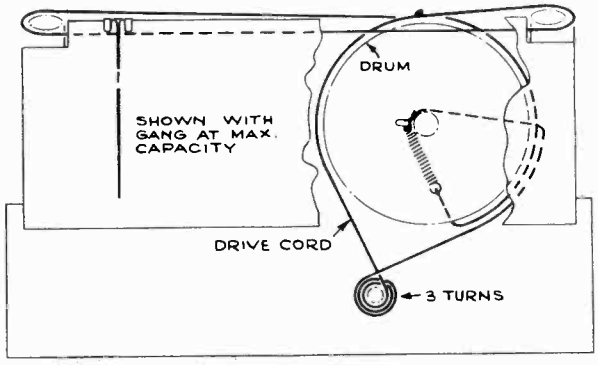
For all Models





LOOP AND PHONO-MOTOR CONN'S V 219 (RC564A)

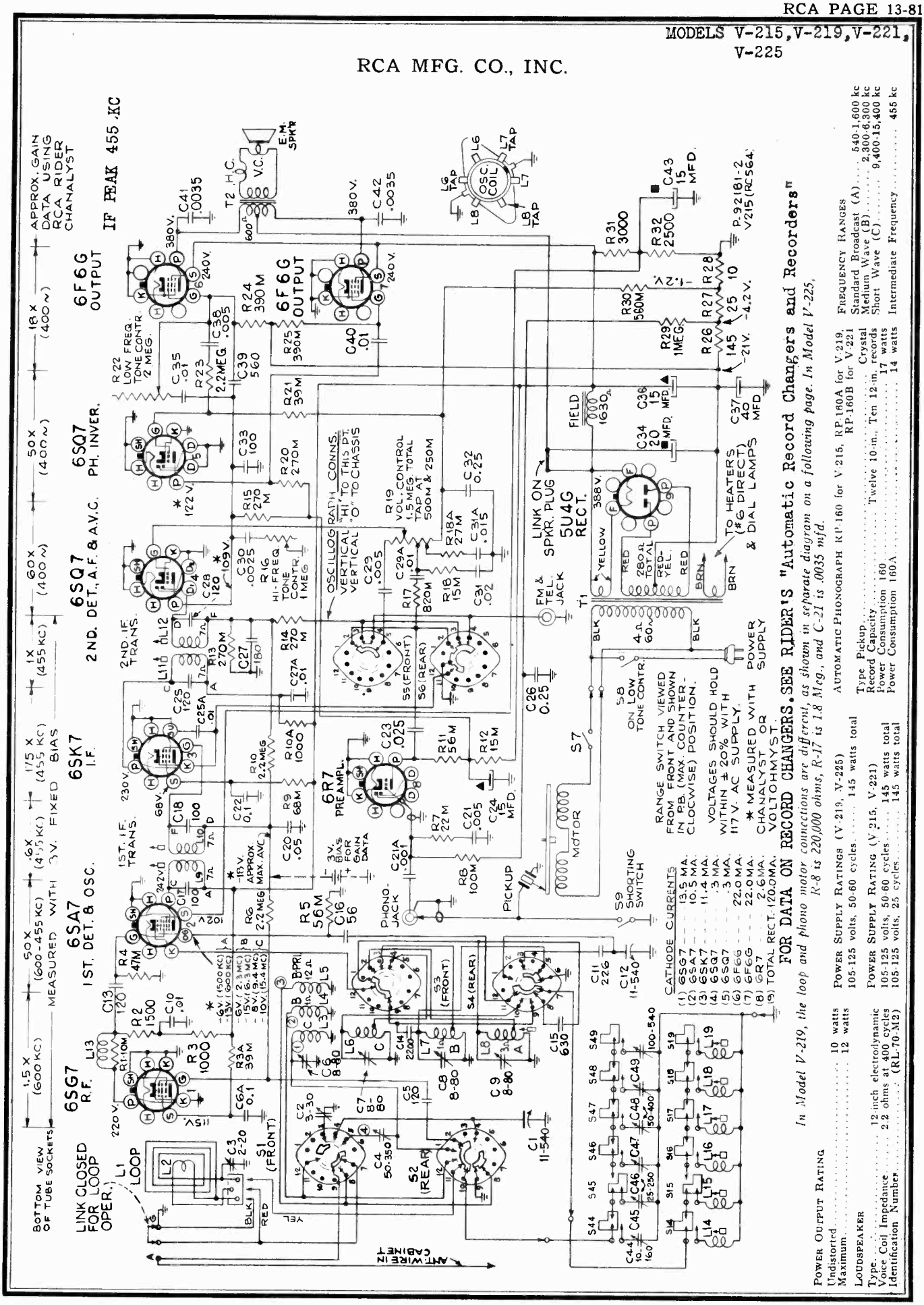
Models V-215, V-219 and V-221



External Antenna.—For best reception on "C" band with an external antenna, peak the trimmer on "C" antenna coil for maximum output on a station in the 31-meter band.

MODELS V-215, V-219, V-221, V-225

RCA MFG. CO., INC.



CATHODE CURRENTS

(1) 6SG7	13.5 MA.
(2) 6SA7	10.5 MA.
(3) 6SK7	11.4 MA.
(4) 6SQ7	.3 MA.
(5) 6SQ7	.3 MA.
(6) 6F6G	22.0 MA.
(7) 6F6G	22.0 MA.
(8) 6R7	2.6 MA.
(9) TOTAL RECT.	120.0 MA.

FOR DATA ON RECORD CHANGERS, SEE RIDER'S "Automatic Record Changers and Recorders"

In Model V-219, the loop and phono motor connections are different, as shown in separate diagram on a following page. In Model V-225, R-8 is 220,000 ohms, R-17 is 1.8 Meg., and C-21 is .0035 mfd.

POWER OUTPUT RATING
Undistorted ..... 10 watts
Maximum ..... 12 watts

LOUDSPEAKER
Type ..... 12 inch electrodynamic
Voice Coil Impedance ..... 2.2 ohms at 400 cycles
Identification Number ..... (RL-70-M2)

POWER SUPPLY RATINGS (V-219, V-225)
105-125 volts, 50-60 cycles ..... 145 watts total

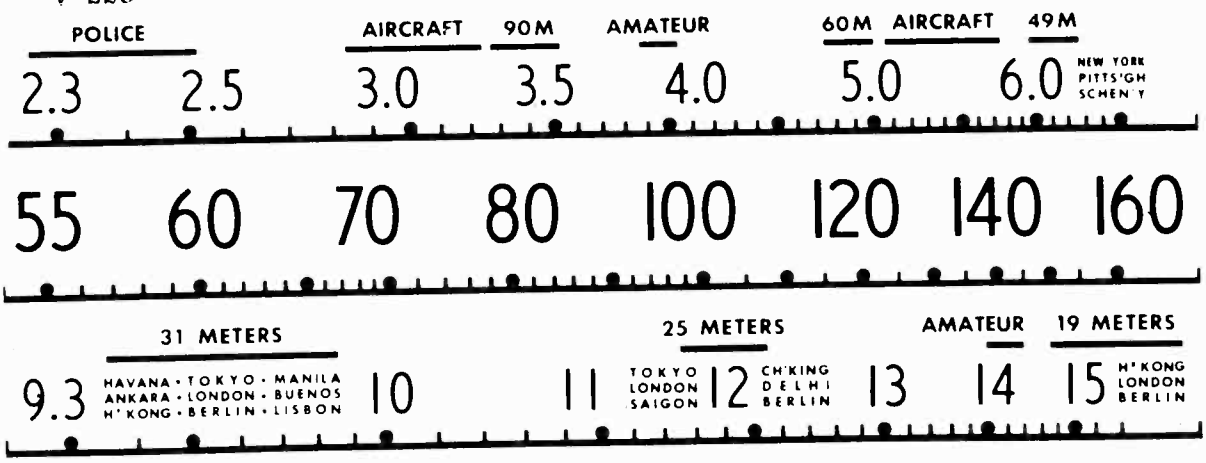
POWER SUPPLY RATING (V-215, V-221)
105-125 volts, 50-60 cycles ..... 145 watts total
105-125 volts, 25 cycles ..... 145 watts total

AUTOMATIC PHONOGRAPH RP-160 for V-215, RP-160A for V-219, RP-160B for V-221
Type Pickup ..... Crystal
Record Capacity ..... Twelve 10-in., Ten 12-in. records
Power Consumption 160 ..... 17 watts
Power Consumption 160A ..... 14 watts

FREQUENCY RANGES
Standard Broadcast (A) ..... 540-1,600 kc
Medium Wave (B) ..... 2,300-6,300 kc
Short Wave (C) ..... 9,400-15,400 kc
Intermediate Frequency ..... 455 kc

MODELS V-215, V-219, V-221, V-225

RCA MFG. CO., INC.



The dial scale drawing shown is a full size reproduction. It can be used as a direct substitute for regular dial scale in alignment procedure.

Cathode-Ray Alignment is the preferable method. Connections for the oscillograph are shown in the schematic diagram.

Output Meter Alignment.—If this method is used, connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—For all alignment operations, connect the low side of the test-oscillator to the receiver chassis, and keep the output as low as possible to avoid a-v-c action.

Electronic Voltmeter.—The electronic voltmeter in the Chanalyst or VoltOhmyst provides an unexcelled output indicator. It should be connected to the AVC bus, and the test-oscillator output adjusted to produce several volts of AVC.

Calibration Scale.—The glass tuning dial may be easily removed from the cabinet and temporarily attached to the chassis for quick reference during alignment. In the event that only the chassis is returned for service, and the cabinet with its tuning dial is left in the customer's home, the full size calibration scale printed in this service note can be used as an accurate and convenient substitute for the regular dial.

Using Tuning Dial.—

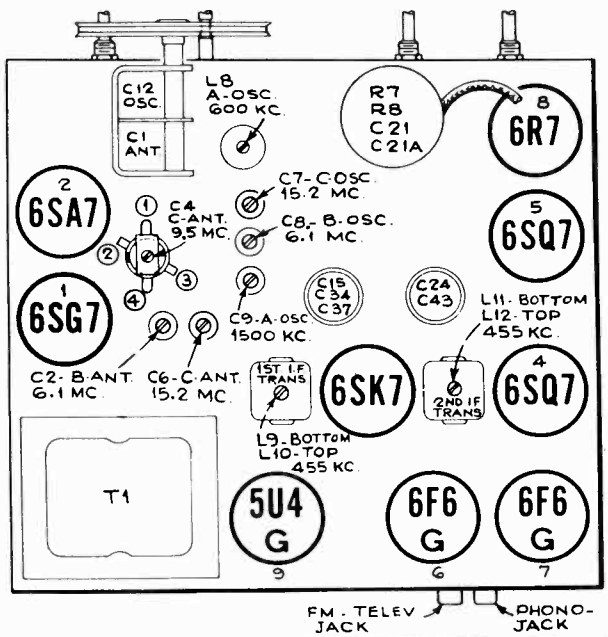
1. Remove the dial glass from the cabinet.
2. With gang at full mesh move the pointer to a point (1/16) inch to the left of the reference mark at the left hand end of the dial backing plate.
3. Place the glass dial under the pointer so that the extreme left scale graduations coincide with the pointer. Use scotch tape to hold the glass dial in place.

Using Dial Scale Printed In This Service Note.—

Follow the procedure above, substituting the dial scale printed in this service note for the glass dial in the cabinet.

Steps	Connect high side of test osc. to—	Tune test osc. to—	Turn radio dial to—	Adjust the following for maximum peak output—
1	I-F grid in series with .01 mfd.	455 kc	"A" Band 540 kc	L12, L11 (2nd I-F Trans.)
2	1st Det. grid in series with .01 mfd.			L10, L9 (1st I-F Trans.)
3	Yellow loop lead in series with 200 mmf. (link closed)	1,500 kc	"A" Band 1,500 kc	C9 (osc.)
4		600 kc	"A" Band 600 kc	L8 (osc.)
5		Repeat steps 3 and 4		
6	Ant. terminal in series with 47 mmf. (link closed)	6.1 mc	"B" Band 6.1 mc	C8 (osc.)* C2 (ant.)
7		15.2 mc	"C" Band 15.2 mc	C7 (osc.)* C6 (ant.)
8		9.5 mc	"C" Band 9.5 mc	C4 (ant.)
9		Repeat steps 7 and 8		
10	Install and connect chassis in cabinet, with link closed. Tune in a radiated oscillator signal at 1,500 kc and peak the "A" band ant. trimmer C3 (on loop). Rock in L8 for peak output at 600 kc.			

* Use minimum capacity peak if two peaks can be obtained. Oscillator tracks 455 kc above signal on all bands.

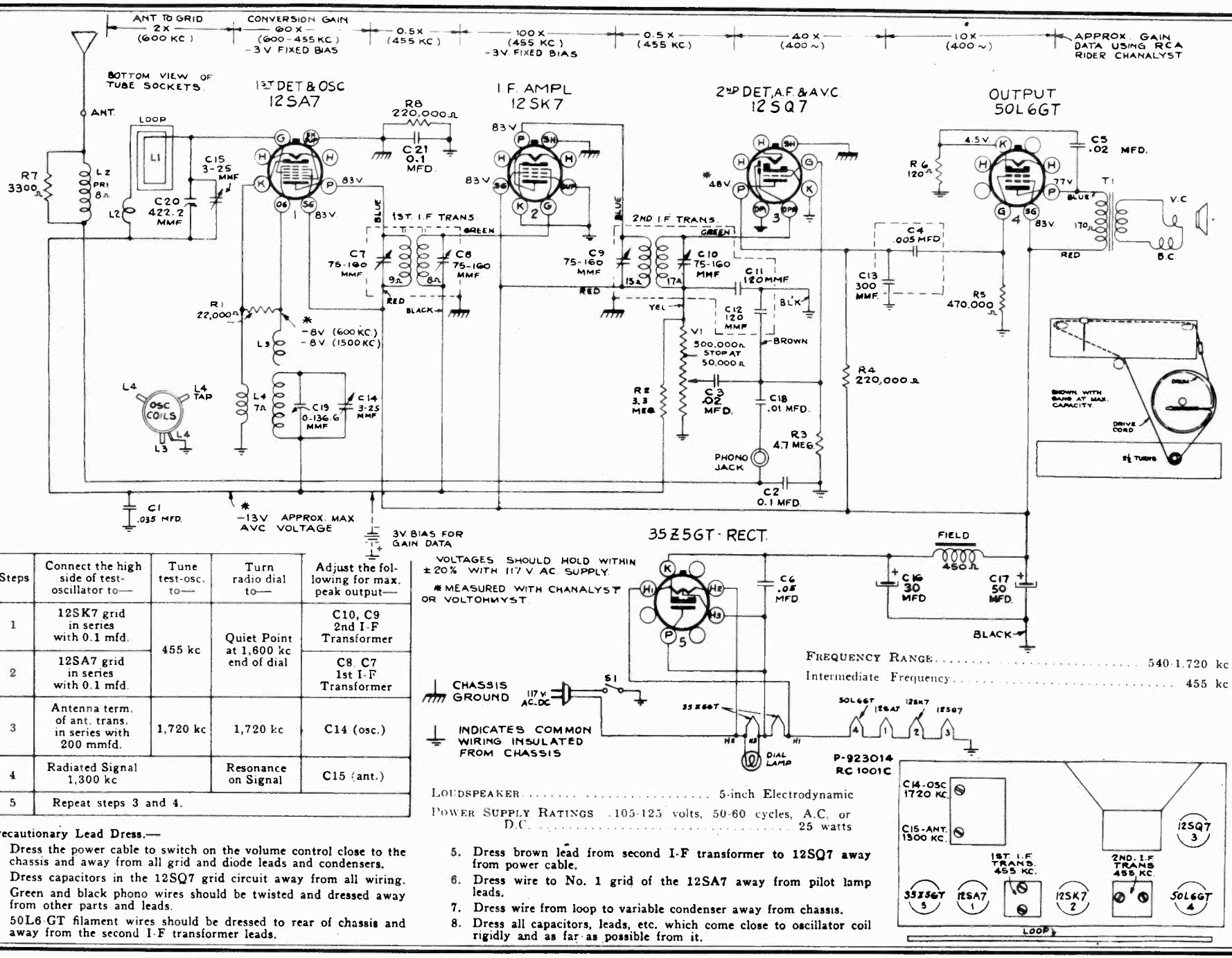


Critical Lead Dress

1. Push button, R.F. and oscillator leads should be separated as much as possible to reduce degeneration on push button reception.
2. R.F. choke in plate circuit of 6SG7 should be dressed towards the back apron.
3. Dress green push button lead under clamp and away from "C" band series capacitor.
4. Dress heater leads away from grids and diodes.
5. Dress phono. cables up and away from all wiring.
6. Dress all excess leads from transformer towards back towards transformer.
7. Keep output plate leads short and dressed close to chassis.
8. Dress green lead from 6SA7 screen to electrolytic down close to chassis.
9. Dress "C" band coil lead from oscillator coil to range switch down towards green lead.
10. Keep yellow loop lead clear of all wiring.
11. Dress ground bus of large electrolytic away from mounting lug.
12. Remove all excess slack from pilot light assembly and dress it close to chassis base away from volume control.
13. Dress oscillator grid capacitor (56 mmfd.) up and away from the screen and plate of 6SA7 socket.
14. A-C leads to "off-on" switch should be kept away from tone control cable to reduce hum.
15. Peaking coil should be dressed away from R-F grid resistor to reduce degeneration in R-F stage.
16. Dress oscillator push button lead in weld clamp on front apron away from 220 mmf. series condenser.
17. Keep all leads away from Phono.-FM jack to prevent audio oscillation and hum. Dress underneath the shield provided.

RCA MFG. CO., INC.

MODELS 516, 517
Chassis RC-1001C



Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. of ant. trans. in series with 200 mmfd.	1,720 kc	1,720 kc	C14 (osc.)
4	Radiated Signal 1,300 kc		Resonance on Signal	C15 (ant.)
5	Repeat steps 3 and 4.			

Precautionary Lead Dress.—

1. Dress the power cable to switch on the volume control close to the chassis and away from all grid and diode leads and condensers.
2. Dress capacitors in the 12SQ7 grid circuit away from all wiring.
3. Green and black phono wires should be twisted and dressed away from other parts and leads.
4. 50L6-GT filament wires should be dressed to rear of chassis and away from the second I-F transformer leads.
5. Dress brown lead from second I-F transformer to 12SQ7 away from power cable.
6. Dress wire to No. 1 grid of the 12SA7 away from pilot lamp leads.
7. Dress wire from loop to variable condenser away from chassis.
8. Dress all capacitors, leads, etc. which come close to oscillator coil rigidly and as far as possible from it.

FREQUENCY RANGE ..... 540-1,720 kc
Intermediate Frequency ..... 455 kc

LOUDSPEAKER ..... 5-inch Electrodynamic
POWER SUPPLY RATINGS ..... 105-125 volts, 50-60 cycles, A.C. or D.C. ..... 25 watts

MODELS 526,527
Chassis RC-1001E

RCA MFG. CO., INC.

LOUDSPEAKER (RL-86-A3)

Type ..... 5-inch electro dynamic
V.C. Impedance ..... 4.0 ohms at 400 cycles

POWER SUPPLY RATING

105-125 volts, AC 50 or 60 cycles, or DC ..... 25 watts

PRECAUTIONARY LEAD DRESS.—

1. Dress the power cable to switch on the volume control close to the chassis and away from all grid and diode leads and condensers.
2. Dress capacitors in the 12SQ7 grid circuit away from all wiring.
3. Green and black phono wires should be twisted and dressed away from other parts and leads.
4. 50L6-GT filament wires should be dressed to rear of chassis and away from the second I-F transformer leads.
5. Dress brown lead from second I-F transformer to 12SQ7 away from power cable.
6. Dress wire to No. 1 grid of the 12SA7 away from pilot lamp leads.
7. Dress wire from loop to variable condenser away from chassis.
8. Dress all capacitors, leads, etc. which come close to oscillator coil rigidly and as far as possible from it.

FREQUENCY RANGE

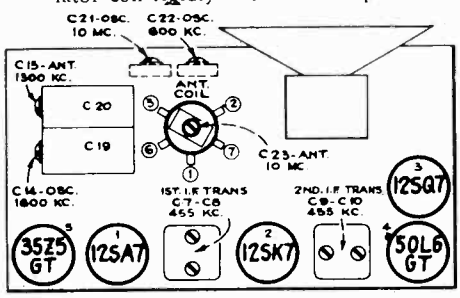
Broadcast Band ..... 535-1,720 kc
Short Wave Band ..... 8.9 mc to 12 mc.

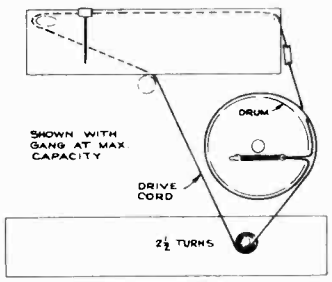
INTERMEDIATE FREQUENCY ..... 455 kc

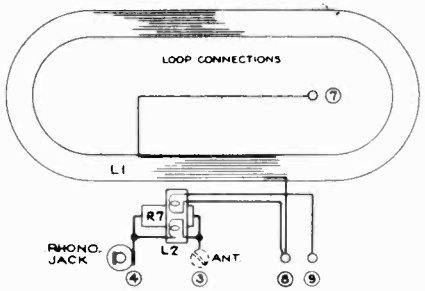
Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output—
1	12SK7 grid in series with 0.1 mfd.	455 kc	Quiet Point at 1,600 kc end of dial	C10, C9 2nd I-F Transformer
2	12SA7 grid in series with 0.1 mfd.			C8, C7 1st I-F Transformer
3	Antenna term. in series with 47 mmf.	10 mc*	10 mc	C21 (osc.)** C23 (ant.)
4	Antenna term. in series with 200 mmfd.	1,600 kc	1,600 kc	C14 (osc.)
5	Radiation Loop	1,300 kc	Resonance on Signal	C15 (ant.)
6	Radiation Loop	600 kc	600 kc	C22 Osc. Rock in

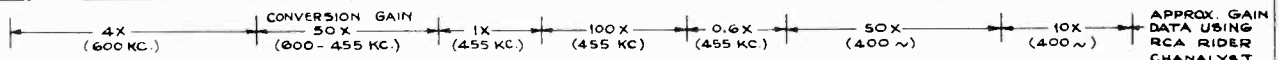
* It is recommended that this step be repeated using a received station of known frequency.

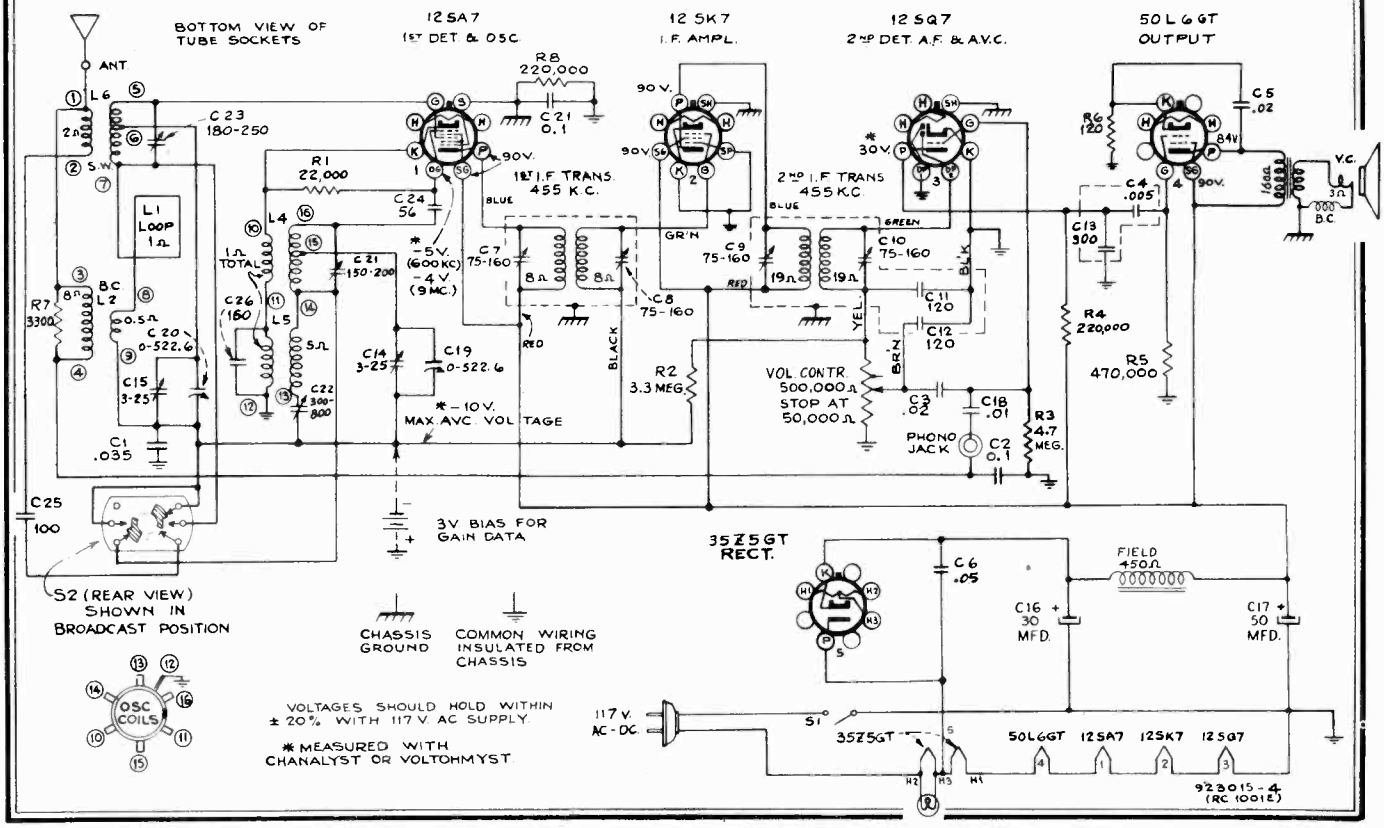
** Use minimum capacity if two peaks can be obtained.





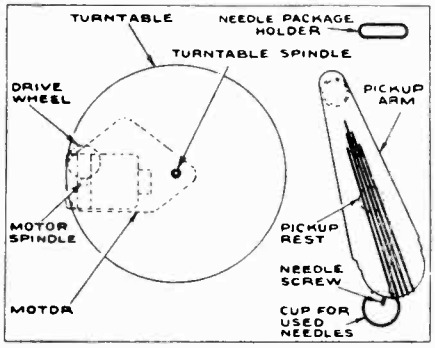






RCA MFG. CO., INC.

MODEL R-560-P
Chassis RC-517F



POWER OUTPUT

Undistorted	0.9 watts
Maximum	1.2 watts

Output Meter Alignment.—Connect the meter across the voice coil, and turn the receiver volume control to maximum.

Test-Oscillator.—Connect the low side of the test-oscillator to the receiver chassis, through a .01 mfd. capacitor, and keep the output as low as possible.

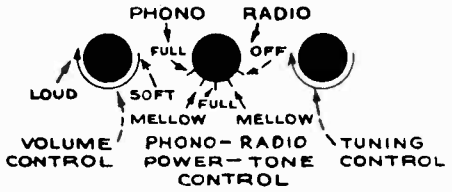
Phonograph Motor Service Data:—

The phonograph motor is of the self starting synchronous type and operates the turntable through friction drive between the motor drive spindle and the rubber tired idler on the rim of the turntable.

The motor should be lubricated once or twice a year by placing a few drops of S. A. E. 20 (or equivalent) on the turntable spindle and saturating the oil retaining felt pads on the motor shaft with S. A. E. 10 oil. **Caution—The motor drive spindle and the rubber tire on the idler must be kept clean and entirely free from oil and grease at all times.**

Power Supply.—Although this model employs an ac-dc chassis, it is not suitable for use on d.c., as this would damage the motor.

FREQUENCY RANGE	540-1,650 kc
INTERMEDIATE FREQUENCY	455 kc



PILOT LAMP	1—Mazda No. 51, 6-8 volts, 0.2 amps.

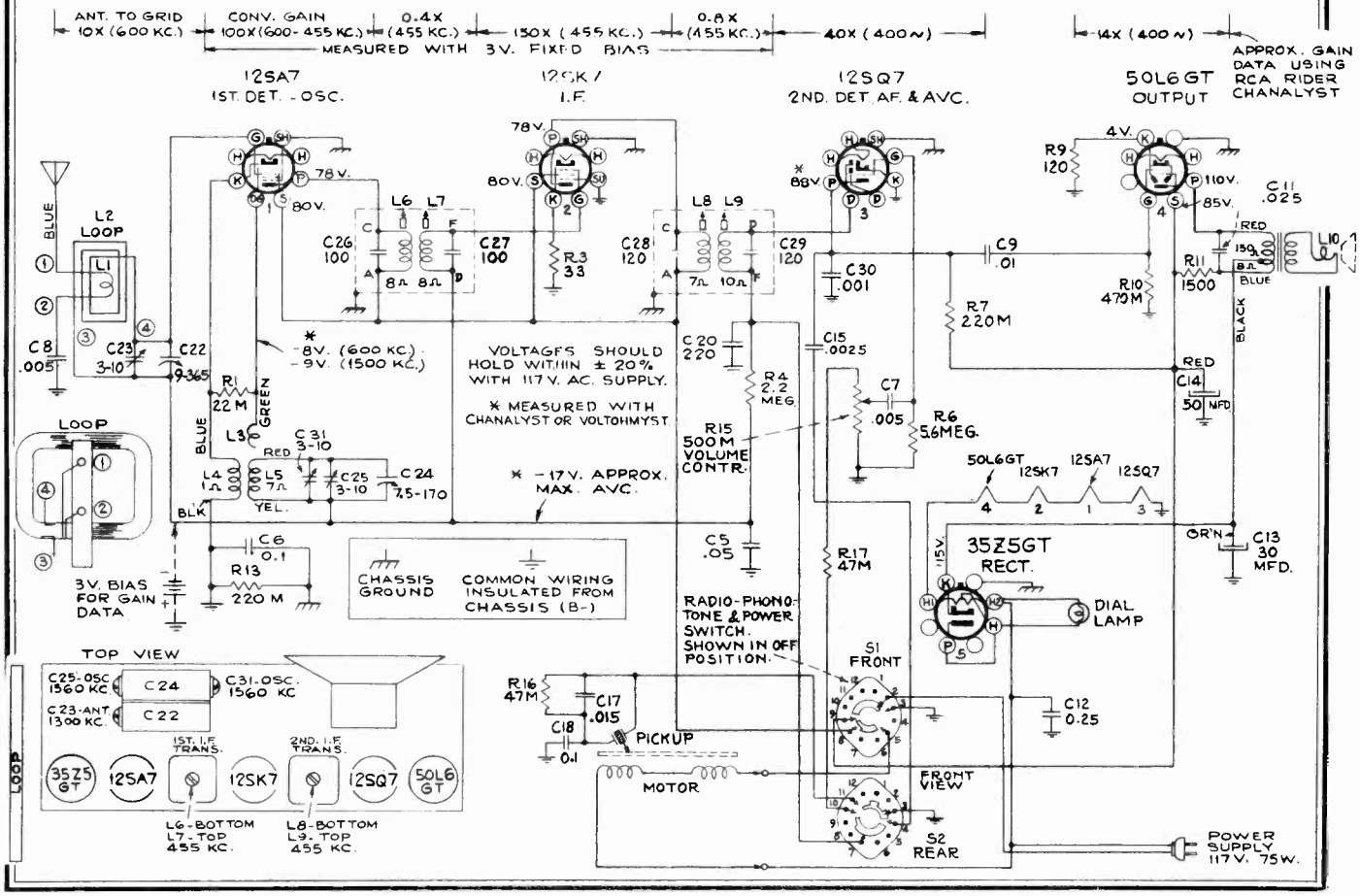
POWER SUPPLY RATING

105-125 volts, 50 cycles	55 watts
105-125 volts, 60 cycles	55 watts

LOUDSPEAKER (RL-81B-4)

Type	5-inch P.M.
V.C. Impedance	4 ohms at 400 cycles

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F transformer
3	Ant. terminal in series with 200 mmfd.	1,650 kc	Gang at minimum	C25 (osc.) C31 (osc.)
4	Radiated signal 1300 kc		Signal Frequency	C23 (ant.)
5	Repeat steps 3 and 4.			



MODEL R-566-P

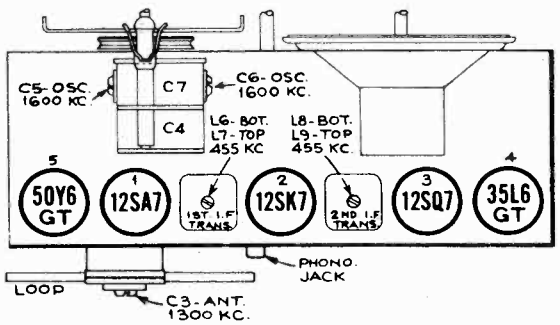
RCA MFG. CO., INC.

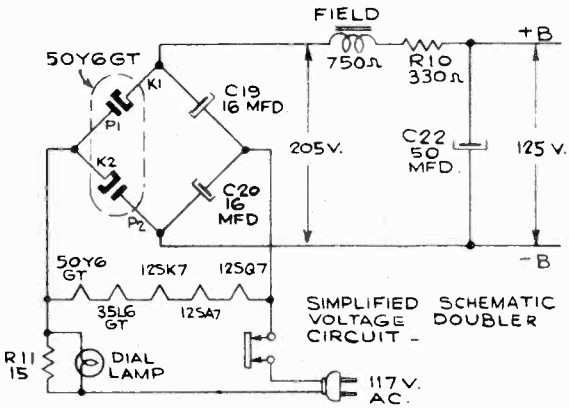
Frequency Range ..... 540-1,600 kc
Intermediate Frequency ..... 455 kc

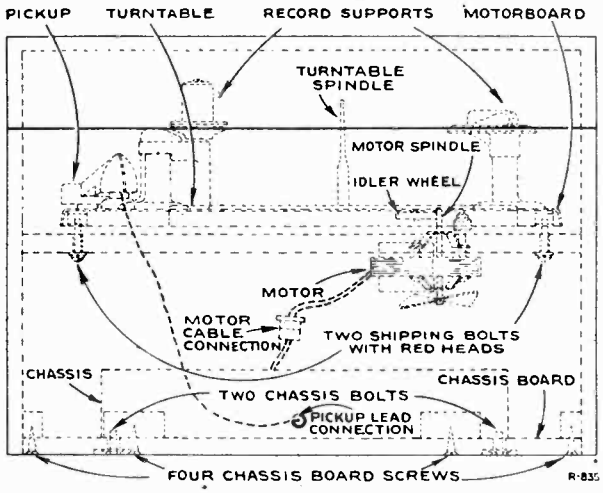
POWER OUTPUT
Undistorted ..... 1.6 watts
Maximum ..... 3 watts
Pilot Lamp ..... (1) Mazda No. 51, 6.3 volts, 0.20 amps.

POWER SUPPLY RATING
105-125 Volts, 60 Cycles ..... 65 watts

Steps	Connect the high side of test-oscillator to—	Tune test-osc. to—	Turn radio dial to—	Adjust the following for max. peak output
1	I-F grid, in series with .01 mfd.	455 kc	Quiet point 1,600 kc end of dial	L8 and L9 2nd I-F transformer
2	1st Det. grid in series with .01 mfd.			L6 and L7 1st I-F transformer
3	Ant. terminal in series with 200 mmfd.	1,600 kc	Gang at minimum	C5 (osc.) C6 (osc.)
4	Radiated signal 1,300 kc		Signal Frequency	C3 (ant.)
5	Repeat steps 3 and 4.			





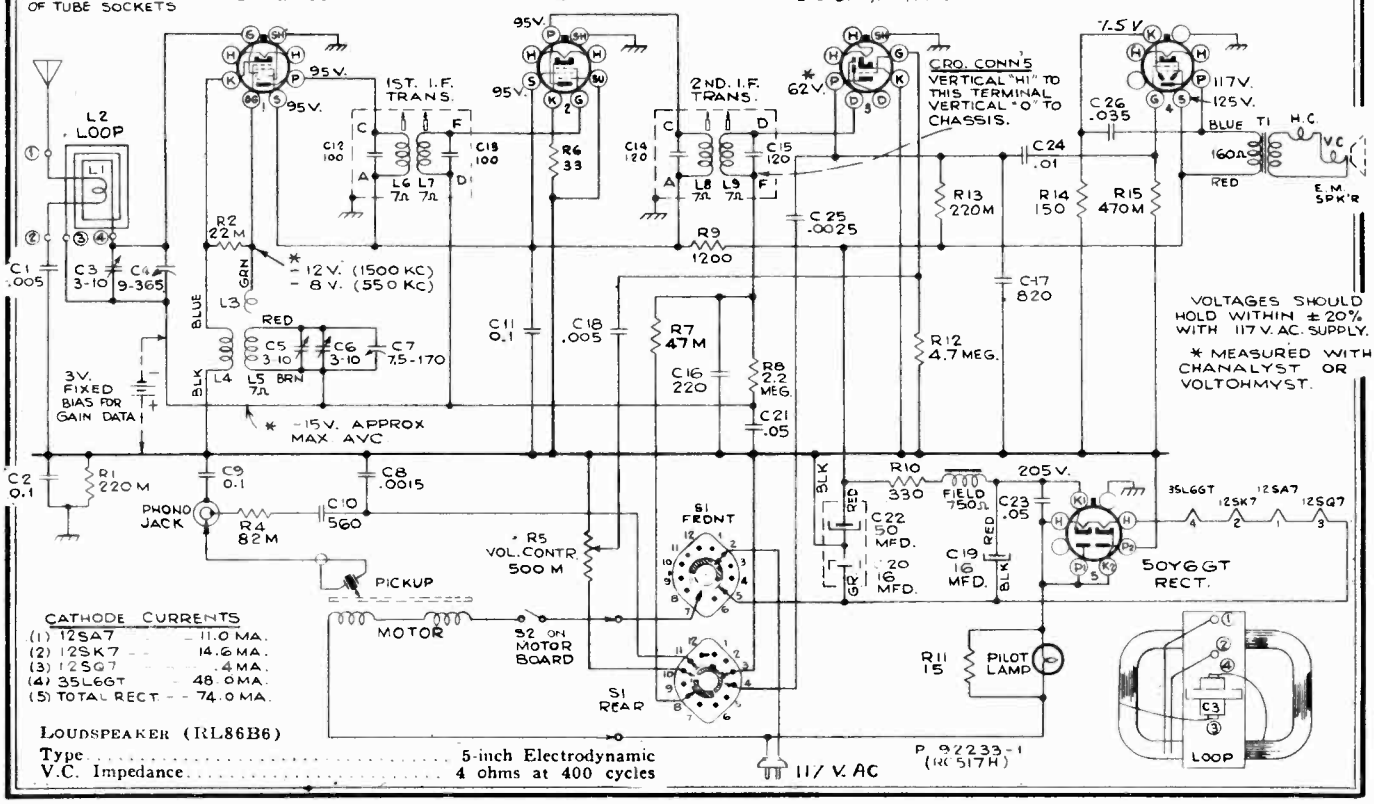


12X (600KC)	50X (600-455KC)	0.8X (455KC)	200X (455 KC)	1X (455KC)	40X (400 ~)	12X (400 ~)	APPROX. GAIN DATA USING RCA RIDER CHANALYST

MEASURED WITH 3V. FIXED BIAS

BOTTOM VIEW OF TUBE SOCKETS

12SA7 — 1ST. DET. & OSC.
12SK7 — I.F.
12SQ7 — 2ND. DET., AF., AVC.
35L6GT — OUTPUT



CATHODE CURRENTS

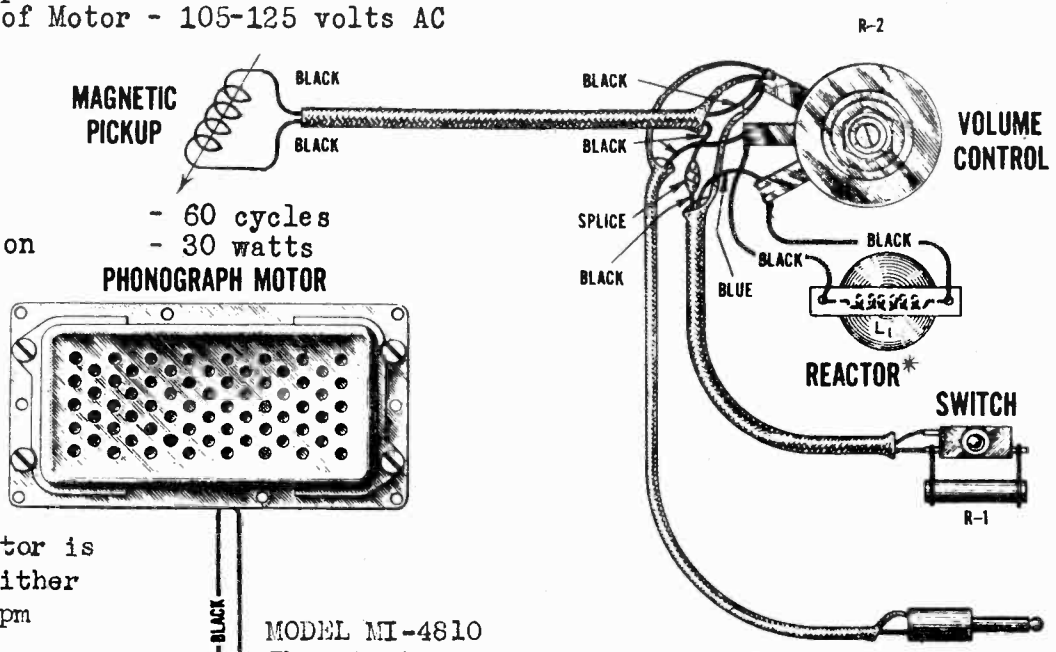
(1) 12SA7	11.0 MA.
(2) 12SK7	14.6 MA.
(3) 12SQ7	.4 MA.
(4) 35L6GT	48.0 MA.
(5) TOTAL RECT.	74.0 MA.

LOUDSPEAKER (RL86B6)
Type ..... 5-inch Electrodynamic
V.C. Impedance ..... 4 ohms at 400 cycles

RCA MFG. CO., INC.

MODEL MI-4802
MODEL MI-4810

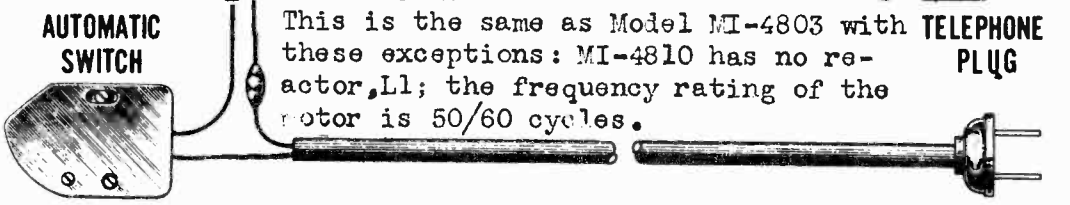
Model Mi-4803 Type Pt-16
Pickup - Low Impedance
Voltage Rating of Motor - 105-125 volts AC



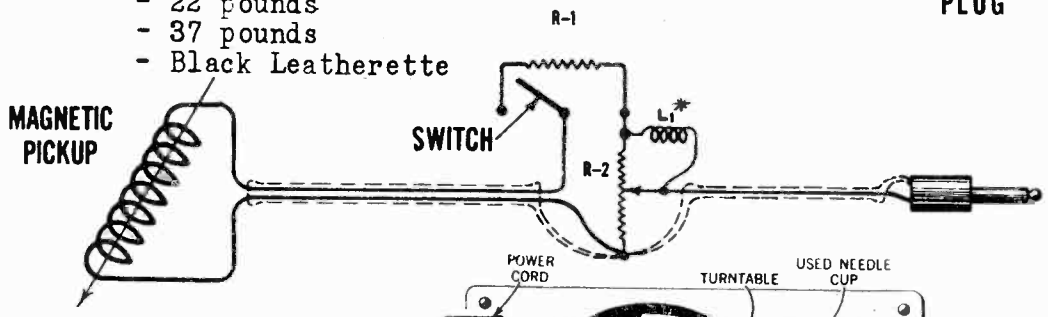
Frequency - 60 cycles
Power Consumption - 30 watts

Synchronous motor is adjusted for either 33 1/3 or 78 rpm

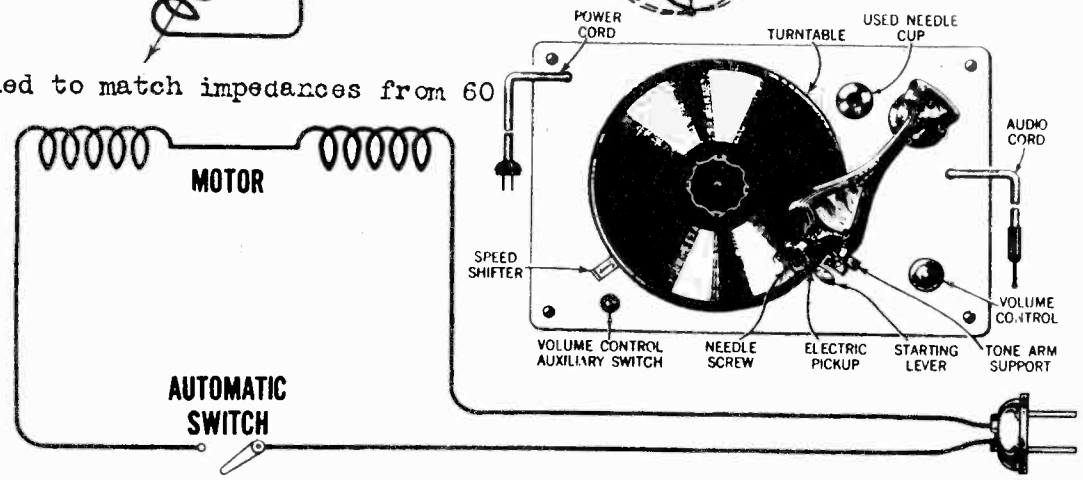
MODEL MI-4810
This is the same as Model MI-4803 with these exceptions: MI-4810 has no reactor, L1; the frequency rating of the motor is 50/60 cycles.



Dimensions: - 18" x 15" x 9" high
Weight - 22 pounds
Shipping Weight - 37 pounds
Finish - Black Leatherette



Pickup designed to match impedances from 60 to 500 ohms.

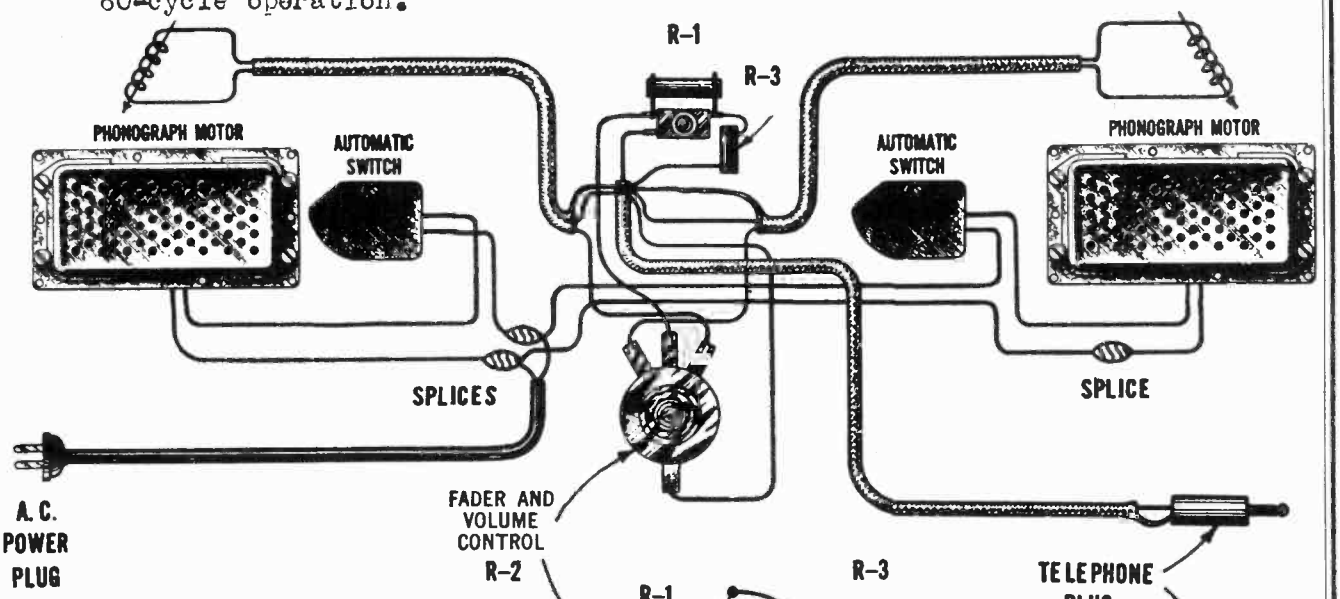


MODEL MI-4804
MODEL MI-4811

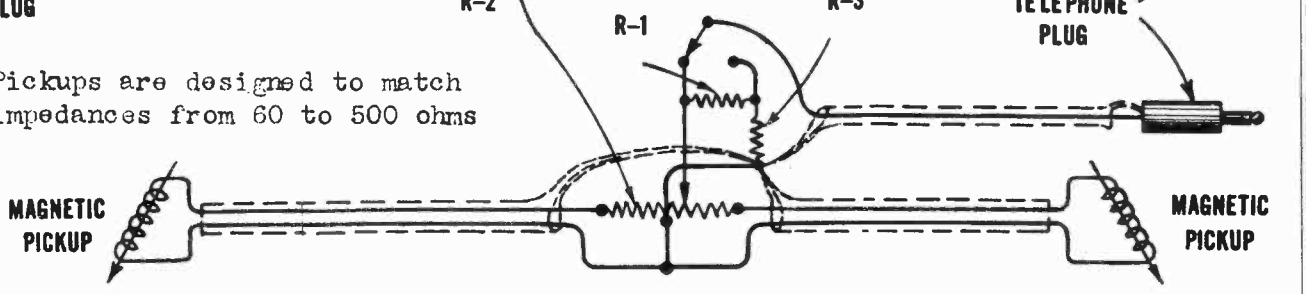
RCA MFG. CO., INC.

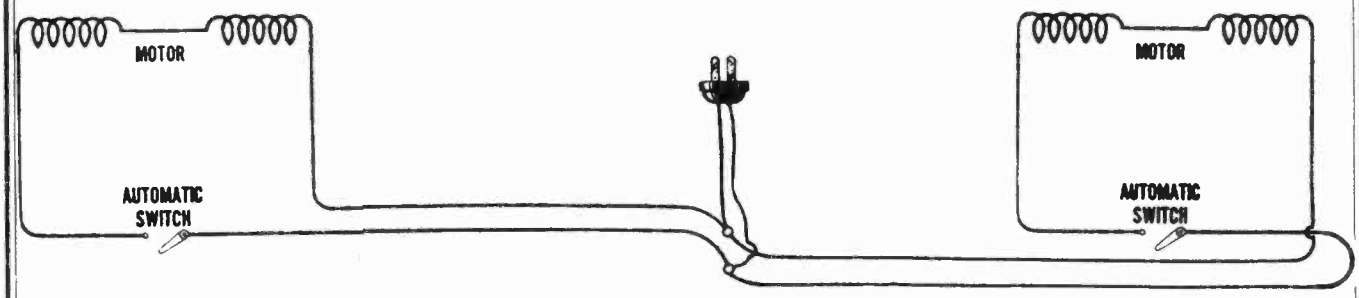
MODEL MI-4804 MODEL MI-4811
Type- PT-17

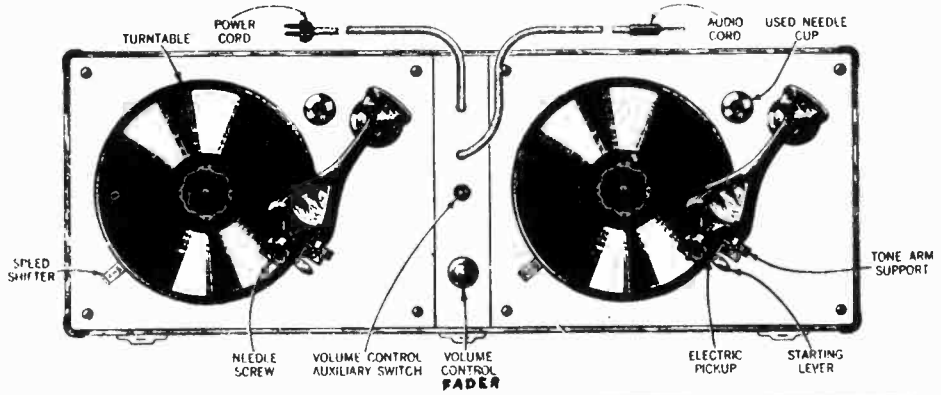
These two Double Turntable Phonographs are the same except that Model MI-4804 is for 60-cycle operation only and Model MI-4811 is for 50 or 60-cycle operation.



Pickups are designed to match impedances from 60 to 500 ohms







MODELS MI-4816, MI-4817, MI-4818

RCA MFG. CO., INC.

The MI-4816, 4818 equipments are designed for regular Public Address use, while the MI-4817 is designed for Sound Truck (6 volt) operation. Standard, 78 rpm, records may be played on the MI-4816 and MI-4818. The MI-4817 has provision for changing the speed of the turntable to enable both 78 rpm and 33-1/3 rpm records to be played. A low-impedance (125 ohm) magnetic pickup is used, designed primarily to use chromium (RCA orange or green shank) needles. The output of the pickup is fed through a volume control into a standard phone plug, or, for permanent connection, the plug may be removed, and the wires soldered directly to the amplifier input. *CAUTION: Connect only to the type power supply specified on name plate.*

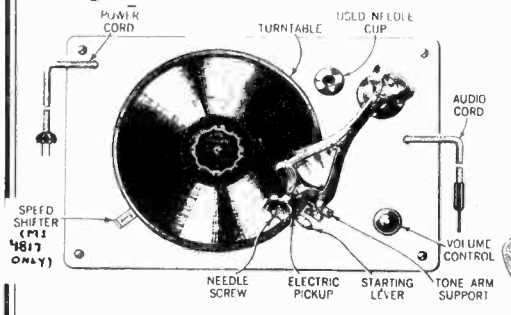
POWER RATINGS

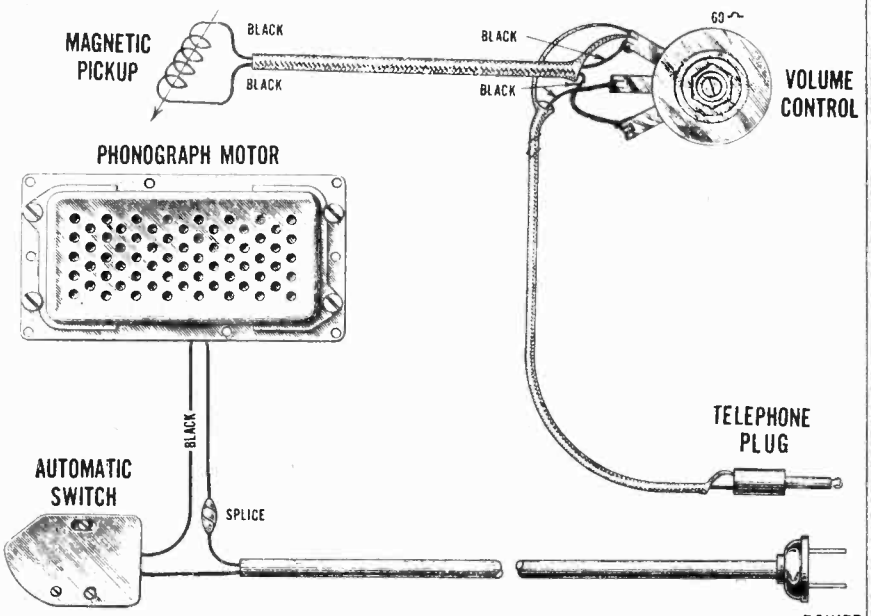
MI-4816	105-125 volts, 60 cycles	30 watts
MI-4817	6 volts, d.c.	35 watts
MI-4818	105-125 volts, 50 cycles	30 watts
Pickup Impedance		125 ohms
Turntable Speeds	MI-4816, 4818	78 rpm
	MI-4817	78 rpm and 33-1/3 rpm
Dimensions (lid closed)		20" x 15" x 9" high
Weight (Net)	22 lbs.	Weight (Shipping) 37 lbs.
Finish		Gray Wrinkle

Operation

To operate turntable - connect to proper power supply, place phono. plug into amplifier input, place record on turntable, set the speed selecting mechanism to the proper position to correspond to the type record used (MI-4817 only), then pull starting lever toward the front of the case, place pickup on record, and regulate volume as desired. To stop turntable, lift pickup arm, place it on the pickup rest, and the automatic switch turns the motor off. When transporting equipment, be sure the pickup arm is on the pickup arm rest.

For adjustments of magnetic pickup, see data on Model MI-12700.





REPLACEMENT PARTS

DESCRIPTION	STOCK NO.
Pickup and Arm Assemblies	
ARM - Pickup arm only	9811
BACK - Pickup back	11548
COIL - Pickup coil	12541
MECHANISM - Comprising an armature and spring assembly, one armature clamp and one damper	14115
SCREW - Needle screw	12539
Motor Assemblies (MI-4816 & 4818 only)	
MOTOR - 60 cycle motor for MI-4816	8989
MOTOR - 50 cycle motor for MI-4818	8990
TURNTABLE	11696
DAMPER - Turntable rubber damper and damper plate	11704
MOTOR MOUNTING - Comprising 2 cup washers, 4 springs and 1 "C" washer	3398
STUDS - 3 motor studs	3817
Motor Assemblies (MI-4817 only)	
ARMATURE - Motor armature	26188
BRUSH - Set of 2 brushes for motor	23515

DESCRIPTION	STOCK NO.
DIAL - Speed indicator dial	23512
ESCUTCHEON - Speed shift lever escutcheon	23514
GOVERNOR - Motor governor complete	26189
LEVER - Speed shift lever	23513
MOTOR - 6 volt d-c motor	27684
POINTER - Speed indicator pointer	26187
TURNTABLE	27685
Motor Board Assemblies	
BRAKE - Automatic brake complete with cover	9809
BOX - Needle box	4391
KNOB - Volume control knob	4085
VOLUME CONTROL	12392
REST - Pickup rest	11551
SCALE - Volume control knob scale	3986
MOTOR BOARD MOUNTING - Comprising 1 bolt, 1 top spring, 1 bottom spring, 2 cup washers, 1 "C" washer and 1 nut (MI-4816-4818 only)	32069
CABLE - Power cord and plug	13524

MODELS MI-4829, MI-4829A

RCA MFG. CO., INC.

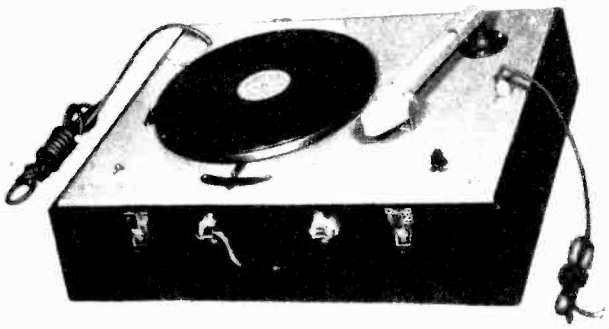


Figure 1—MI-4829

Height (with cover)	8½ inches
Length	21⅜ inches
Depth	18 inches
Weight—net	32 pounds

General Description

The MI-4829 and MI-4829A are portable turntables for playing of laterally cut records up to 16 inches in diameter, at either 78 or 33⅓ r.p.m. They use a governor type motor which is adjustable over a wide range of speed, and operate on 105/125 volts 50 to 60 cycles. An output jack and shielded cable is provided for connection to an external amplifier. The MI-4829 is equipped with a high impedance crystal pickup. The MI-4829A uses a low impedance magnetic pickup for connection to 250-ohm amplifier inputs. Both have an integral volume control for controlling the input level to an external amplifier.

MI	PICKUP	R-1	R-2	C-1
4829	Crystal	500,000	100,000	0.0025
4829A	Magnetic	600	—	—

Operation

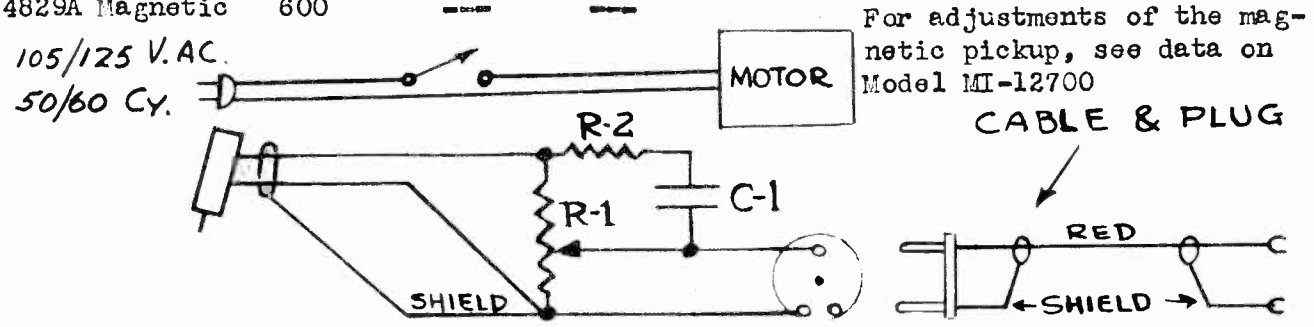
1. Plug pickup cable into motor board receptacle.
2. Connect shield lead to ground on the proper amplifier, and red lead to "high" side of amplifier input. (To sleeve and tip of telephone plug respectively, if used.)
3. Set speed selecting mechanism to the proper position, corresponding to type of record used.
4. If 16-inch records are to be played, first place special 16-inch flocked disc on the turntable.
5. When carrying records in cover, place 16-inch flocked disc between records and clamping disc to prevent records from warping.

Speed regulation:—Check speed in the 78 r.p.m. position by placing a piece of paper between a record and the turntable with the paper protruding beyond the edge of the record, and counting the number of revolutions of the turntable per minute while playing the record.

Should it be necessary to reset the pointer such that 78 r.p.m. can be obtained near the center of the "F-S" scale, remove motorboard from cabinet and take off the turntable first removing the "C" washer from the turntable spindle. Set pointer off scale approximately ½ inch beyond the "F" mark. Loosen slightly the pointer arm screw and nut that clamps it to the slotted cam shaft. Then with a screw driver, adjust the cam such that the minimum radius of the cam is against the governor adjustment ball bearing. Tighten the pointer arm screw and nut in this position.

No separate adjustment is provided for 33⅓ r.p.m. since with the speed properly adjusted for 78 r.p.m. records, the speed for long playing records will be 33⅓ r.p.m. when the control lever is set at 33⅓.

The crystal pickup:—If failure occurs, no attempt should be made to repair the unit, but a new replacement crystal unit should be installed.

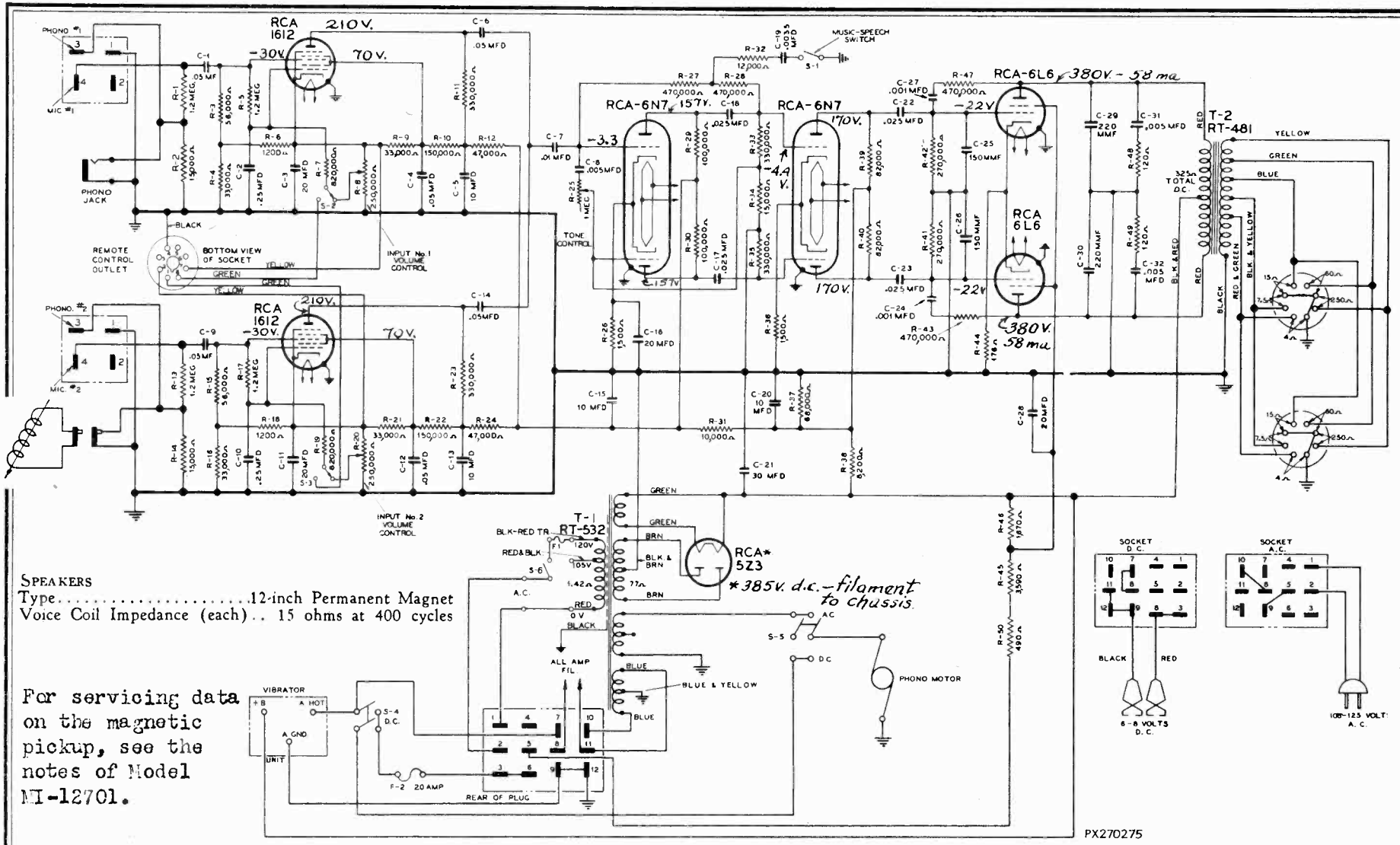


DESCRIPTION	STOCK No.
MOTORBOARD ASSEMBLIES MI-4829 AND MI-4829A	
Capacitor—.0025 mfd. (MI-4829 only)	34459
Connector—3-prong female for input cable	36183
Control—Volume control (MI-4829 only)	36182
Control—Volume control (MI-4829A only)	37047
Cord—A.C. power cord	32098
Disc—Disc for 16-inch records	371'6
Escutcheon—Speed change escutcheon	2351-1
Escutcheon—Speed indicator escutcheon	23512
Knob—Volume control knob	7960
Motor—Turntable drive motor	36180
Pointer—Speed change pointer	23513
Pointer—Speed indicator pointer	26187
Resistor—100,000 ohms—½ watt (MI-4829 only)	3252
Switch—Motor switch	28322
Turntable—Turntable complete	36181
CARRYING CASE	
Case—Carrying case complete	36184
Catch—Carrying case catch	36119
Foot—Felt foot for carrying case	36118
Handle—Carrying case handle	36199
Hinge—Carrying case hinge complete	36200

DESCRIPTION	STOCK No.
PICKUP ARM ASSEMBLY MI-4829	
Base—Pickup arm base only	36139
Cable—Pickup cable	36141
Nut—Nut and washer for pickup arm base	33122
Pickup Unit Cartridge	36427
Ring—Retaining spring for pickup arm shaft	34311
Screw—Needle screw only	33529
Shaft—Pivot arm and shaft	36140
Shell—Tone arm shell	36137
Spring—Pickup arm spring	36138
PICKUP ARM ASSEMBLY MI-4829A	
Arm—Pickup arm with pivot arm and pickup spacer—less pickup unit, collar, pivot shaft and bearing, and base assembly	33577
Base—Base assembly with bottom bearing	33578
Collar—Pivot shaft collar	34679
Pickup—Pickup unit complete	32357
Shaft—Pivot shaft and bearing	33579

RCA MFG. CO., INC.

MODEL MI-12754
P-A Equipment



PX270275

For servicing data on the magnetic pickup, see the notes of Model MI-12701.

SPEAKERS
Type.....12-inch Permanent Magnet
Voice Coil Impedance (each).. 15 ohms at 400 cycles

Voltage Ratings	105/125 volts, 50/60 cycles
	6-8 volts d.c.
Power Consumption, A.C.	195 watts
D.C.	120 watts
Fuses, A.C.	3 amperes
D.C.	20 amperes
Input Impedance	Microphone, 40,000 ohms
	Phonograph, 15,000 ohms
Load Impedances	4; 7.5; 15; 60; 250 ohms
Frequency Response	± 2 db 70 to 10,000 cycles

POWER OUTPUT

8% Harmonic Distortion (A.C. Operation)	25 watts
Maximum Output (A.C. Operation)	30 watts
8% Harmonic Distortion (D.C. Operation)	20 watts
Output Level (.006 watt Zero Reference Level)	+ 35 db
Input Level-Max. permissible (.006 watt Zero Reference)	- 40 db
Min. for normal power output	- 80 db
Hum Level (max.)	- 10 db
Average Over-all Gain	Microphone Input, 116 db
	Phonograph Input, 77 db

MODEL MI-12754

RCA MFG. CO., INC.

General Description

The MI-12754 Sound Truck Equipment consists of a combined 25 watt amplifier-turntable assembly, two permanent magnet speakers and an MI-6228A microphone. This equipment may be used on a 6-volt D-C supply, or 110-volt A-C supply by merely changing the power supply cord and associated plugs. The A-C and D-C cords are supplied with the equipment. This equipment may be used for permanent or mobile installations.

Input.—There are two input channels with separate volume controls. Each channel has provision for high impedance phonograph or microphone input, and both channels may be used simultaneously.

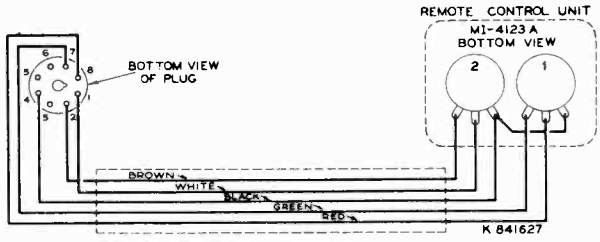
Channel No. 1 has provision for either microphone or phonograph input. Microphone input to this channel is through the receptacle at the rear of cabinet marked "MIC. 1." Phono. input is either through the jack at the rear of the cabinet marked "PHONO." or through the receptacle marked "MIC. 1." Proper connections to the input plug can be determined from the schematic diagram. Both microphone and phono. pickup may be used simultaneously on this channel if provision is made for controlling the volume of the pickup separately.

The phono. pickup located on the cabinet is permanently connected to channel No. 2. If it is desired to use channel No. 2 for a microphone, then the microphone should be connected to the receptacle marked "MIC. 2," located at the rear of the cabinet. Both microphone and phono. cannot be used simultaneously, due to a possible difference in sound level, because no provision is made for controlling the volume of either one separately.

If additional phono. pickup is desired, for a-c operation the RCA R-93 or MI-4816 portable turntable phono. pickup may be used. For 6-volt d-c operation, the MI-4817 portable turntable may be used. For additional microphones, an RCA MI-4036 or an additional MI-6228A microphone may be used.

Due to the fact that the signal level of each channel is controlled electrically and not in the signal circuit, remote control is possible at any point removed from the amplifier at a distance not exceeding 2,000 ft. The remote control unit is available as a separate unit and is connected to the amplifier by a cable and plug which fits into a socket provided on the rear of the main amplifier case. The remote mixing controls available are: **MI-4123** which comes without cord or plug for use where the amplifier and wiring are permanently installed. **MI-4123A** which is identical to the MI-4123 except that a 30 ft. five conductor cable with plug attached, is included in this assembly. A 50 ft. extension cable with male and female plugs is stocked as **MI-4685. MI-45,** five conductor cable, is recommended for connecting the remote control to the amplifier. No. 18 R.C. wire may be used.

Two output receptacles are provided at the rear of the amplifier case. Output impedances of 4, 7½, 15, 60 and 250 ohms are available.



Remote Control Wiring

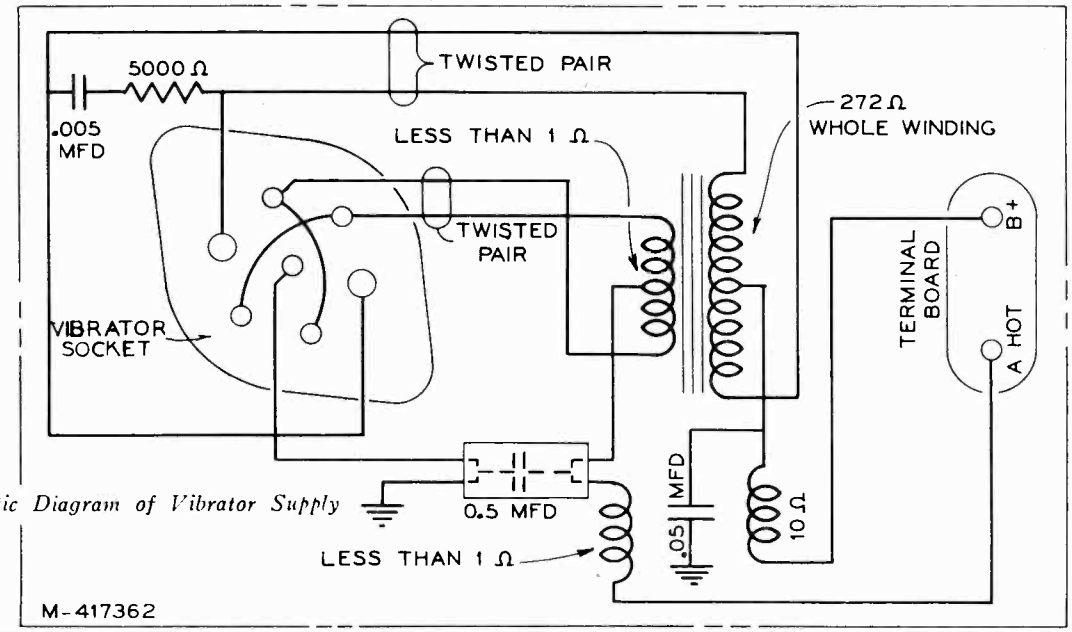
Microphones

Two recommended types of microphones are available for use with the MI-12754 amplifier. For orchestrations, and where close talking is not necessary, the RCA type **MI-4036** junior velocity microphone will give excellent results. The MI-4036 will operate into inputs of either 50, 250 or 15,000 ohms impedance, and therefore, by making the proper connections to the microphone transformer, the microphone can be used for the High Impedance input. For average announcing purposes the **MI-6228A Aerodynamic Microphone** is excellent. The output impedance of this microphone is 40,000 ohms. Thus it may be directly plugged into the microphone input jack on the amplifier.

Stands for the MI-4036 microphone are available as follows:

Floor Stand..... **MI-4068-A**
Table Stand..... **MI-4065-A**

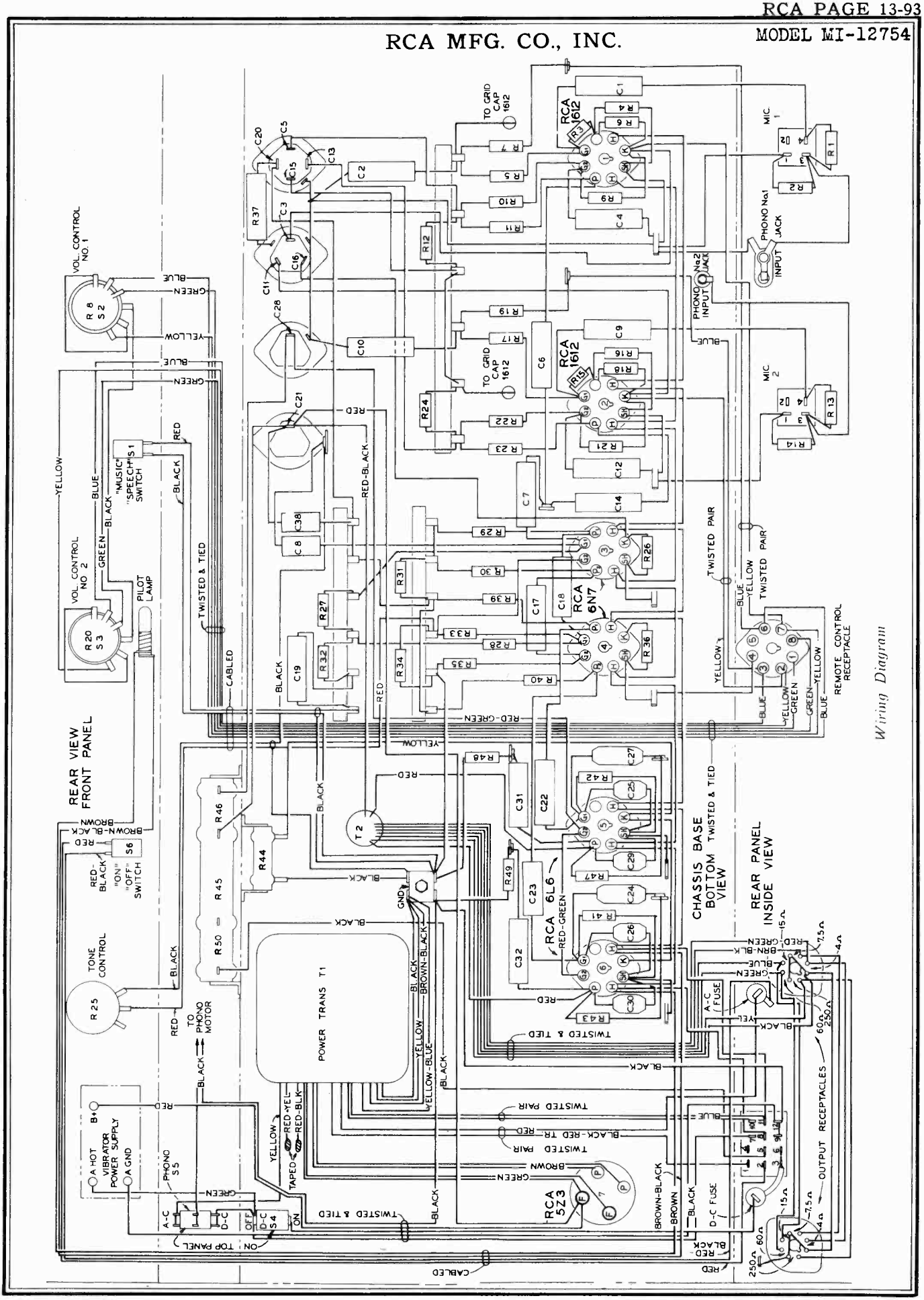
Stands for the MI-6228-A are available as follows:
Table Stand..... **MI-6227**



Schematic Diagram of Vibrator Supply

RCA MFG. CO., INC.

MODEL MI-12754



Wiring Diagram

MODEL MI-12754

RCA MFG. CO., INC.

The phono. motor should be oiled occasionally with a light grade of high quality oil, a few drops each month being sufficient. The oil wick is located near the turntable spindle, and is accessible through an opening in the top of the cabinet located under the turntable.

The motor speed should be 78 r.p.m. and may be checked by placing a piece of paper between a record and the turntable, with the paper protruding slightly beyond the edge of the record, then counting the number of revolutions of the record per minute. The correct speed may be obtained by adjusting the speed regulating lever.

Operating Instructions

No. 1.—Set up amplifier assembly and speakers in location desired.

No. 2.—Plug a-c or d-c female plug into receptacle on rear of cabinet. If power supply is to be d-c, the switch at front left of cabinet should be thrown to the d-c position.

No. 3.—If remote control is to be used, plug in remote control at the rear center of the cabinet. If no remote control is to be used, plug in dummy plug supplied with equipment.

No. 4.—Plug in microphone No. 1 or microphone No. 2 as desired.

No. 5.—Turn "ON-OFF" switch to the "ON" position. A pilot light on the control panel shows when the amplifier is "ON."

No. 6.—Turn both volume controls to the complete counter-clockwise position, but do not snap to the remote position, unless remote control is to be used.

No. 7.—Turn tone control completely clockwise.

No. 8.—Bring volume up on the channel desired by turning the volume control slowly clockwise until the desired volume level is obtained. If microphone is to be used on "SPEECH," snap "MUSIC-SPEECH" switch to the "SPEECH" position. If phonograph is to be used, snap "MUSIC-SPEECH" switch to the "MUSIC" position.

No. 9.—Turn tone control slowly counter-clockwise until the desired tonal quality is obtained. For phonograph reproduction, the tone control should be turned until needle scratch is not objectionable.

No. 10.—To use turntable, when equipment is connected to d-c supply, snap phono. switch to "DC" position. To stop turntable, snap switch to "AC" position. A-C operation is the opposite.

The input receptacle marked "Microphone No. 1" may be used for either microphone or additional phonograph input if the input plug is connected as shown in the schematic diagram.

Care must be taken when plugging the speakers in, to match the correct speaker impedance to the correct output impedance. Each speaker supplied with this unit has 15 ohms impedance, and should be plugged into the 7.5 ohm terminals of the receptacles marked on the rear of the amplifier case when both speakers are used. The assembly screw on the speaker plug shows the proper indexing point for speaker impedance.

Other speakers than those supplied may be used with this equipment. However, care must be taken that the proper impedance match is kept between the speaker and the amplifier output. If only one speaker is desired to take the full output of the amplifier, an RCA MI-6260 speaker may be used. This speaker provides large coverage with high efficiency, and is ideally suited for outdoor mobile or permanent installations.

IMPORTANT: The clip of the d-c black power lead must always be connected to the GROUND side of the battery, irregardless of whether (+) or (−) side of battery is grounded. The vibrator should be inserted in its socket so that the (+) sign marked on the vibrator is toward the arrow on the metal cover if the (+) side of the battery is grounded to chassis. The (−) sign on vibrator should be toward the arrow on the cover if the (−) side of the battery is grounded to the chassis.

STOCK No.	DESCRIPTION
	AMPLIFIER ASSEMBLIES
30314	Cap—Grid cap for Radiotron
12725	Capacitor—150 mmfd. (C-25, C-26)
12694	Capacitor—220 mmfd. (C-29, C-30)
12635	Capacitor—.001 mfd. (C-24, C-27)
30303	Capacitor—.0035 mfd. (C-19)
4838	Capacitor—.005 mfd. (C-8)
30852	Capacitor—.005 mfd. (C-31, C-32)
4858	Capacitor—.01 mfd. (C-7)
4870	Capacitor—.025 mfd. (C-17, C-18, C-22, C-23)
4886	Capacitor—.05 mfd. (C-1, C-4, C-6, C-9, C-12, C-14)
12484	Capacitor—.25 mfd. (C-2, C-10)
32019	Capacitor Pack—10-10-10-10 mfd., 450 volts each (C-5, C-13, C-15, C-20)
32021	Capacitor—20 mfd. (C-28)
32018	Capacitor Pack—20-20-20 mfd., 25 volts each (C-3, C-11, C-16)
32020	Capacitor—30 mfd. (C-21)
4358	Clamp—Remote control plug locking clamp
10907	Fuse—3 amp. (F-1)
3646	Fuse—20 amp. (F-2)
30187	Jack—Phonograph input jack
32058	Plug—8-contact male remote control plug
32057	Plug—12-contact male power plug
32059	Post—Extraction fuse post
30189	Resistor—120 ohms, ½ watt (R-48, R-49)
30197	Resistor—176 ohms. 25 watt (R-44)
30731	Resistor—1,200 ohms, ½ watt (R-6, R-18)
30654	Resistor—1,500 ohms, ½ watt (R-26, R-36)
30196	Resistor—6,200 ohms, tapped at 1,670, 3,590, 940 ohms (R-45, R-46, R-50)
13204	Resistor—8,200 ohms, 2 watt (R-38)
3078	Resistor—10,000 ohms, ½ watt (R-31)
30436	Resistor—12,000 ohms, ½ watt (R-32)
12759	Resistor—15,000 ohms, ½ watt (R-2, R-14, R-34)
30685	Resistor—33,000 ohms, ½ watt (R-4, R-9, R-16, R-21)
30787	Resistor—47,000 ohms, ½ watt (R-12, R-24)
30650	Resistor—56,000 ohms, ½ watt (R-3, R-15)
30225	Resistor—68,000 ohms, 2 watt (R-37)
8064	Resistor—82,000 ohms, ½ watt (R-39, R-40)
3252	Resistor—100,000 ohms, ½ watt (R-29, R-30)
30493	Resistor—150,000 ohms, ½ watt (R-10, R-22)
30651	Resistor—270,000 ohms, ½ watt (R-41, R-42)
30784	Resistor—330,000 ohms, ½ watt (R-11, R-23, R-33, R-35)
30648	Resistor—470,000 ohms, ½ watt (R-27, R-28, R-43, R-47)
30161	Resistor—820,000 ohms, ½ watt (R-7, R-19)
30162	Resistor—1.2 megohm, ½ watt (R-1, R-5, R-13, R-17)
32055	Socket—4-contact socket for microphone plug
13318	Socket—4-contact insulated rectifier tube socket
31251	Socket—Octal base tube, output, or remote control socket
14274	Socket—Pickup cable socket and ground plate
30195	Transformer—Output transformer (T-2)
32024	Transformer—Power transformer (T-1)
	CONTROL PANEL ASSEMBLIES
	Jewel—Pilot lamp jewel bracket and socket. Yaxley Mfg. Co. Cat. No. 310-R or equivalent; with red jewel.
30247	Knob—Volume control or tone control knob
5226	Lamp—6.3 volt pilot lamp
30198	Panel—Control panel only, less mounting
7900	Switch—"On-Off" power or "Music-Speech" switch (S-1, S-6)
30452	Tone Control—1 megohm (R-25)
30164	Volume Control and Switch—250,000 ohms (R-8, R-20, S-2, S-3)
	MICROPHONE ASSEMBLY
MI-6228A	Microphone
MI-6227	Stand—Microphone stand
12035	Cable—30 ft. 2-conductor shielded cable
30052	Transformer—Microphone transformer
	MOTOR ASSEMBLIES
32036	Motor—A.C.-D.C. phonograph motor
32041	Plate—Metal support plate
32042	Plate—Rubber support plate
32038	Pointer—Speed indicator pointer
32040	Tip—Turntable shaft tip
32037	Turntable—10-inch turntable
	MOTOR BOARD ASSEMBLIES
11762	Box—Needle box and lid
32039	Dial—Speed indicator dial
32084	Rest—Pickup arm rest position bracket and spring
17507	Switch—D.P.D.T. Phonograph switch (S-5)
32070	Switch—D.P.S.T. Power switch (S-4)
	PICKUP AND ARM ASSEMBLIES
14291	Armature—Pickup armature assembly
11732	Coil—Pickup coil
14292	Damper—Pickup damper block with clamp and screw
32044	Pickup and Arm
31100	Pickup Unit only
3811	Screw—Needle holding screw
	SPEAKER ASSEMBLY
32201	Cone—Speaker cone and voice coil, complete with dust cap
32202	Dust Cap—Dust cap for speaker cone
32200	Speaker—Complete
	VIBRATOR POWER SUPPLY
18075	Capacitor—.005 mfd., 1,600 volts
18077	Capacitor—.05 mfd., 600 volts
18080	Capacitor—0.5 mfd., 50 volts
18078	Choke—"A" choke coil
18079	Choke—R.F. choke coil
4436	Resistor—5,000 ohms, ½ watt
18076	Transformer—Power transformer
18010	Vibrator—Plug-in unit
	MISCELLANEOUS, CABLES & PLUGS, ETC.
32098	Cable—A.C. power cable and plug
32101	Cable—D.C. power cable—less battery clips and socket
32100	Cable—Speaker cable, less plug
14289	Clip—1-set battery clips
32054	Plug—Microphone plug
25941	Plug—Power cord plug, 12 contact
30188	Plug—Speaker cable plug, 8 contact
30278	Screw—Cabinet thumb screw
32056	Socket—Power cable or battery cable socket

MODEL 41-43

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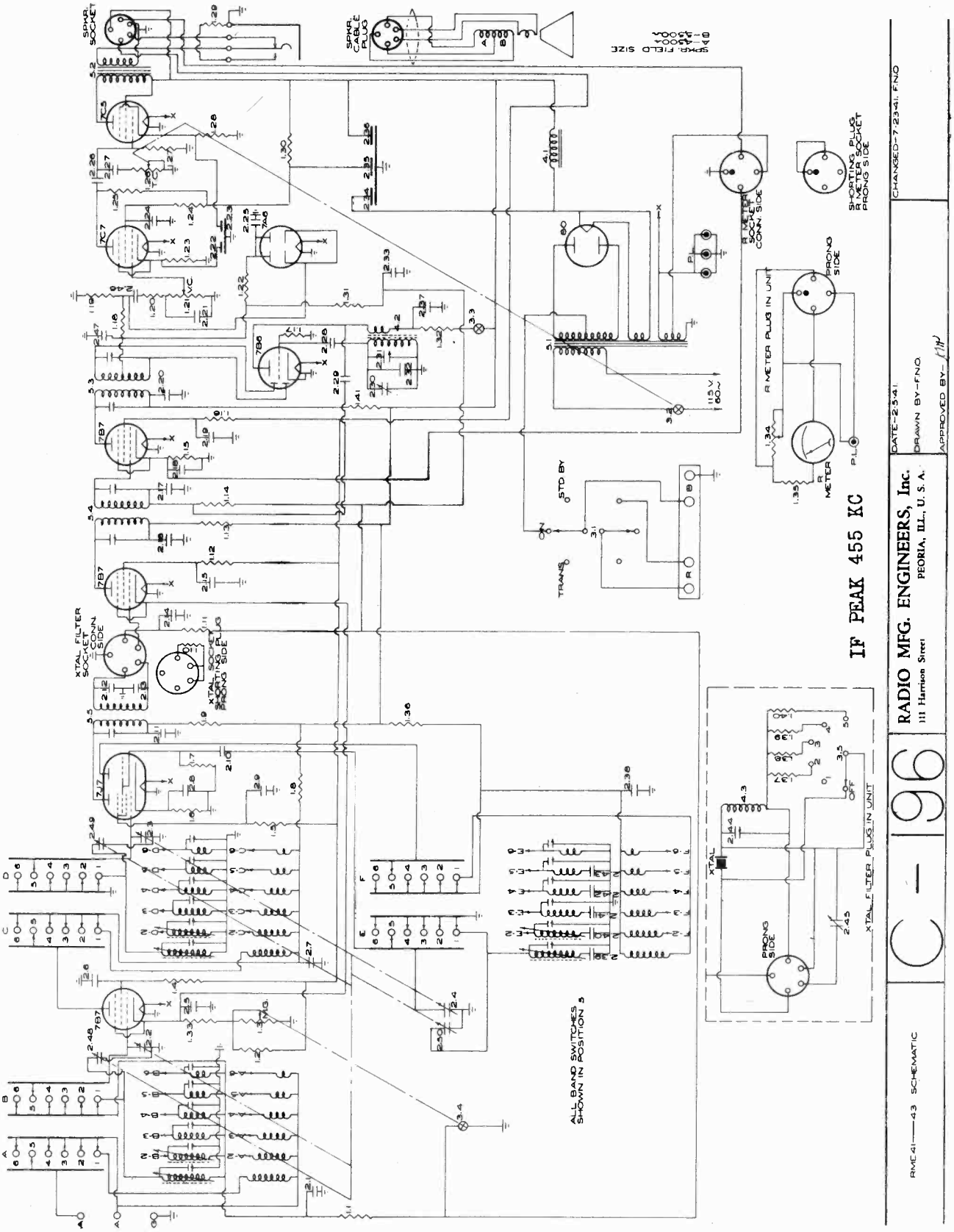

RME-41/43 PARTS LIST CONTINUED

CONDENSERS CONTINUED

2.29	100 μμfd., Mica
2.30	50 μμfd., Variable
2.31	100 μμfd., Mica Padder
2.32	100 μμfd., Mica Padder
2.33	.01 μfd., 400 volt paper
2.34	10 μfd.,
2.35	15 μfd., — 3 Section Filter Condenser
2.36	15 μfd.,
2.37	.01 μfd., 400 volt paper
2.38	.01 μfd., 400 volt paper
2.39	550 μμfd., Mica
2.40	600 μμfd., Mica
2.41	1300 μμfd., Mica
2.42	1700 μμfd., Mica
2.43	3900 μμfd., Mica
2.44	100 μμfd., Mica Padder
2.45	30 μμfd., Variable
2.46	.1 μfd., 400 volt paper
2.47	.01 μfd., 400 volt paper
2.48	
2.49	— L.F. Sections of Tuning Condenser
2.50	
2.51	1 μfd. 200 volt paper

SWITCHES:

3.1	3 Position, 2 Pole, Stand-by Switch
3.2	S.P.S.T. Line Switch on Tone Control
3.3	S.P.S.T. Beat Oscillator Switch
3.4	S.P.S.T. AVC Switch on Manual Gain Control
3.5	5 Position, 1 Pole, Xtal Switch

INDUCTANCES

4.1	Filter Choke
4.2	B.O. Coil
4.3	Xtal Filter Coil

TRANSFORMERS

5.1	Power Transformer
5.2	Output Transformer
5.3	#3 I.F. Transformer
5.4	#2 I.F. Transformer
5.5	#1 I.F. Transformer

RME-41/43 PARTS LIST

Drawing: C-196
073041

RESISTORS

1.1	100,000 ohms, 1/3 watt
1.2	50,000 ohms, 1 watt
1.3	30,000 ohms, Variable
1.4	2,000 ohms, 1/3 watt
1.5	2,000 ohms, 1/3 watt
1.6	300 ohms, 1/3 watt
1.7	50,000 ohms, 1/3 watt
1.8	2,000 ohms, 1/3 watt
1.9	2,000 ohms, 1/3 watt
1.10	100,000 ohms, 1/3 watt
1.11	100,000 ohms, 1/3 watt
1.12	2,000 ohms, 1/3 watt
1.13	2,000 ohms, 1/3 watt
1.14	100,000 ohms, 1/3 watt
1.15	300 ohms, 1/3 watt
1.16	2,000 ohms, 1/3 watt
1.17	100,000 ohms, 1/3 watt
1.18	50,000 ohms, 1/3 watt
1.19	50,000 ohms, 1/3 watt
1.20	50,000 ohms, 1/3 watt
1.21	250,000 ohms, Variable

RESISTORS CONTINUED

1.22	250,000 ohm, 1/3 watt
1.23	1,000 ohm, 1/3 watt
1.24	1 Megohm, 1/3 watt
1.25	100,000 ohm, 1/3 watt
1.26	1 Megohm , Variable
1.27	250,000 ohm, 1/3 watt
1.28	240 ohm, 1 watt
1.29	35 ohm, 1/3 watt
1.30	20,000 ohm, 1/3 watt
1.31	1 Megohm, 1/3 watt
1.32	250,000 ohm, 1/3 watt
1.33	150 ohm, 1/3 watt
1.34	200 ohm, Variable
1.35	1,500 ohm, 1/3 watt
1.36	2,000 ohm, 1/3 watt
1.37	250,000 ohm, 1/3 watt
1.38	100,000 ohm, 1/3 watt
1.39	50,000 ohm, 1/3 watt
1.40	5,000 ohm, 1/3 watt
1.41	2,000 ohm, 1/3 watt

CONDENSERS

2.1	.1 μfd., 400 volt paper
2.2	R.F. Section Tuning Condenser
2.3	Det. Section Tuning Condenser
2.4	Osc. Section Tuning Condenser
2.5	.01 μfd., 400 volt paper
2.6	.01 μfd., 400 volt paper
2.7	.01 μfd., 400 volt paper
2.8	.01 μfd., 400 volt paper
2.9	.01 μfd., 400 volt paper
2.10	100 μμfd., Mica
2.11	.01 μfd., 400 volt paper
2.12	50 μμfd., Mica
2.13	50 μμfd., Mica
2.14	.01 μfd., 400 volt paper
2.15	.01 μfd., 400 volt paper
2.16	.01 μfd., 400 volt paper
2.17	.01 μfd., 400 volt paper
2.18	.01 μfd., 400 volt paper
2.19	.01 μfd., 400 volt paper
2.20	.01 μfd., 400 volt paper
2.21	250 μμfd., Mica
2.22	20 μfd., 25 v. electrolytic
2.23	20 μfd., 25 v. electrolytic
2.24	.1 μfd., 400 volt paper
2.25	1.0 μfd., 200 volt paper
2.26	.1 μfd., 400 volt paper
2.27	.1 μfd., 400 volt paper
2.28	100 μμfd., Mica

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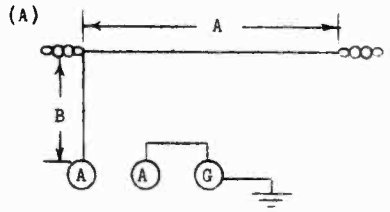
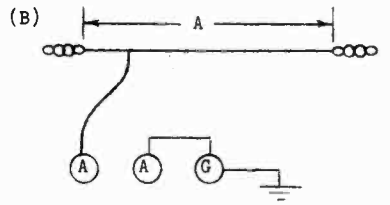
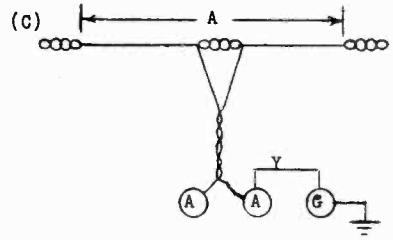
ALIGNING ADJUSTMENTS



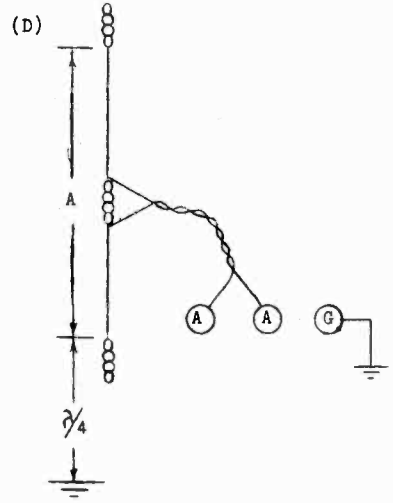
General Marconi connection. Optimum condition exists when $A + B = \frac{\lambda}{4}, \frac{3\lambda}{4}, \frac{5\lambda}{4}$, etc.



Optimum signal input to receiver when $A = \frac{\lambda}{2}$, and feeder is tapped at proper distance from center. This antenna works quite well usually on even harmonics also.



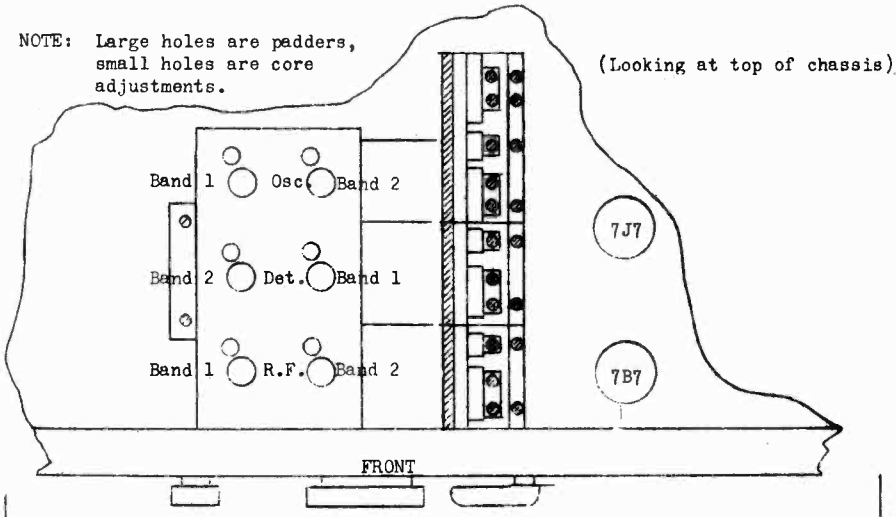
Optimum condition when $A = \frac{\lambda}{2}$. Not satisfactory for wide range frequency. Excellent for any amateur band if $A = \frac{\lambda}{2}$ is in the middle of the band. For example: For 20 meter band antenna should be designed for 14,200 KC. A = Approximately 33 feet, directionat at right angle from line of wire. Jumper "Y" can usually be omitted.



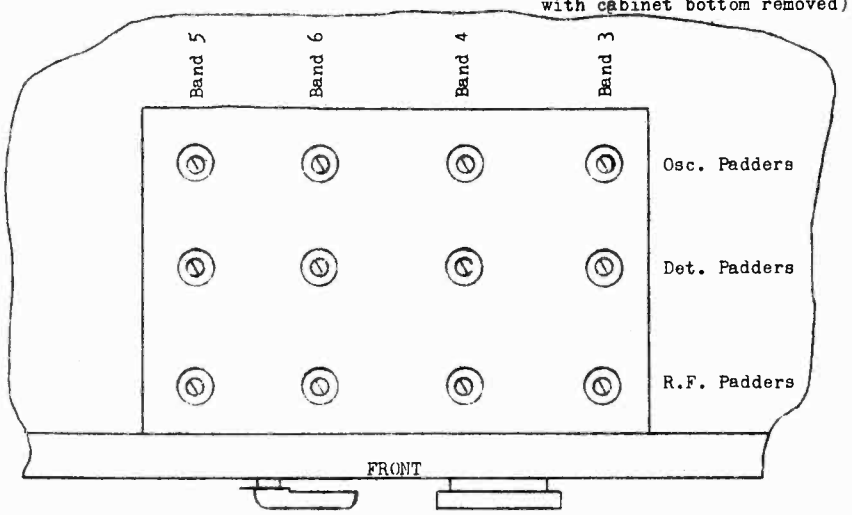
Dimensions same as those of C. Antenna good for one narrow band. (For example amateur band) Is not directional.

Low Frequency (Bands 1 and 2)

NOTE: Large holes are padders, small holes are core adjustments.



High Frequency (Bands 3,4,5 and 6)



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MODEL 41-43

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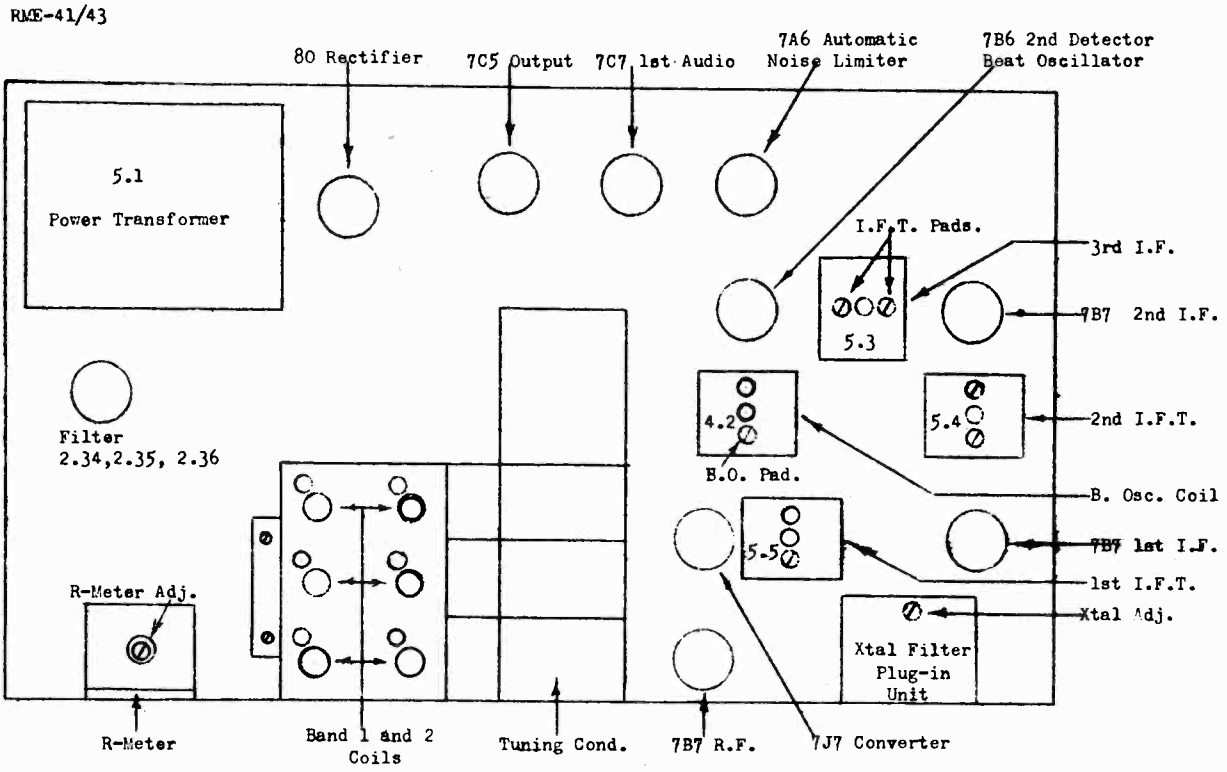
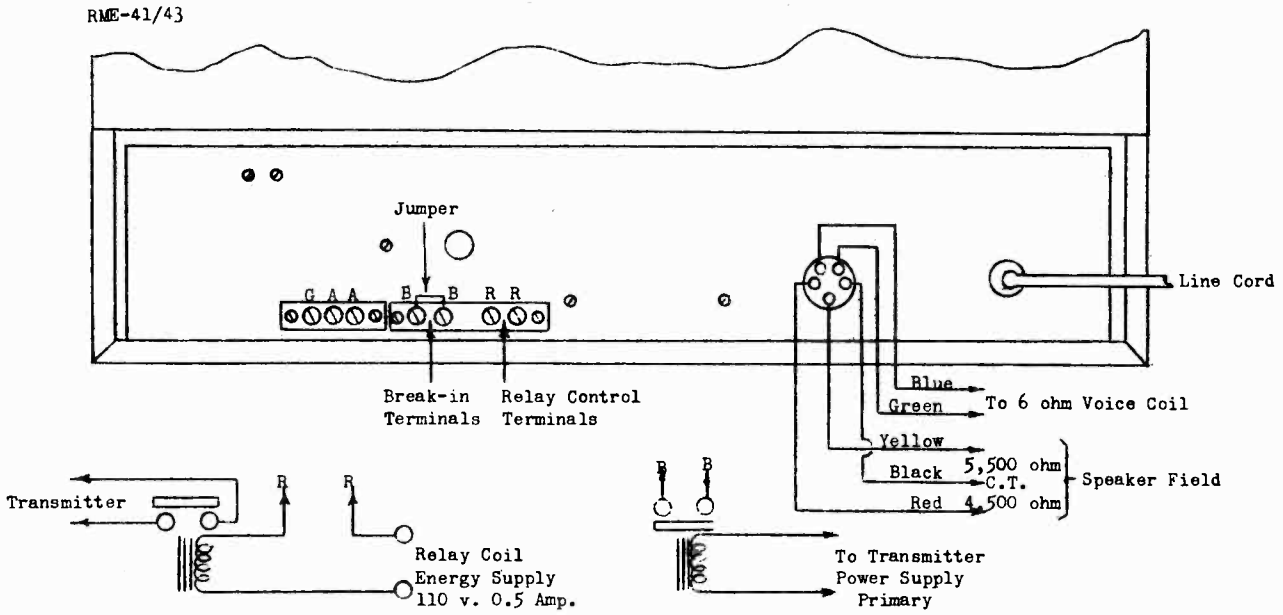
RME-41/43



RME-41/43



Relay to Control transmitter typical circuit diagram for connecting of relay control. Connect to terminal pair marked "R" on receiver. Relay closes when Stand-by Switch is turned to "Trans".

Typical circuit for remote break-in control of receiver. Terminal pair marked "B" on receiver connect to "B - B". Circuit between "B" pair is closed when relay or remote switch is closed during transmitter stand-by periods. Break-in terminals must be shorted if above circuit is not used.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE
80 Rectifier filament and ground	325 volts
B.O. plate supply and ground (B.O. turned on)	125 volts

These voltages are subject to a fluctuation of ±15% without indication of material difficulties.

CONTINUITY CHECKS

Receiver turned off. No jumper between "A" and "G" on antenna terminal strip.

PLACE TEST PRODS BETWEEN		RESISTANCE
A-1 and ground		Infinite
A-2 and ground		Infinite
"G" and ground		Short
RF amp. grid and ground		1.1 Megohms ±20%
Converter grid and ground	Band 1	3.5 ohms
	Band 2	1.5 ohms
	Band 3	.3 ohm
	Band 4	.2 ohm
	Band 5	.1 ohm
	Band 6	.1 ohm
First I.F. grid and ground		1.5 Megohms ±20%
Second I.F. grid and ground		1.5 Megohms ±20%
Oscillator grid and ground		50,000 ohms ±20%
B.O. grid and ground		100,000 ohms ±20%
7C7 grid and ground		250,000 ohms to 0 ohm as audio gain control is rotated.
7C5 grid and ground		250,000 ohms ±20%
Oscillator section of tuning condenser and ground.		Bands 1,2,3,4,5 Infinite Band 6 .1 ohm

SPECIFICATIONS

TUBES:	Type	Use
1.	7B7	R.F. Amplifier
2.	7J7	Converter
3.	7B7	1st I.F. Amplifier
4.	7B7	2nd I.F. Amplifier
5.	7B6	Detector and Beat Oscillator
6.	7C7	1st A.F. Amplifier
7.	7C5	Output Amplifier
8.	7A6	Automatic Noise Limiter
9.	80	Rectifier

I. F. Frequency: 455 Kilocycles
Power Consumption: At 115 volts, 90 watts
Audio Output: 3 Watts
Audio Frequency Response: 100 to 5,000 cycles per second ±2.5 db.
Cabinet Dimensions: Length 19 inches. Depth 10-1/2 inches. Height 10-1/4 inches.
Weight (Unpacked): 36 pounds
Voice Coil impedance: 6 ohms
Speaker Field Coil Resistance: 10,000 ohms
Tapped at: 4,500 ohms

High frequency beat is used on all bands. That is to say, that the oscillator is 455 KC higher in frequency than the signal received.

If sufficient input is used each signal can be received at two points, differing by 910 kilocycles. The other signal is the image or "low beat" signal. The higher frequency signal received, according to the receiver dial, is the proper one and the circuits should be aligned to it.

When using a signal generator or test oscillator to align the set a resistor of about 150 or 200 ohms should be inserted between the signal generator and the antenna connection. This will prevent misaligning of the RF stage caused by the connection of the low impedance of the signal generators output circuit across the receiver input.

CRYSTAL FILTER ADJUSTMENT

In order that the full capabilities of the crystal filter in the model 43 be realized the following procedure in tuning it is recommended:

On the top of the crystal filter box is a trimmer (Figure 1). The easiest way to adjust this trimmer is to tune in a station in the broadcast band that is broadcasting music, preferably an orchestra. The XTAL SELECTIVITY switch should be turned to Position 5 and the signal tuned in accurately on the crystal. The XTAL PHASING control should be adjusted to give minimum background noise. The SELECTIVITY control is then turned to Position 1. The trimmer should then be carefully adjusted. As the trimmer is turned it will be found that the character of the music changes. The trimmer should be set to a point that sounde the most natural. If the adjustment is made carefully there will be a regular sharpening of the receiver as the SELECTIVITY switch is turned from "OFF" to Position 5.

****

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN RECEIVER CIRCUIT

Measurements made with a voltmeter having internal resistance of 1000 ohms per volt. Instruments with lower internal resistance may give entirely different readings.
NOTE: Line voltage should be 115 volts, Stand-by Switch on.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE
Radio frequency amplifier plate and ground	290 volts
Radio frequency amplifier screen and ground	107.5 volts
Radio frequency amplifier cathode and ground	3 volts
Converter plate (pentode section) and ground	310 volts
Converter screen (pentode section) and ground	107.5 volts
Oscillator supply and ground	168 volts
First I.F. amplifier plate and ground	290 volts
First I.F. amplifier screen and ground	107.5 volts
First I.F. amplifier cathode and ground	3 volts
(The same voltages apply to the 2nd I.F. stage)	
7C7 plate and ground	43 volts
7C7 screen and ground	112.5 volts
7C7 cathode and ground	3.1 volts
7C5 plate and ground	290 volts
7C5 screen and ground	305 volts
7C5 cathode and ground	13.5 volts

OPERATION

Each control on the RME-41/43 receiver has a definite function and the operator should familiarize himself with their purpose and operation in order to obtain the best results.

The MAIN TUNING DIAL is somewhat novel in design. Continuous mechanical band spread is utilized. Mechanical band spread has been somewhat frowned upon in the past due to the difficulty of obtaining a mechanical arrangement free of backlash. This is accomplished in the 41/43 by using a preloaded gear train instead of the more conventional belt system. Illumination of the bandspread condenser lowers the loss in the RF circuits resulting in greater gain and greater stability.

The band spread scale makes 5 complete revolutions for 180° of main tuning pointer travel. As the main pointer reaches an amateur band these frequencies may be read off the band spread dial with greater accuracy. In addition to the amateur band calibrations an arbitrary calibration is also included. This scale is the outermost one on the bandspread dial. It is divided into 100 divisions. For any position of the main pointer this calibration may be read off by placing in front of the figure read, the figure indicated by the main tuning pointer. Thus when the main pointer is at the extreme left the arbitrary calibration will be read from 0 to 99. For the next revolution of the band spread scale the calibration will be read from 100 to 199, etc. Thus the arbitrary calibration will consist of 500 divisions for each range. As an example: 2 megacycles may also be read as 190 (or more accurately 189.8) on the arbitrary scale.

The BAND SELECTOR SWITCH selects the frequency range desired. The range of the receiver is divided into 6 bands. The range covered by each band is as follows:

Band I	.540	to	1.6	MC.	American Broadcast
Band II	1.6	to	2.9	MC.	Includes 160 M. Amateur Band
Band III	2.9	to	5.4	MC.	Includes 80 M. Amateur Band
Band IV	5.4	to	9.8	MC.	Includes 40 M. Amateur Band
Band V	9.8	to	18.0	MC.	Includes 20 M. Amateur Band
Band VI	18.0	to	33.0	MC.	Includes 10 M. Amateur Band

Actually these figures do not represent the full range of each band since there is considerable overlap between the end of one band and the start of the next.

The LINE TONE control turns the receiver on and off. As the control is turned clockwise the line switch will close. Continued turning of the knob controls the audio response.

The STAND-BY SWITCH on the extreme right end of the control panel is used to make the receiver inoperative without turning off the line switch. When the control is in the center at "on" the receiver will operate, when it turned to the right to "Stand-by" it will be dead. The third position labeled "Trans" also makes the receiver inoperative and, in addition, closes the relay circuit as mentioned previously.

The AUDIO GAIN control to the left of the stand-by switch is used to adjust the audio volume to the desired level.

Below the control panel is a toggle switch labeled B. O. SWITCH turning on the beat oscillator. The beat oscillator is indespensible in the reception of CW signals and is an aid in locating weak phone carriers.

The pitch of the beat frequency may be varied by means of the control labeled B. O. PITCH.

SERVICE NOTES FOR THE RME-41/43 RECEIVERS

If the owner has available an accurate signal generator he may, by following the steps outlined in succeeding paragraphs, realign and recalibrate his receiver. If a signal generator is not available he may take the receiver to a reputable service man to have the work done. In addition to the signal generator an insulated screw driver will be required and if the receiver is a Model 41 an output meter will be needed.

NOTE: If the receiver is a Model 43 the "R" meter makes an excellent resonance indicating device. All adjustments are made with the AVC on.

If the receiver is a Model 41 the output meter is used and is connected across the voice coil leads of the speaker. It may also be connected to a plug and inserted into the phone jack. When an output meter is used the AVC should be turned off by turning the RF GAIN control slightly to the left. The signal generator must be modulated.

I.F. ALIGNMENT

The I.F. frequency of the RME-41/43 is 455 Kc. The band switch should be turned to Band 1. The tuning dial should be turned to the low frequency end (.55 Mc). The hot lead from the signal generator is clipped to the lug on the detector section (middle) of the tuning condenser. With the signal generator set to 455 Kc., each padder on the 1st, 2nd and 3rd I.F. transformers (see Fig. 1) are carefully adjusted for maximum response as indicated on the meter.

NOTE: If the receiver is a Model 43 the frequency of the signal generator must be set accurately to that of the crystal. This is done in the following manner:

Turn the crystal selectivity switch to Position 5. Carefully adjust the signal generator frequency until the carrier meter rises sharply. The signal generator is now accurately on the crystal frequency. The crystal selectivity switch is turned to "OFF" and the three I.F. transformers are aligned as before.

BEAT OSCILLATOR ADJUSTMENT

With the signal generator connected as for aligning I.F. circuits, turn "B.O.SWITCH" on and set "B.O. PITCH" control pointer vertical. With an insulated screw driver adjust B.O. padder (See Fig. 1) until zero beat is obtained.

ALIGNMENT OF THE RADIO FREQUENCY SECTION

Alignment of the radio frequency section of the receiver will affect, principally, the calibration of the receiver. Within certain limits this, of course, will also effect the sensitivity. Small variations in frequency (up to 2%) will not materially reduce the sensitivity of thereceiver, although they will, of course, show up as variations in the calibration as indicated by the setting of the MAIN TUNING DIAL. Correction of any variation of calibration can be made by following the suggestions outlined in the following paragraphs.

Band 1 includes frequencies between 540 and 1600 Kc. For Band 1 there are two frequency adjustments for adjusting the dial to the proper calibration. The adjustments are made on the top of the chassis through the dust cover over the Band 1 and 2 coils. The proper holes for making the adjustments are indicated on the top sketch on Figure 3. There are 6 sets of large and small holes each. The two sets toward the rear of the chassis are the oscillator adjustments. The set toward the front are the RF stage adjustments; and the center set are for the detector. Under the large hole is a padder for adjusting the high frequency end of the scale. Under the small hole is a screw which moves the core in the coil and adjusts the low frequency end.

The next step is to choose a station or a signal of accurately known frequency on the low frequency end of the range (for example 600 Kc.) and set the main tuning scale to read this frequency. If the station is not tuned in which the scale indicates its frequency it may be brought in by adjusting the oscillator coil core. This may be done with a small screw driver through the small hole marked "BAND 1 OSC" on Figure 3. Another station or signal is now selected near the high frequency end of the range (for example 1400 Kc.). If this signal is not heard when the dial is accurately set to its frequency it may be brought in by adjusting the padder under the large hole marked "BAND 1 OSC" by means of an insulated trimmer tool. When this signal is accurately brought in as indicated by a maximum reading on the carrier meter one should go back to the low frequency test point and readjust it if it has changed. It may be necessary to go back and forth several times until both frequencies are accurately calibrated.

The accuracy of most service signal generators is not very great, especially on the higher frequencies. The owner of an RME-41/43 should hesitate in using one to calibrate his receiver unless he is sure that it is accurately calibrated.

The procedure in calibrating and aligning Band 2 is the same for Band 1. On this band two frequencies, such as 1800 and 2800 KC, may be used. For the low frequency point the band spread dial should be set accurately to 1800 KC for calibration.

The four high frequency bands are calibrated and aligned by removing the bottom plate from the receiver. The screws holding the four rubber feet and the four small screws between them are removed. This allows the bottom plate to be removed. It will be found that an aluminum plate covers the coils. This plate has holes over the 12 padders and all adjustments should be made with this plate in position.

Since the inductance of the coils are accurately adjusted and set at the factory it is necessary only to calibrate one frequency on each band. The same applies to the alignment of the RF and detector padders. This calibration and alignment should preferably be made at a point which is on the calibrated band spread scale. Suggested calibration points for each band are as follows:

Band 3	4 MC.
Band 4	7 MC.
Band 5	14 MC.
Band 6	30 MC.

From the bottom sketch on Figure 3 the location of each of the 3 padders for each band may be readily located. Note in particular the location of Band 5 and 6 padders. Adjustments should be made with insulated screw driver type of trimmer tool.

The beat oscillator may be used either with or without the automatic volume control (AVC). It is usually more satisfactory to receive CW signals with the AVC off. This may be accomplished by turning the control labeled "R.F.GAIN" slightly to the left. Continued rotation of this control varies the gain of the receiver manually.

Below the control panel on the left is a jack marked "PHONES". Any pair of good headphones may be plugged into this jack for headphone reception. When the phones are plugged in the speaker is automatically cut out.

The CARRIER LEVEL METER is supplied only with the model 43. It may also be purchased separately for installation in the Model 41. This meter indicates the average value of the carrier being received. The meter is calibrated in db as well as in conventional numbers. As in previous RME models a signal difference of 1-R is equivalent to 6 db., and R-9 is equivalent to 200 microvolts input to the receiver. A signal is always tuned so as to give a maximum reading on the meter. The meter should be adjusted to zero with the antenna disconnected by means of the screw on the bracket behind the meter.

The CRYSTAL FILTER, also supplied with the 43 only, has two controls. The top control, marked "XTAL SELECTIVITY", makes it possible to select the desired amount of selectivity for best results. Turning the control to "OFF" removes the crystal from the circuit. Rotating the control to the right changes the selectivity from a broad crystal characteristic at "1" suitable for phone reception to a razor-sharp characteristic at "5" for CW reception.

The CRYSTAL PHASING control should be adjusted to give minimum background noise. This setting will depend somewhat on particular conditions. This control may also be used to wipe out an interfering signal. Expert manipulation of the crystal filter usually comes only after a certain amount of practice.

The AUTOMATIC NOISE LIMITER is always in the circuit on the 41 and 43. No adjustment is required. The circuit is of a type that automatically adjusts itself to maximum effectiveness.

INSTRUCTIONS FOR INSTALLATION AND OPERATION OF THE RME-41/43 RECEIVERS

The RME-43 is a 9 tube superheterodyne communication type receiver. This receiver incorporates several revolutionary features, notably the tuning arrangement which provides accurate calibration on all amateur bands and a continuous arbitrary calibration of 500 divisions on each range. The 43 is supplied complete with a variable selectivity type crystal filter and a calibrated carrier level meter. The crystal filter and meter are both plugged in so that the receiver may be purchased without them and added later. The two units may be installed in a few minutes. The only tool required is a screw driver. No soldering is necessary and the receiver need not be removed from the cabinet. A receiver purchased without these two features is designated as a model RME-41.

ANTENNA

The terminals on the rear apron (Figure 2) marked "A-A-G" are for the antenna connection. When the receiver leaves the factory there is a jumper between one of the "A" posts and the "G" post. Good results may be obtained by connecting a wire 50 to 75 feet long to the other "A" post. If a 2 wire feeder system is used the jumper is removed and the two feeders are connected to "A" and "A". A sketch (Figure 4) of several suggested antennas is included in this booklet. A ground may be connected to the "G" post if it improves reception.

RELAY AND BREAK-IN TERMINALS

On the rear apron are 2 sets of contacts marked "R" and "B" (See Fig. 2). The pair marked "B" are in series with the plate supply. This pair must always be shorted when the receiver is being used, either by a relay, as suggested in Fig. 3, or by a jumper if the remote control feature is not used. This jumper is in place when the set leaves the factory.

The pair marked "R" are relay control terminals. This pair is shorted when the receiver stand-by switch is turned to "Trans". It may be used to control an external relay in conjunction with a suitable external voltage.

MODEL RME-99 Late

RADIO MFG. ENGINEERS, INC.

FIG-1

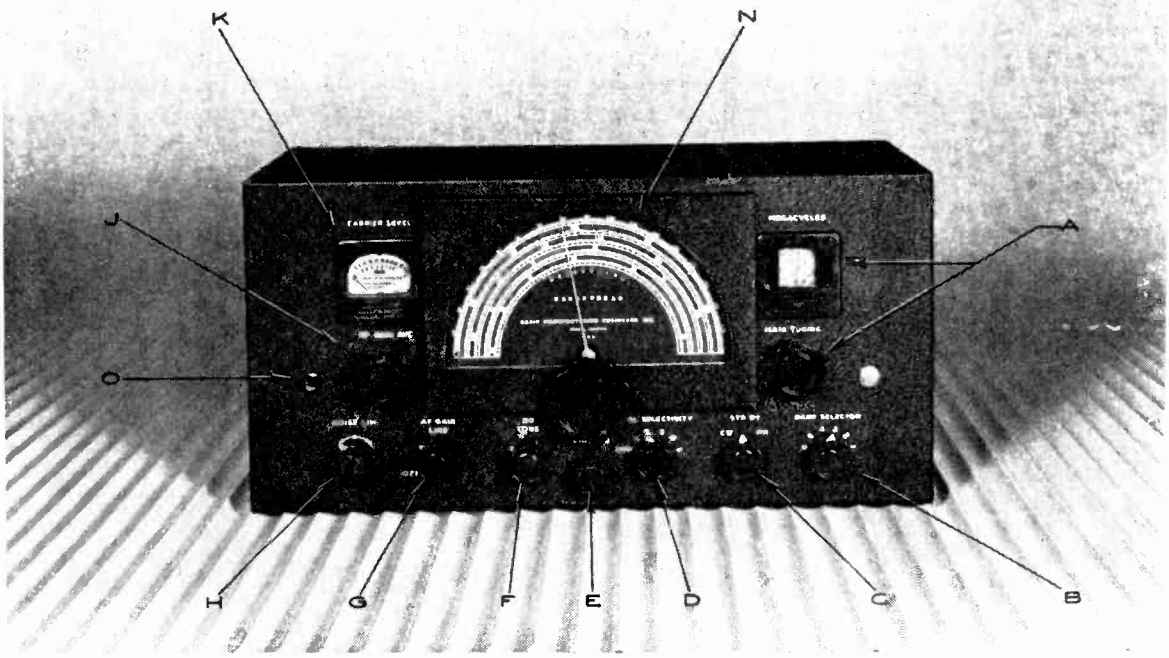


Fig. 1 — Front View

Late Model 99 same as Early Model 99 in Vol. XII except that 7A7 tubes were replaced by 7B7 tubes. For Early Schematic, see RME pgs. 12-13.

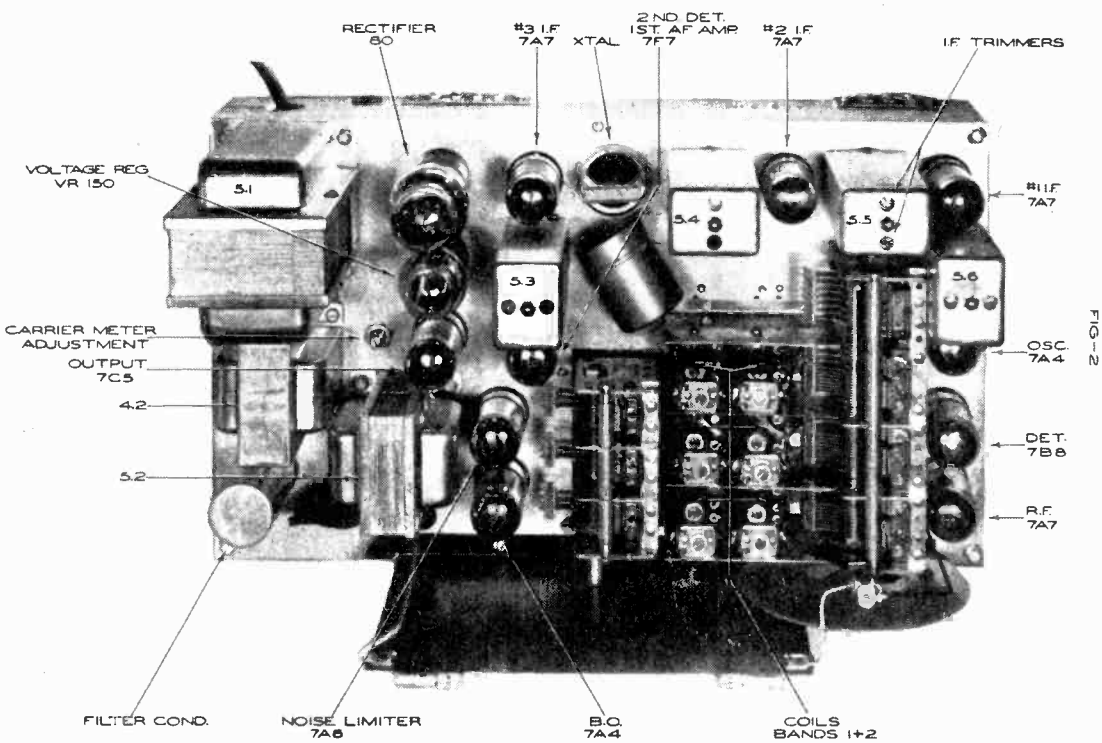
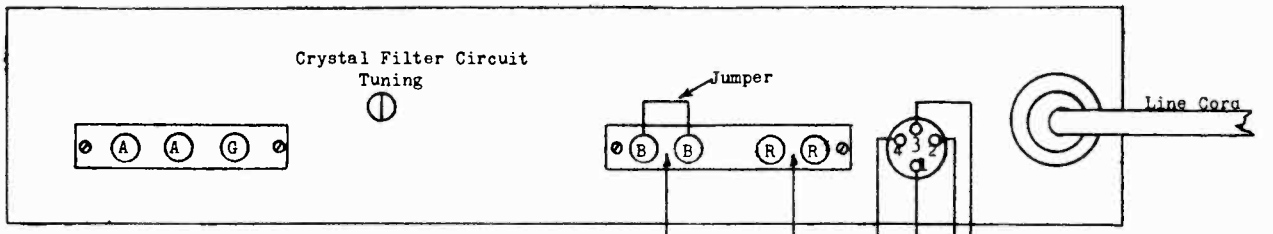
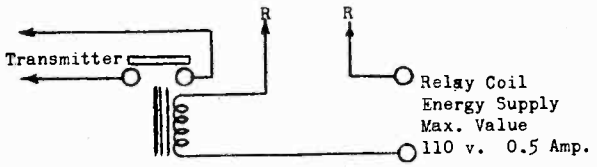


FIG-2

MODEL RME-99, Late

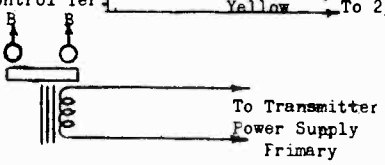
RADIO MFG. ENGINEERS, INC.



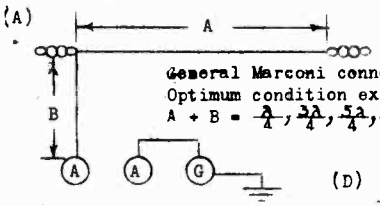


Relay to Control Transmitter. Typical Circuit diagram for connecting of relay control. Connect to terminal pair marked "R" on receiver. Relay closes when receiver is on stand-by.

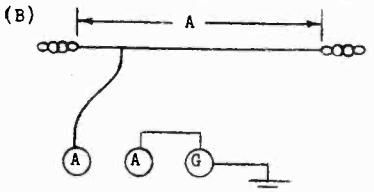
For other data see Volume XII



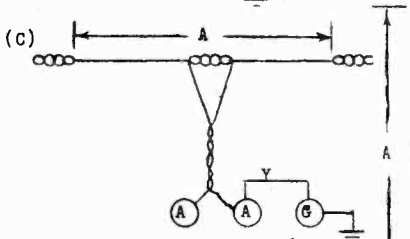
Typical circuit for remote break-in control of receiver. Terminal pair marked "B" on receiver connect to "B - B". Circuit between "B" pair closed when relay or remote switch is closed during transmitter stand-by periods. Break-in terminal must be shorted if above circuit is not used.



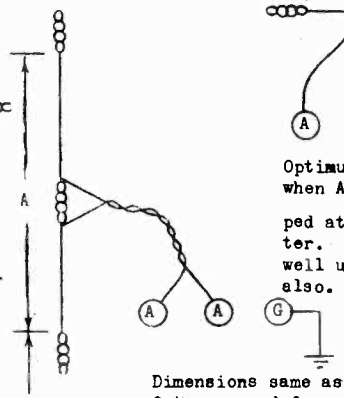
General Marconi connection. Optimum condition existe when $A + B = \frac{\lambda}{4}, \frac{3\lambda}{4}, \frac{5\lambda}{4}$, etc.



Optimum signal input to receiver when $A = \frac{\lambda}{2}$, and feeder is tapped at proper distance from center. This antenna works quite well usually on even harmonics also.



Optimum condition when $A = \frac{\lambda}{2}$. Not satisfactory for wide range frequency. Excellent for any amateur band if $A = \frac{\lambda}{2}$ is in the middle of the band. For example: For 20 meter band antenna should be designed for 14,200 KC; A = Approximately 33 feet, directionat at right angle from line of wire. Jumper "Y" can usually be omitted



Dimensions same as those of C. Antenna good for one narrow band. (For example amateur band) Is not directional.

Late Model RME99 is the same as the Early model(see Rider's Vol.XII) except that 7A7 tubes were replaced by 7B7 tubes.

TEST VOLTAGES OBTAINED AT VARIOUS POINTS IN RECEIVER CIRCUIT

Measurements made with voltmeter having internal resistance of 1000 ohms per volt. Instruments with other internal resistances give entirely different readings.
NOTE: Line voltage should be 115 volts, Stand-by Switch on.

PLACE TEST PRODS BETWEEN	CORRECT VOLTAGE
Radio frequency amplifier plate and ground	225 volts
Radio frequency amplifier screen and ground	130 volts
Radio frequency amplifier cathode and ground	3.5 volts
First detector plate and ground	2.45 volts
First detector cathode and ground	4.2 volts
First I.F. amplifier plate and ground	225 volts
First I.F. amplifier screen and ground	130 volts
First I.F. amplifier cathode and ground	3.5 volts
The same voltages apply to the 2nd and 3rd I.F. Amplifier stages)	
First detector screen and ground	45 volts
First audio amplifier plate and ground	130 volts
First audio amplifier cathode and ground	1.75 volts
7C5 plate and ground	195 volts
7C5 screen and ground	210 volts
7C5 cathode and ground	10 volts
80 rectifier filament and ground	310 volts