

# ATWATER KENT RADIO

## SERVICE DATA

With

### PARTS AND PRICE LISTS FOR

MODEL 80, 80-F, 81, 82, 82-F, 82-D, 82-Q, 83, 83-F, 84, 84-F, 84-D, 84-Q  
85, 85-F, 85-Q, 86, 86-F, 87, 89, 89-F, 89-P

### TABULATED DATA FOR MODELS DESCRIBED IN THIS SUPPLEMENT

Model Number	Power Supply	Part Number Complete	Part Number Chassis	Part Number Speaker	Cabinet	Auto- matic Vol. Control	Tone Cont.	Local Dist. Switch	R.F.	TUBES								
										1st Det.	1st I. F.	2nd I. F.	2nd Det.	1st A. F.	2nd A. F.	Osc.	Con- trol Tube	Rect.
80	110-V., 60-C.	20900	20820	17300	*	No	Yes	No	—	35	35	—	24	47	—	27	—	80
80-F	110-V., 25-C.	21400	21710	17300	*	No	Yes	No	—	35	35	—	24	47	—	27	—	80
82	110-V., 60-C.	21000	21090	17300	**	Yes	Yes	No	—	35	35	—	24	47	—	27	24	80
82-F	110-V., 25-C.	21700	21740	17300	**	Yes	Yes	No	—	35	35	—	24	47	—	27	24	80
82-D	110-V., D. C.	21800	21750	18600	**	No	Yes	No	—	36	36	—	36	37	33	37	—	—
82-Q	Battery	21900	21760	18400	**	Yes	Yes	Yes	32	32	32	—	32	30	33	30	—	—
83	110-V., 60-C.	21100	—	18100† 24600†	Lowboy	No	Yes	No	—	35	35	—	24	47	—	27	—	80
83-F	110-V., 25-C.	22000	—	18100† 24600†	Lowboy	No	Yes	No	—	35	35	—	24	47	—	27	—	80
84 (Early)	110-V., 60-C.	17500	18930	17300	***	No	No	No	—	24	24	—	24	47	—	27	—	80
84 (Late)	110-V., 60-C.	19000	20060	17300	***	No	Yes	No	—	35	35	—	24	47	—	27	—	80
84-F (Early)	110-V., 25-C.	17600	19270	17300	***	No	No	No	—	24	24	—	24	47	—	27	—	80
84-F (Late)	110-V., 25-C.	19200	20070	17300	***	No	Yes	No	—	35	35	—	24	47	—	27	—	80
84-D (Early)	110-V., D. C.	17800	19680	18600	***	No	No	No	—	36	36	—	36	37	33	37	—	—
84-D (Late)	110-V., D. C.	19300	20080	18600	***	No	Yes	No	—	36	36	—	36	37	33	37	—	—
84-Q (Early)	Battery	18300	19550	18400	***	No	No	No	32	32	32	—	32	30	33	30	—	—
84-Q (Late)	Battery	19400	20090	18400	***	No	Yes	No	32	32	32	—	32	30	33	30	—	—
85 (Early)	110-V., 60-C.	17900	—	18100	Lowboy	No	Yes	No	—	24	24	—	24	47	—	27	—	80
85 (Late)	110-V., 60-C.	17900	—	18100† 24600†	Lowboy	Yes	Yes	No	—	35	35	—	24	47	—	27	24	80
85-F	110-V., 25-C.	18200	—	18100† 24600†	Lowboy	Yes	Yes	No	—	35	35	—	24	47	—	27	24	80
85-Q	Battery	22200	—	19900	Lowboy	Yes	Yes	Yes	—	32	32	32	32	30	33	30	—	—
86	110-V., 60-C.	23000	—	24600	Low-Highboy	Yes	Yes	No	35	35	35	—	24	47	—	27	24	80
86-F	110-V., 25-C.	24700	—	24600	Low-Highboy	Yes	Yes	No	35	35	35	—	24	47	—	27	24	80
87	110-V., 60-C.	21200	—	19800	Lowboy or Highboy	No	Yes	No	35	35	35	—	27	27	47(2)	27	—	80
89	110-V., 60-C.	21300	—	19800	Lowboy or Highboy	Yes	Yes	No	35	35	35	—	27	27	47(2)	27	24	80
89-F	110-V., 25-C.	22400	—	19800	Lowboy or Highboy	Yes	Yes	No	35	35	35	—	27	27	47(2)	27	24	80
89-P	110-V., 60-C.	20000	—	19800	Phono. Comb.	Yes	Yes	No	35	35	35	—	27	27	47(2)	27	24	80
81	Battery	20300	22750	22600														

Model 81 has seven tubes: Three '36s as 1st, 2nd and 3rd R. F., one '37 as detector, two '38s as push-pull A. F., and one '37 as automatic volume control tube.

\*Compact type. Rounded arch of zebra wood. Matched butt walnut panel. Rope carved pilasters. 19 1/4" high, 15 3/4" wide, 9 3/8" deep.

\*\*Compact type. Gothic arch of zebra wood. Matched butt walnut panel. Carved twist pilasters. 19 1/4" high, 15 3/4" wide, 9 3/8" deep.

\*\*\*Compact type. Gothic arch. 19 1/4" high, 15 3/4" wide, 9 3/8" deep.

†The two part numbers for speakers in 83, 83-F, 85, 85-F indicate early- and late-type speakers.

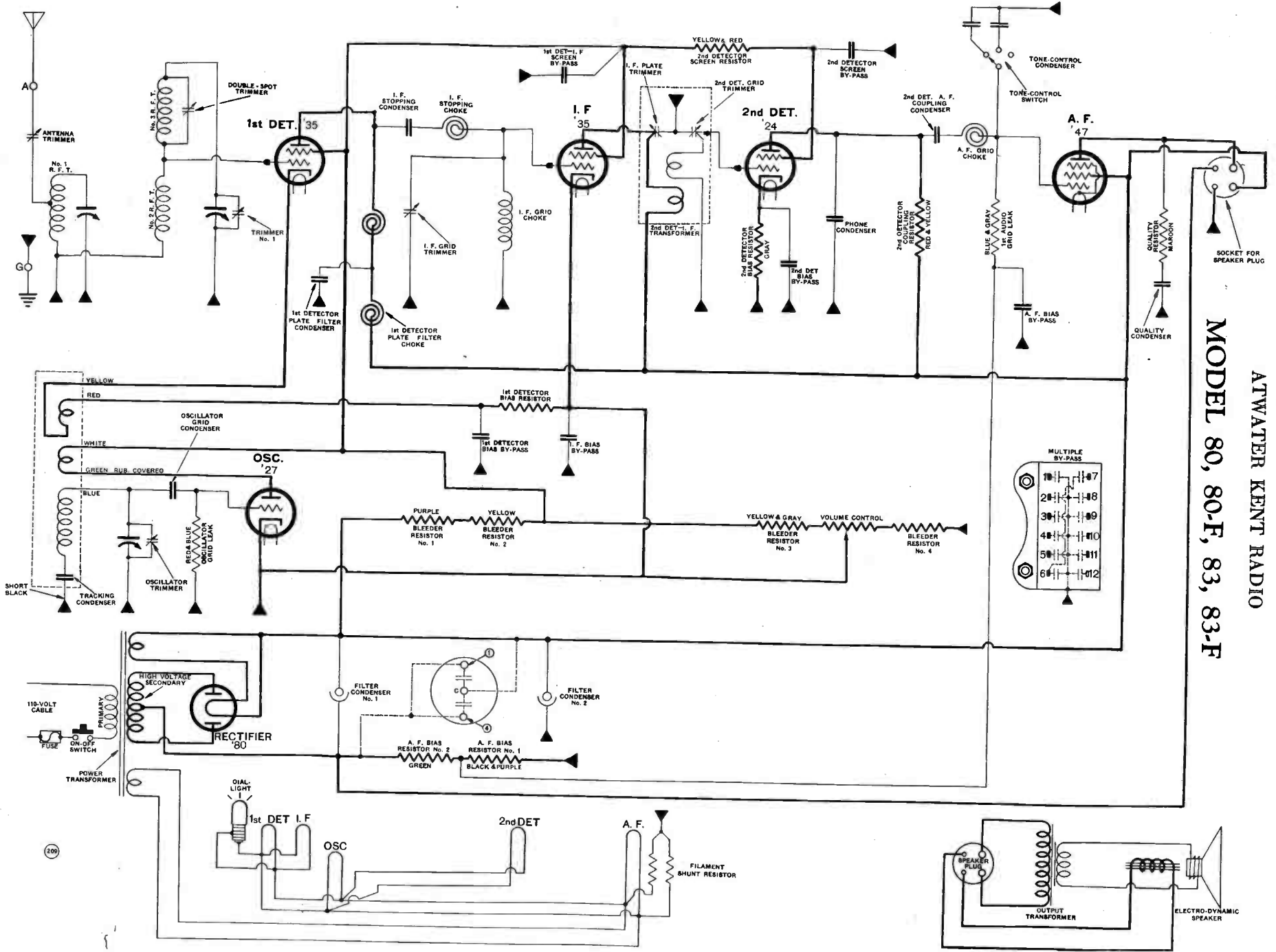
**LOWBOY.** Finished in American walnut with matched butt walnut front panels. 23 3/4" wide, 15 3/4" deep, 38 3/4" high.

**HIGHBOY** with sliding doors. Finished in hand-rubbed American walnut. Matched butt walnut front panels and doors. 26" wide, 16 3/4" deep, 45 3/4" high.

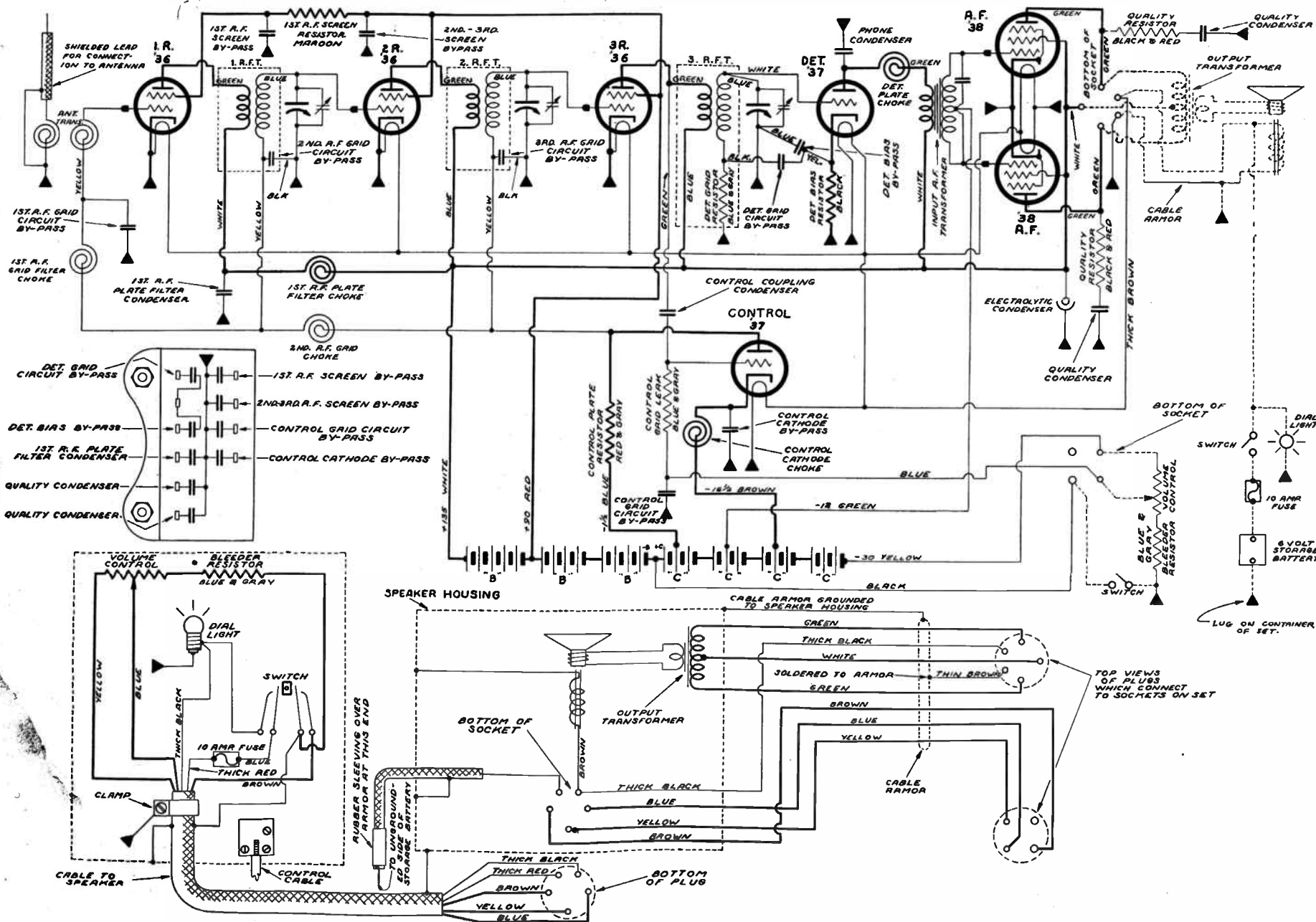
**LOW-HIGHBOY.** Finished in American walnut with matched butt walnut front panels and apron, and rubbed top.

**PHONOGRAPH COMBINATION CABINET.** Finished in American walnut with rubbed top. Matched butt walnut front panels and apron. Top piano-hinged and with automatic support.

FIG. 281. DIAGRAM OF MODEL 80, 80-F, 83, AND 83-F (A. C.-OPERATED).  
In Model 83 and 83-F, a filter-con denser unit is used and it is connected as shown in dotted lines. This unit is NOT used in Model 80 and 80-F.  
In Model 83, 83-F, the electrolytic filter condenser No. 1 is not used, and the filament circuit is slightly different.



ATWATER KENT RADIO  
MODEL 80, 80-F, 83, 83-F



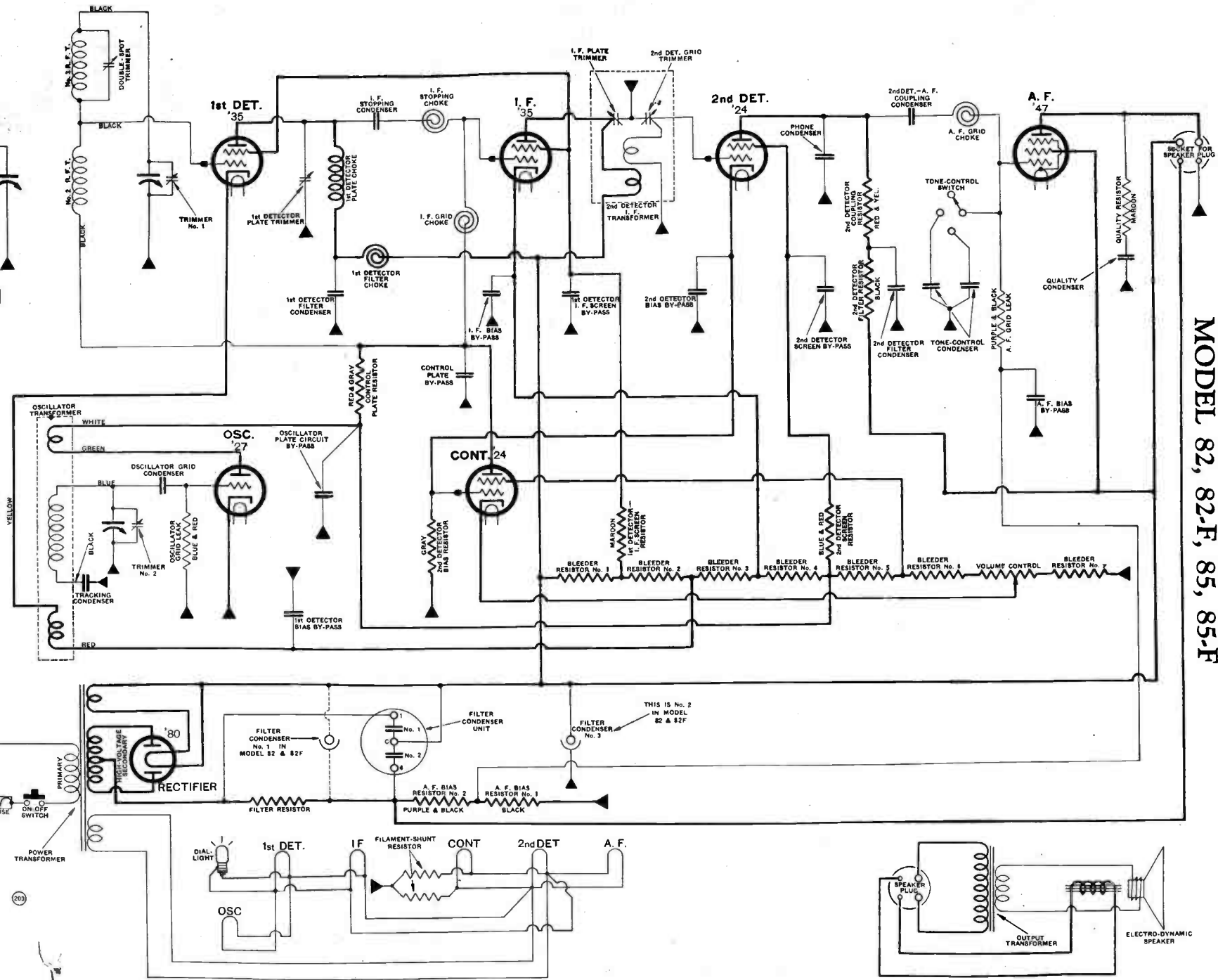
MODEL 81 MOTOR CAR RADIO

ATWATER KENT RADIO

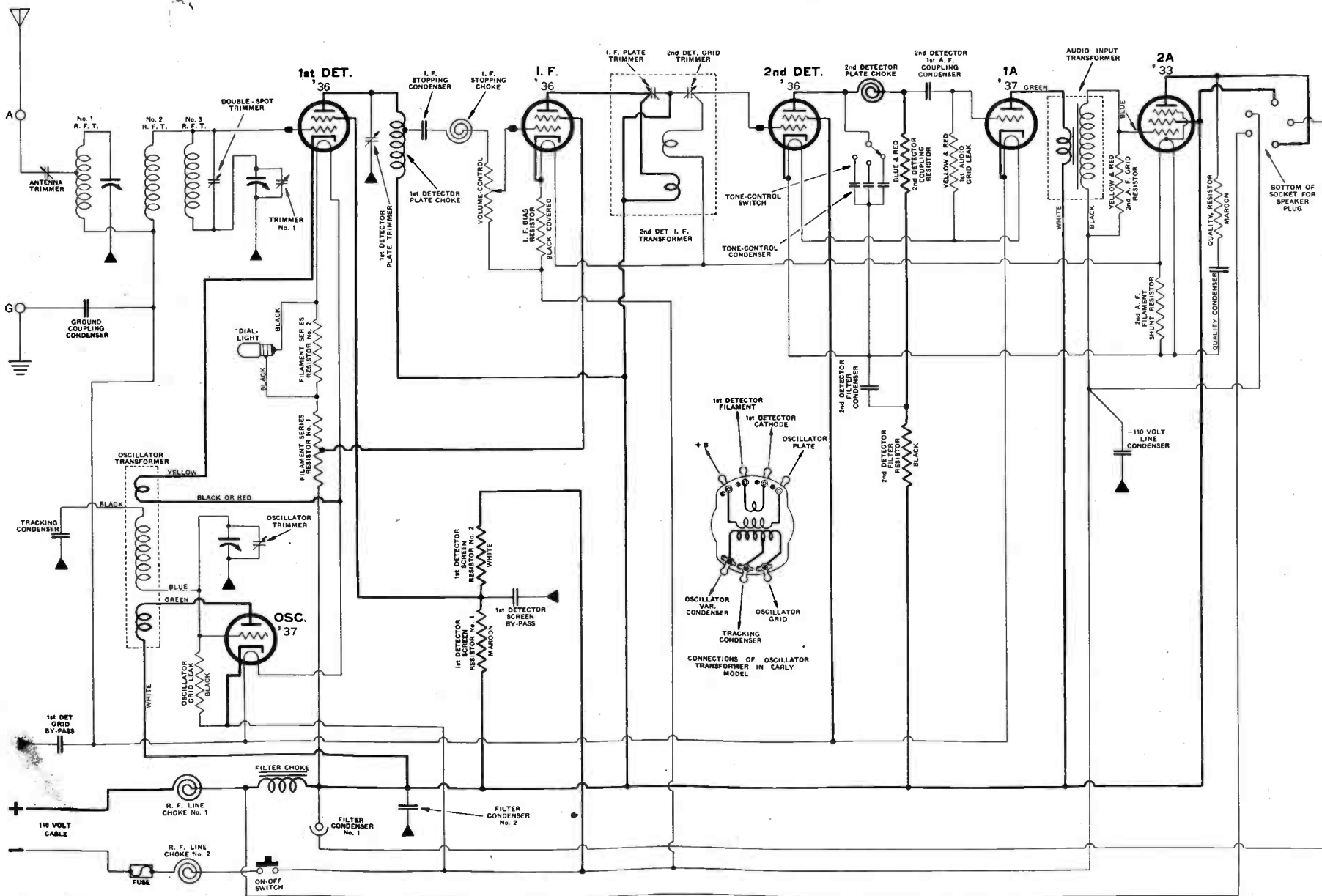
FIG. 282. DIAGRAM OF MODEL 81 MOTOR CAR RADIO (BATTERY-OPERATED).

This receiver consists of three units: (1st) the chassis and battery container, (2nd) the electro-dynamic speaker, (3rd) the remote-control unit.

# MODEL 82, 82-F, 85, 85-F



**FIG. 283. DIAGRAM OF MODEL 82, 82-F, 85, AND 85-F (A. C.-OPERATED).**  
 In Model 82 and 82-F, the filter condenser unit is not used, but is replaced by an additional electrolytic condenser which is shown above, connected in dotted lines. A few early-type Model 85 do not have automatic volume control; they have three electrolytic filter condensers; the circuit of these early Model 85 sets is similar to Model 80. The tracking condenser mounted on the oscillator transformer in Model 82 and some 85 sets. The filament circuit of Model 82 is somewhat different from that shown above.  
 November, 1931.



ATWATER KENT RADIO  
MODEL 82-D, 84-D

FIG. 284. DIAGRAM OF MODEL 82-D AND 84-D (D. C.-OPERATED).

Early Model 84-D does not have tone control; it has a condenser, instead of a resistor, across the secondary of the audio input transformer; it has a small phone condenser connected to the plate of the 2nd-detector, and it has an antenna choke connected between the antenna and ground posts. In 82-D, the oscillator-tracking condenser is mounted on the oscillator transformer. Connections to the oscillator transformer in early-type 84-D are shown in the separate drawing. In 82-D, an extra-110-volt line condenser is connected from ground to a point between R. F. line choke No. 2 and the on-off switch.

# ATWATER KENT RADIO

## MODEL 82-Q

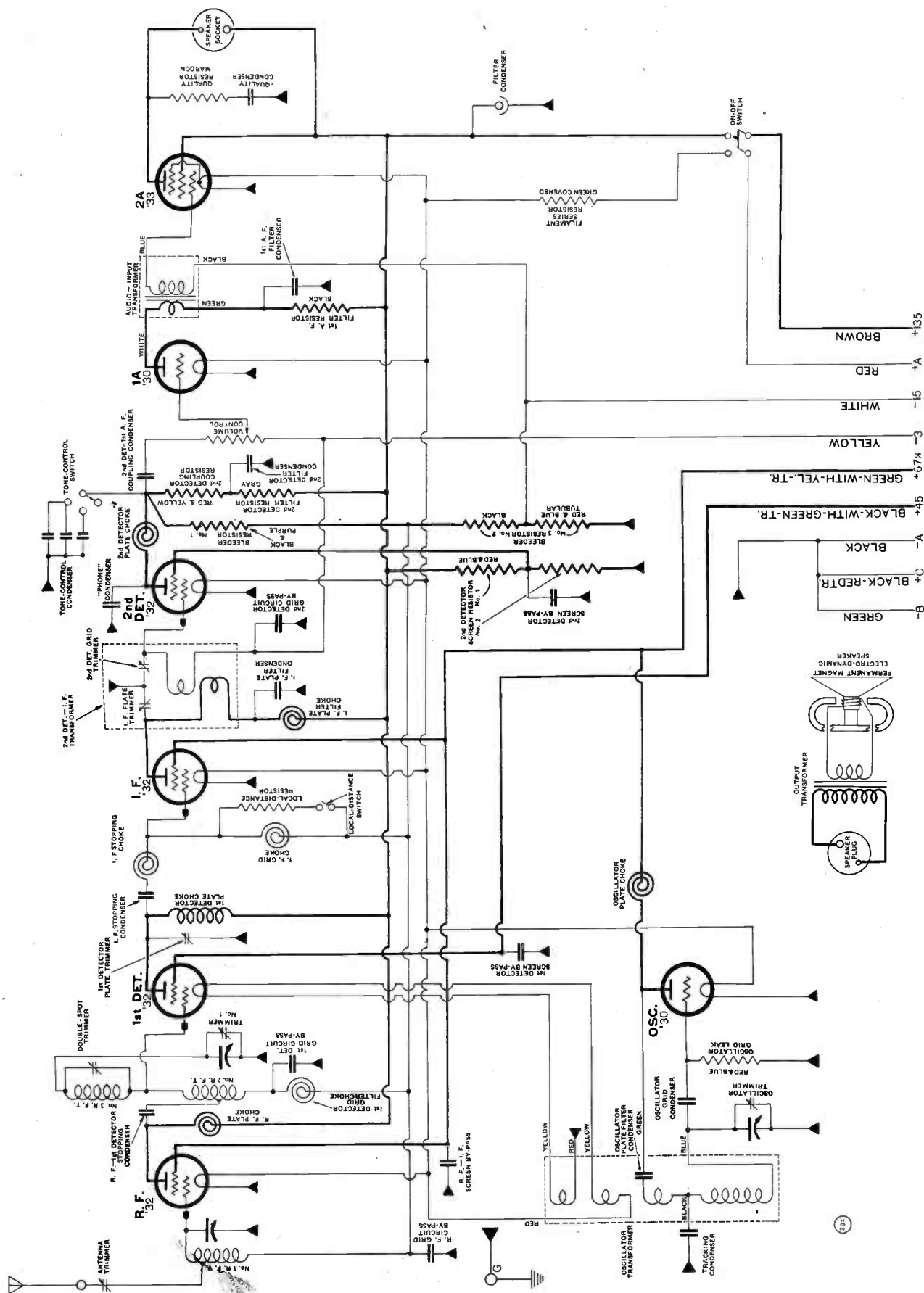


FIG. 285. DIAGRAM OF MODEL 82-Q (BATTERY-OPERATED).

In some 82-Q receivers, the primary of the audio input transformer is connected as follows: Green to the plate, and white to the 1st-A. F. filter resistor.

# ATWATER KENT RADIO

## MODEL 80, 80-F, 82, 82-F TOP VIEW MODEL 80, 80-F CHART

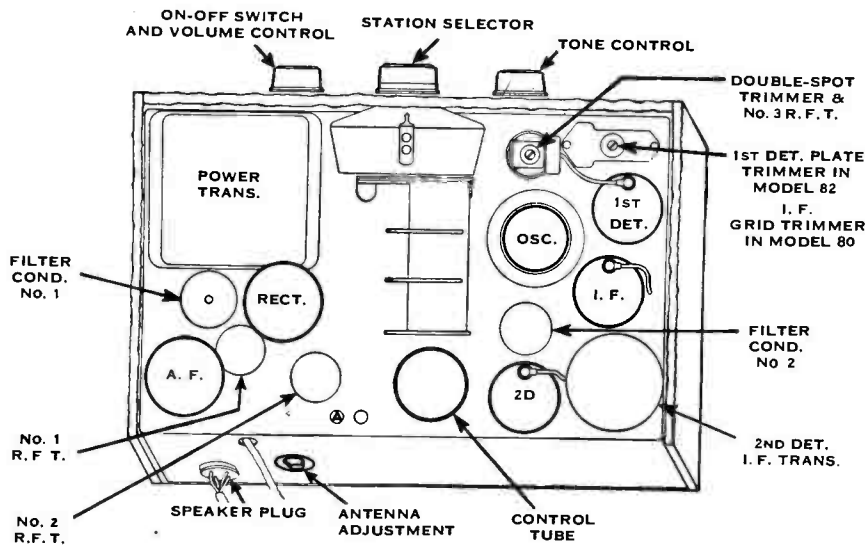


FIG. 293. TOP VIEW OF MODEL 82, 82-F.

The top view of Model 80, 80-F is similar except that it has no control tube and the position of No.1 and No. 2 R.F.T. is interchanged.

### Condensers in Multiple By-pass Model 80, 80-F, 83, 83-F

- 1—Tone-control condenser.
- 2—Tone-control condenser.
- 3—1st-detector—I. F. screen by-pass.
- 4—I. F. bias by-pass.
- 5—2nd-detector bias by-pass.
- 6—Phone condenser.
- 7—2nd-detector—A. F. coupling condenser.
- 8—2nd-detector screen by-pass.
- 9—Quality condenser.
- 10—1st-detector plate filter condenser.
- 11—A. F. bias by-pass.
- 12—1st-detector bias by-pass.

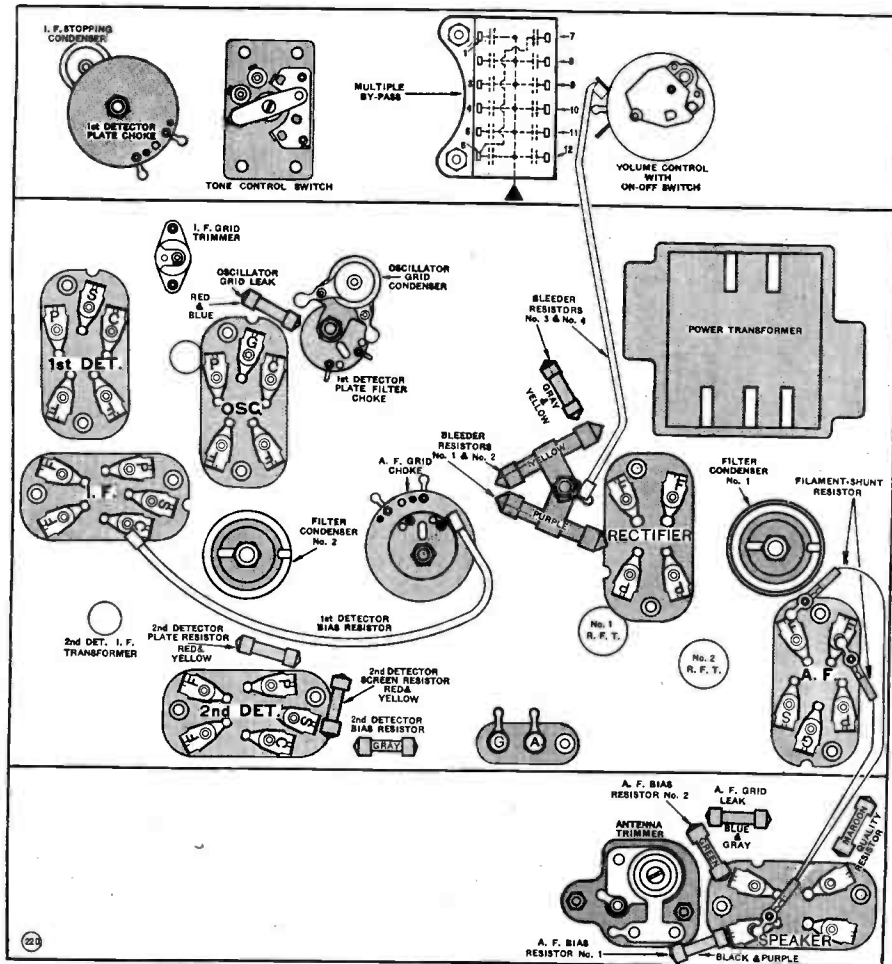


FIG. 294. CHART OF MODEL 80, 80-F.

The parts on Model 83, 83-F are similar except that Model 83, 83-F has a filter condenser unit and only one electrolytic condenser.

# ATWATER KENT RADIO

## MODEL 83, 83-F TOP VIEW

### MODEL 82, 82-F CHART

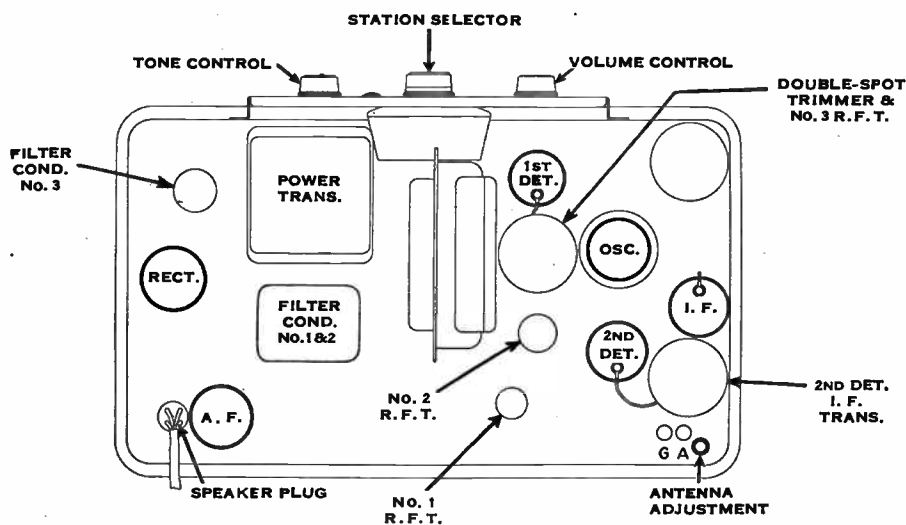


FIG. 295. TOP VIEW OF MODEL 83, 83-F.

The circle in the upper right-hand corner is the shield that covers the coupling unit between the 1st-detector and the I. F. tubes.

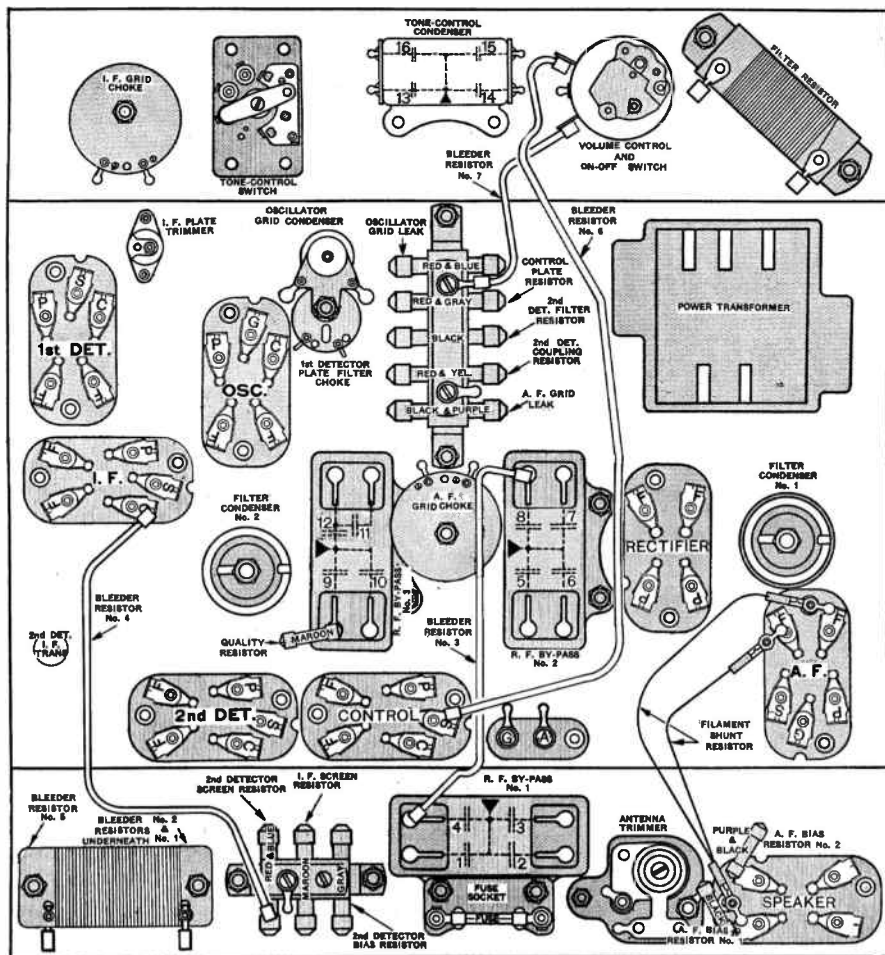


FIG. 296. CHART OF MODEL 82, 82-F.

The filter resistor is not used in Model 82-F.

### By-pass Condensers in Model 82, 82-F

#### R. F. By-pass No. 1

- 1—2nd-detector bias by-pass.
- 2—Control plate by-pass.
- 3—Not used.
- 4—I. F. bias by-pass.

#### R. F. By-pass No. 2

- 5—1st-detector filter condenser.
- 6—1st-detector—I. F. screen by-pass.
- 7—2nd-detector filter condenser.
- 8—1st-detector bias by-pass.

#### R. F. By-pass No. 3

- 9—Quality condenser.
- 10—A. F. bias by-pass.
- 11—2nd-detector—A. F. coupling condenser.
- 12—Phone condenser.

#### Tone-control Condenser

- 13—Tone condenser.
- 14—2nd-detector screen by-pass.
- 15—Oscillator plate-circuit by-pass.
- 16—Tone condenser.



# ATWATER KENT RADIO

## MODEL 82-D TOP VIEW AND CHART

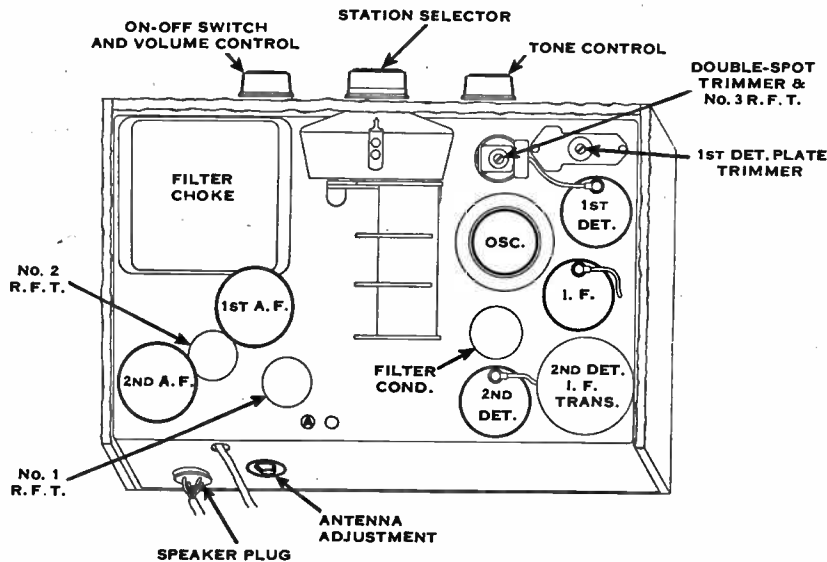


FIG. 297. TOP VIEW OF MODEL 82-D.

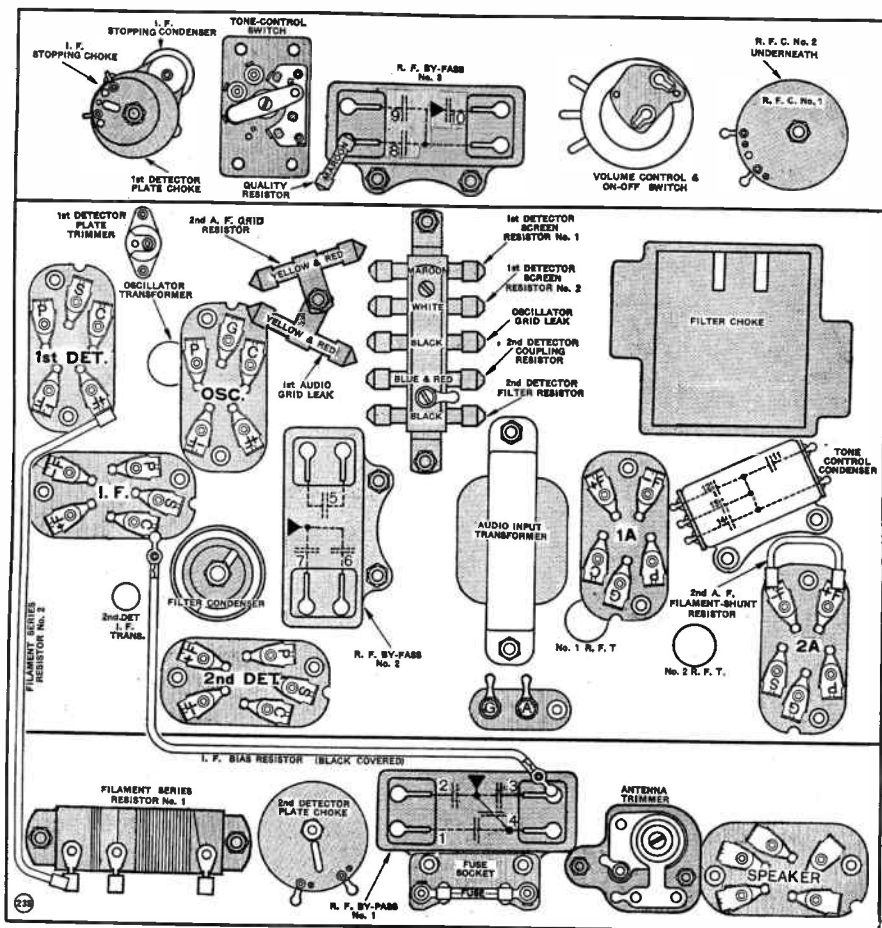


FIG. 298. CHART OF MODEL 82-D.

### By-pass Condensers in Model 82-D

#### R. F. By-pass No. 1

- 1—Ground coupling condenser.
- 2—1st-detector screen by-pass.
- 3—110-volt line condenser.
- 4—1st-detector grid by-pass.

#### R. F. By-pass No. 2

- 5—2nd-detector—1st-A.F. coupling condenser.
- 6—Filter condenser No. 2.
- 7—Not used.

#### R. F. By-pass No. 3

- 8—Quality condenser.
- 9—2nd-detector filter condenser.
- 10—110-volt line by-pass.

#### Tone-control Condenser

- 11—Not used.
- 12—Tone condenser.
- 13—Tone condenser.
- 14—Tone condenser.

MODEL 82-Q TOP VIEW AND CHART

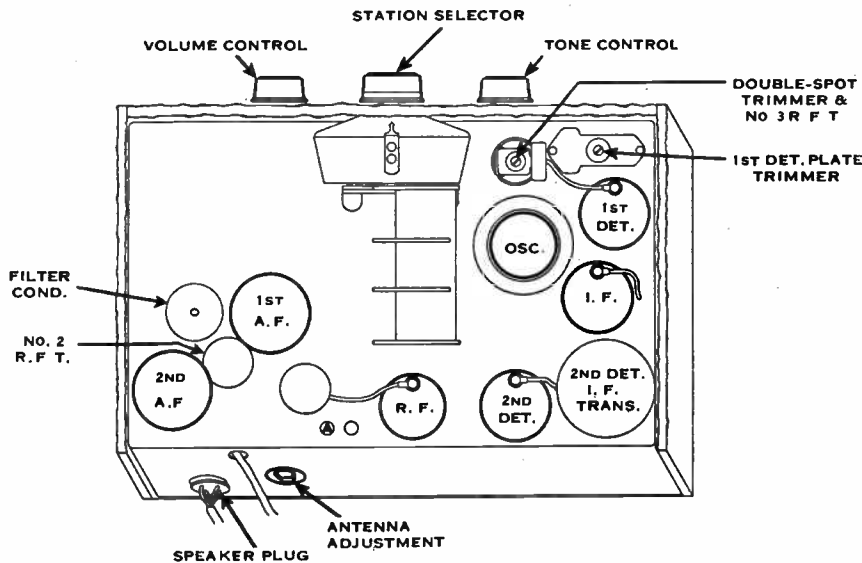


FIG. 299. TOP VIEW OF MODEL 82-Q.

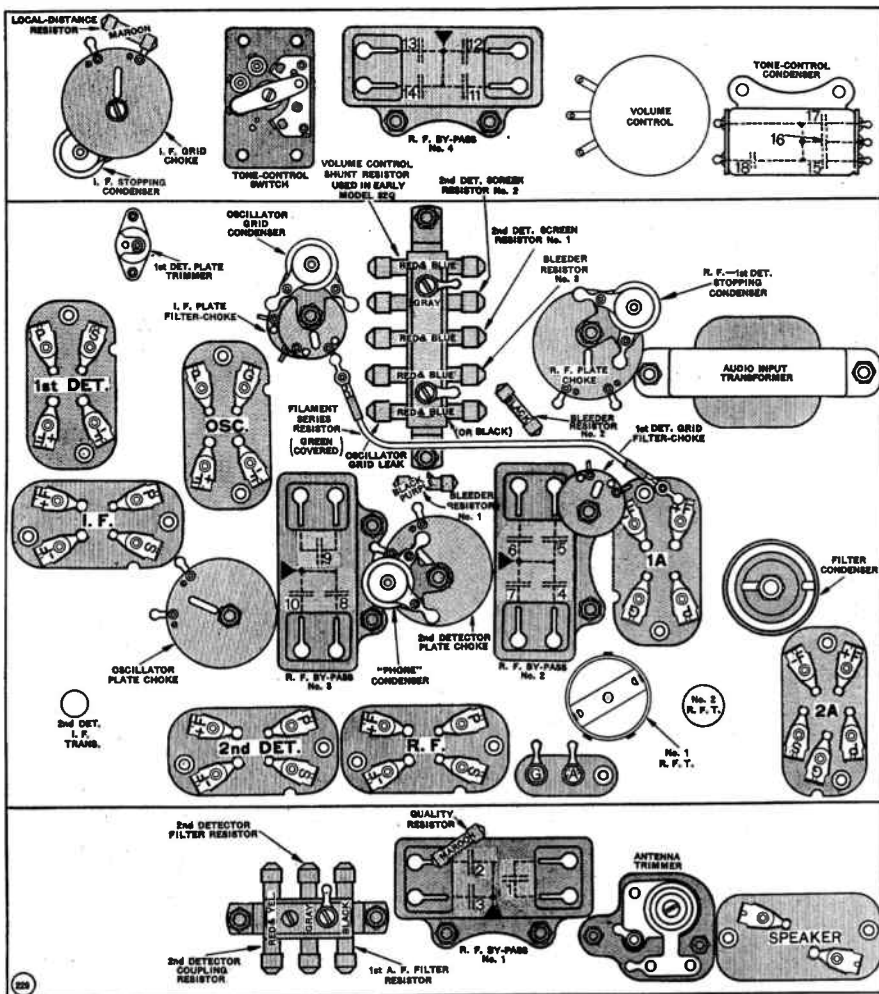


FIG. 300. CHART OF MODEL 82-Q.

By-pass Condensers in Model 82-Q

R. F. By-pass No. 1

- 1—Not used.
- 2—Quality condenser.
- 3—2nd-detector grid-circuit by-pass.

R. F. By-pass No. 2

- 4—+B filter condenser.
- 5—R. F. grid-circuit by-pass.
- 6—R. F.—I. F. screen by-pass.
- 7—1st-detector grid-circuit by-pass.

R. F. By-pass No. 3

- 8—2nd-detector filter condenser.
- 9—2nd-detector—1st-A. F. coupling condenser.
- 10—Tracking condenser.

R. F. By-pass No. 4

- 11—2nd-detector screen by-pass.
- 12—1st-A. F. filter condenser.
- 13—1st-detector screen by-pass.
- 14—I. F. plate filter condenser.

Tone-control Condenser

- 15—Tone condenser.
- 16—Tone condenser.
- 17—Tone condenser.
- 18—Not used.

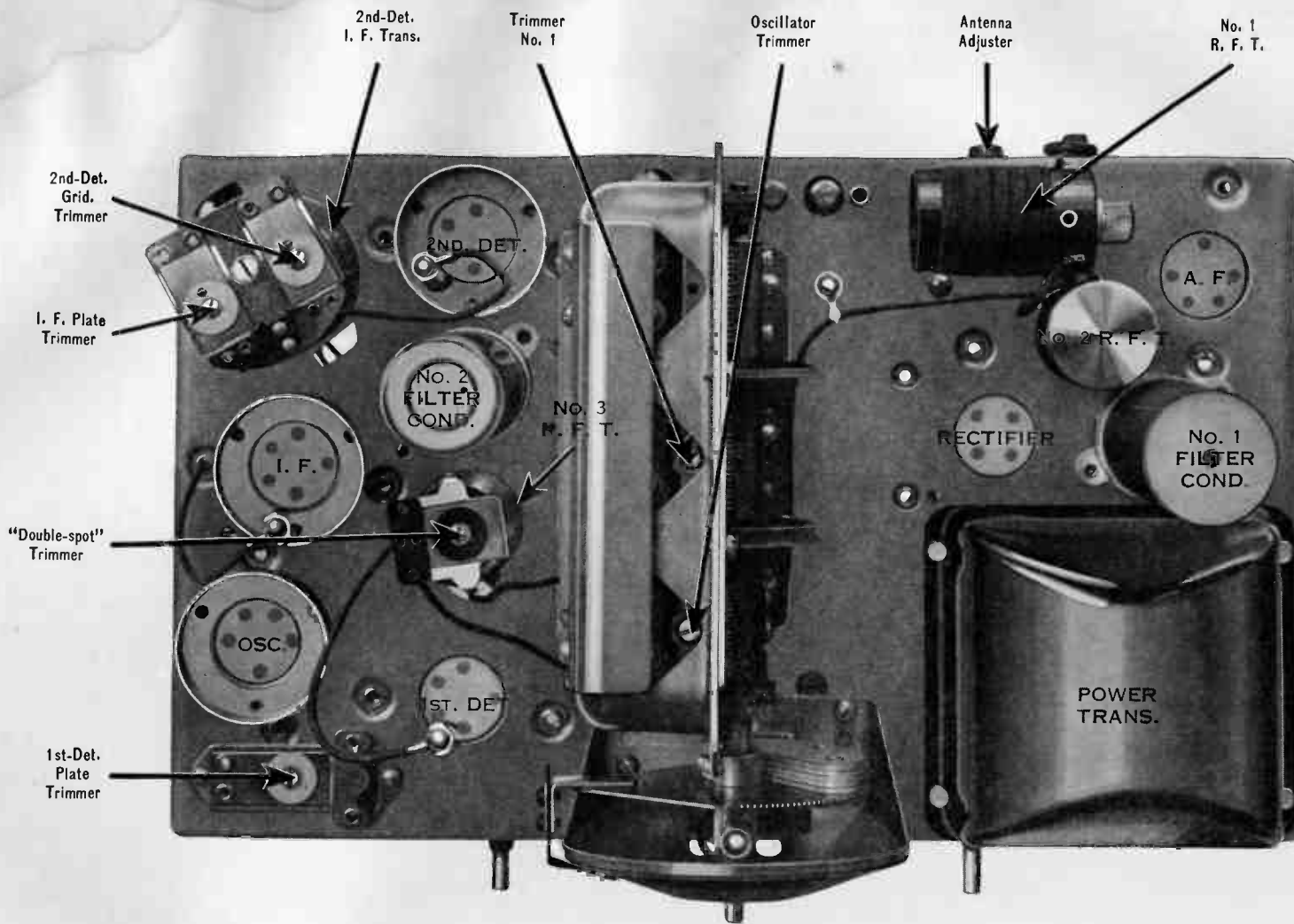


FIG. 301. TOP VIEW OF MODEL 84, 84-F CHASSIS.

ATWATER KENT RADIO  
**MODEL 84, 84-F...TOP VIEW**

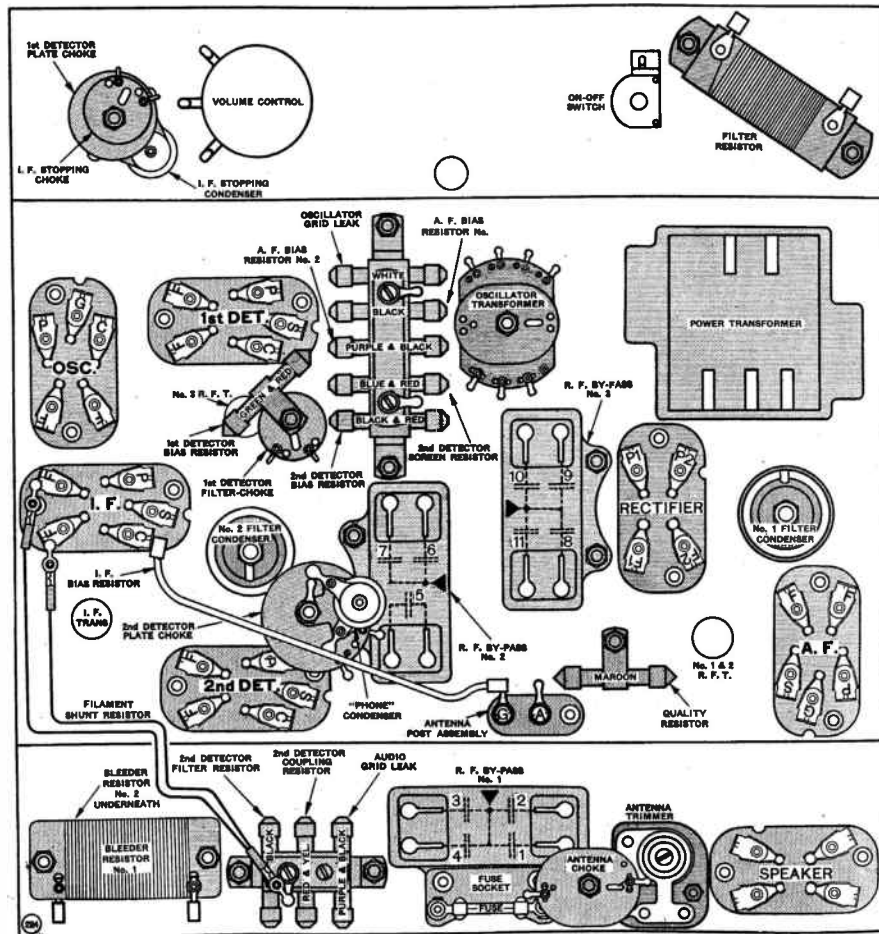


FIG. 302. CHART OF EARLY-TYPE MODEL 84, 84-F.

In some early-type Model 84, 84-F, the 1st-detector bias resistor is a flexible type, and the quality resistor is wire-wound. These are both superseded by the tubular resistors indicated above. The filter-resistor at top-right is NOT used in any Model 84-F.

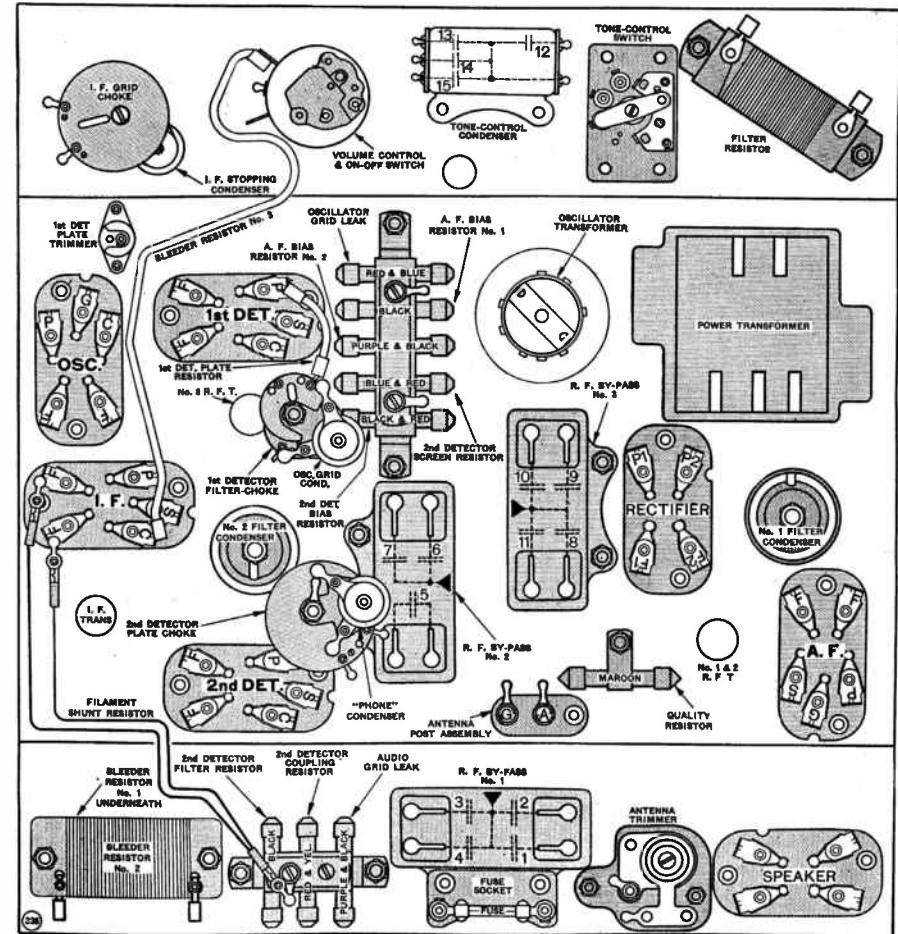


FIG. 303. CHART OF LATE-TYPE MODEL 84, 84-F.

Some late-type Model 84, 84-F receivers have slightly different oscillator transformers and connections than indicated in the diagram Fig. 288. When servicing such sets, carefully note and adhere to the original method of wiring. A flexible type 1st-detector bias resistor (not shown above) is connected from condenser 9 to condenser 3.

ATWATER KENT RADIO  
MODEL 84, 84-F CHARTS

### By-pass Condensers in Model 84, 84-F.

#### R. F. By-pass No. 1

- 1—2nd-detector filter condenser.
- 2—Quality condenser.
- 3—I. F. bias by-pass.
- 4—A. F. bias by-pass.

#### R. F. By-pass No. 2

- 5—2nd-detector—A. F. coupling condenser.
- 6—Tracking condenser.
- 7—2nd-detector bias by-pass.

#### R. F. By-pass No. 3

- 8—1st-detector filter condenser.
- 9—1st-detector bias by-pass.
- 10—1st-detector—I. F. screen by-pass.
- 11—2nd-detector screen by-pass.

#### Tone-control Condenser

- (used only in late type)
- 12—Not used.
- 13—Tone-control condenser.
- 14—Not used.
- 15—Tone-control condenser.

ATWATER KENT RADIO

MODEL 84-D TOP VIEW AND CHART

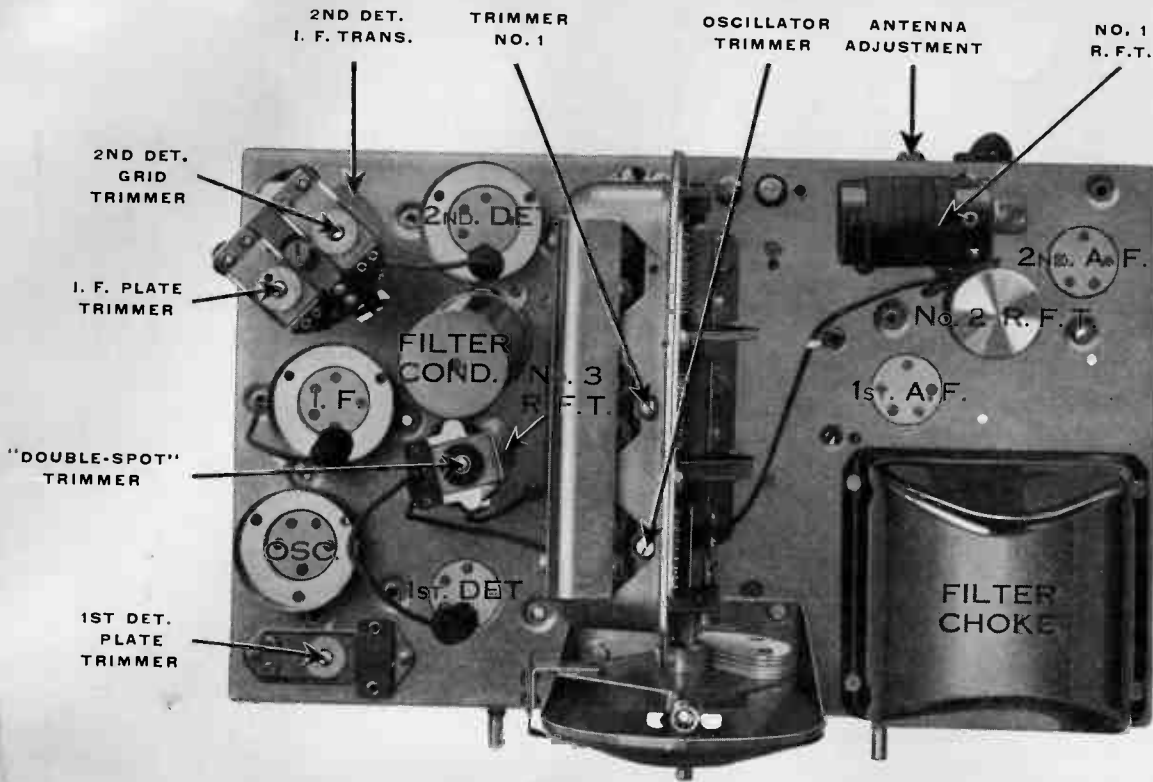


FIG. 304. TOP VIEW OF MODEL 84-D.

By-pass Condensers in Model 84-D

Condensers in R. F. By-pass No. 1

- 1—Ground coupling condenser.
- 2—1st-detector screen by-pass.
- 3—110-volt line condenser.
- 4—1st-detector grid by-pass.

R. F. By-pass No. 2

- 5—2nd-detector—1st-A. F. coupling condenser.
- 6—Filter condenser No. 2.
- 7—Tracking condenser.

R. F. By-pass No. 3

- 8—Quality condenser.
- 9—2nd-detector filter condenser.
- 10—2nd-A. F. grid condenser in early-type sets, 2nd-detector phone condenser in later-type sets.

Tone-control Condenser (Late-type sets only)

- 11—Not used.
- 12—Tone condenser.
- 13—Tone condenser.
- 14—Tone condenser.

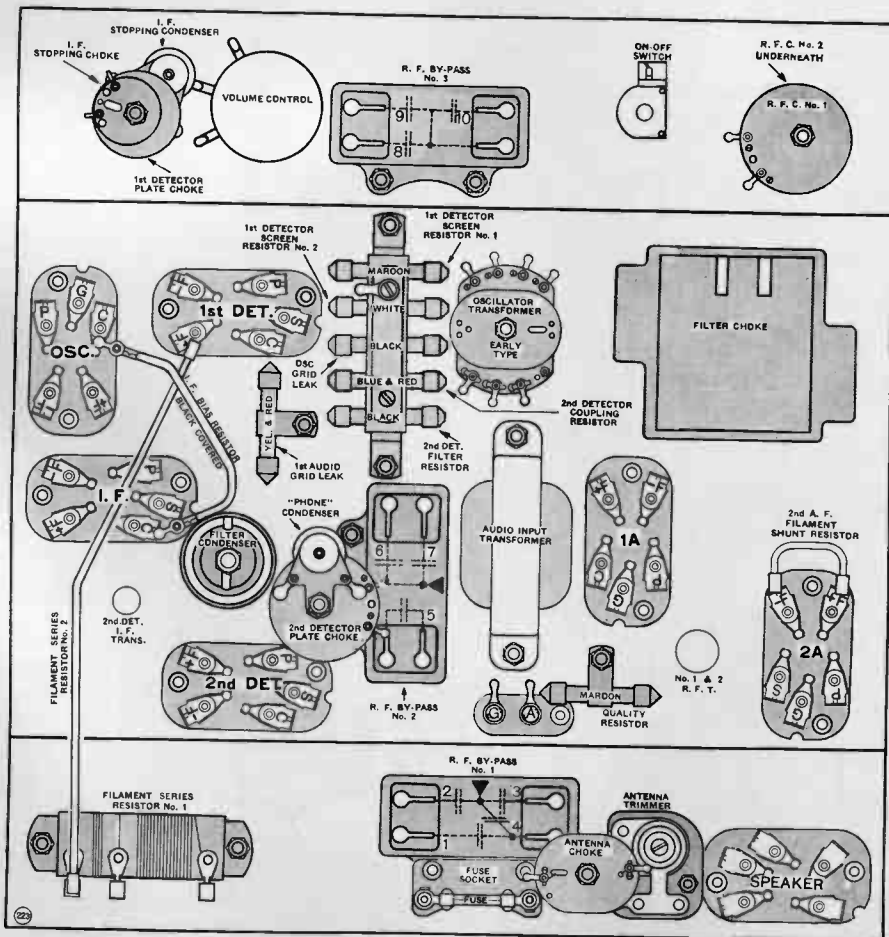


FIG. 305. CHART OF MODEL 84-D. (EARLY TYPE WITHOUT TONE CONTROL.)

# MODEL 84-Q TOP VIEW AND CHART

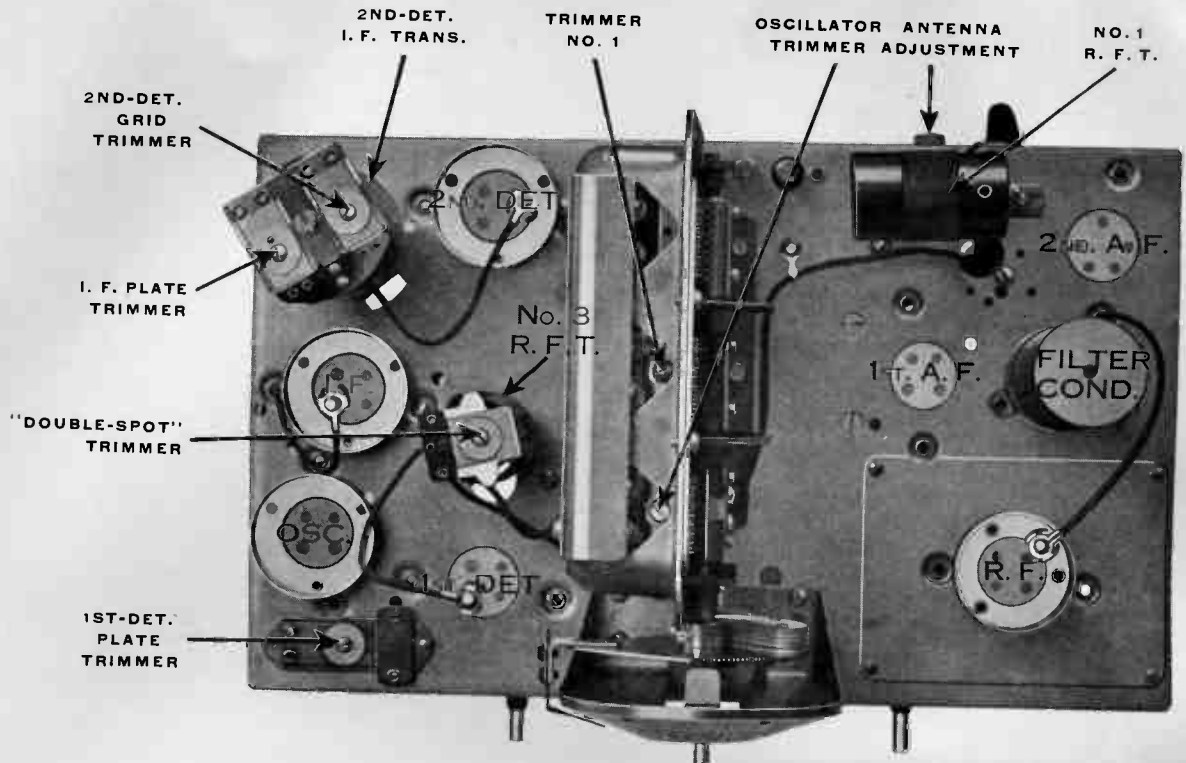


FIG. 306. TOP VIEW OF MODEL 84-Q.

In a few early-model 84-Q receivers, the position of the R. F. and the 1st-A. F. socket is interchanged.

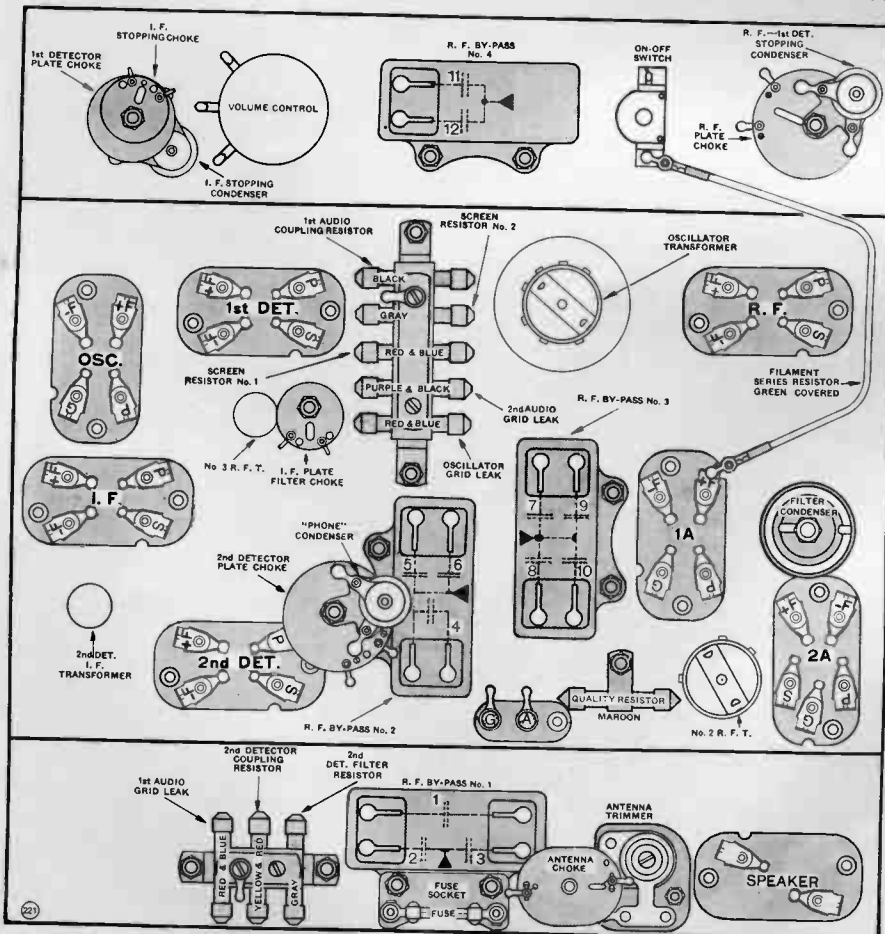


FIG. 307. CHART OF MODEL 84-Q. (EARLY TYPE WITHOUT TONE CONTROL..)

## By-pass Condensers in Model 84-Q

### R. F. By-pass No. 1

- 1—1st-2nd A. F. coupling condenser.
- 2—Phone condenser.
- 3—Quality condenser.

### R. F. By-pass No. 2

- 4—2nd detector—1st-A. F. coupling condenser.
- 5—2nd-detector filter condenser.
- 6—Tracking condenser.

### R. F. By-pass No. 3

- 7—R. F.-I. F. screen by-pass.
- 8—I. F. plate filter condenser.
- 9—1st-detector—2nd-detector screen by-pass.
- 10—+B filter condenser.

### R. F. By-pass No. 4 (Later 84-Q only)

- 11—R. F. filament by-pass.
- 12—R. F. filament by-pass.

# ATWATER KENT RADIO

## MODEL 85, 85-F TOP VIEW AND CHART

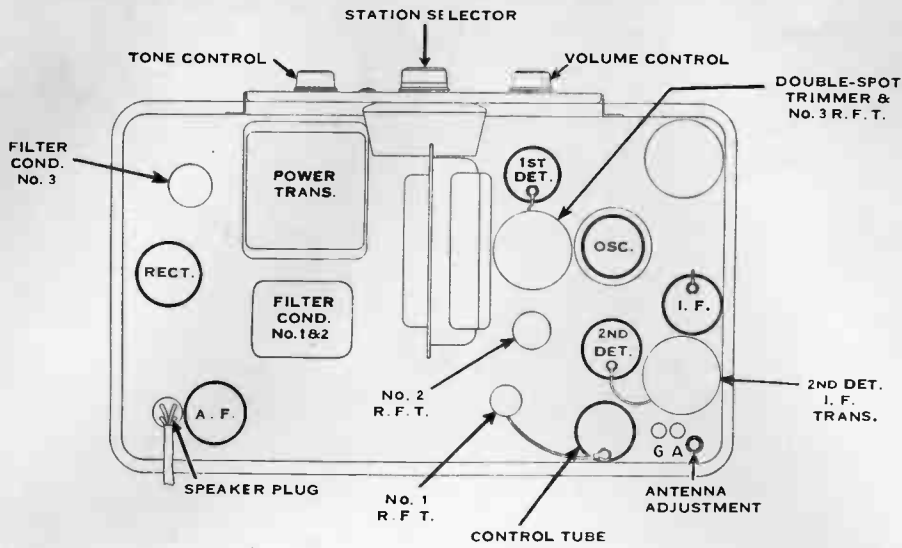


FIG. 308. TOP VIEW OF MODEL 85, 85-F.

The circle in the top right corner represents the shield for the coupling unit between the 1st-detector and I. F. tubes.

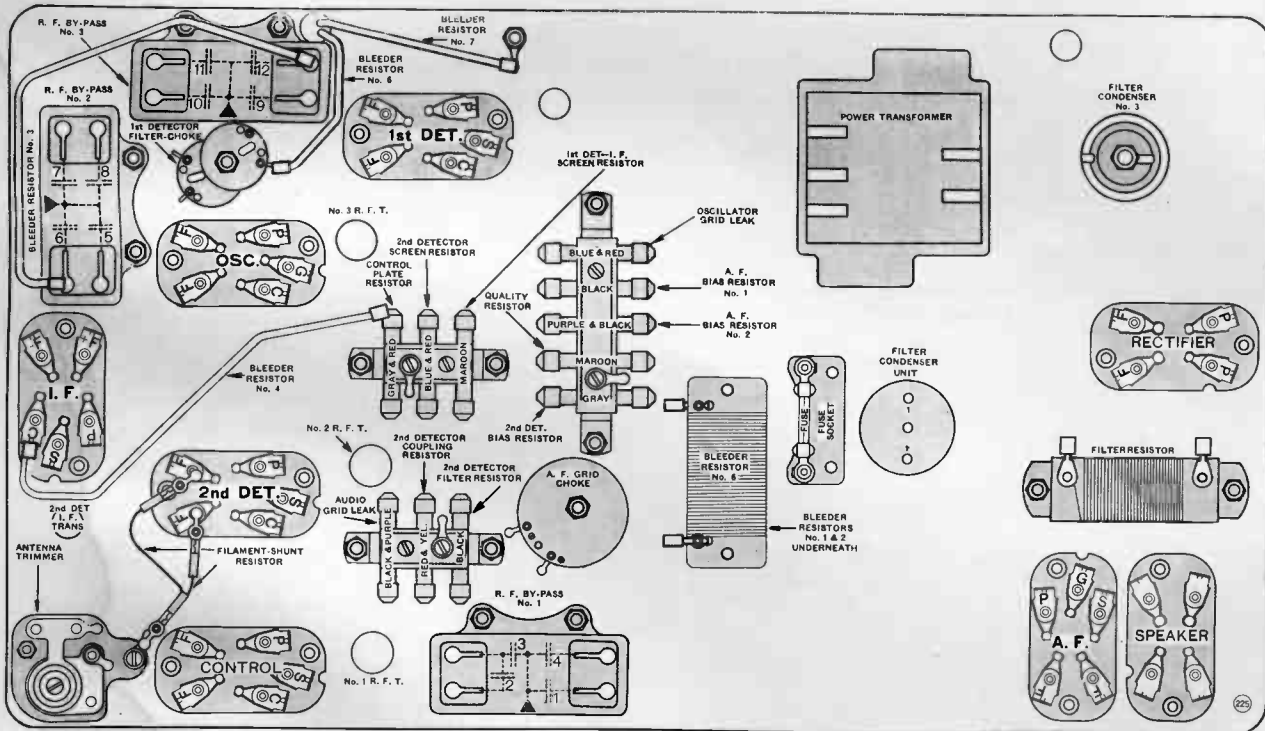


FIG. 309. CHART OF MODEL 85, 85-F.

The filter resistor is not used in Model 85-F.

### By-pass Condensers in Model 85, 85-F

#### R. F. By-pass No. 1

- 1—Quality condenser.
- 2—2nd-detector—A. F. coupling condenser.
- 3—Phone condenser.
- 4—2nd-detector bias by-pass.

#### R. F. By-pass No. 2

- 5—A. F. bias by-pass.
- 6—I. F. bias by-pass.
- 7—Tracking condenser.
- 8—Control-plate by-pass.

#### R. F. By-pass No. 3

- 9—1st-detector—I. F. screen by-pass.
- 10—2nd-detector filter condenser.
- 11—1st-detector filter condenser
- 12—1st-detector bias by-pass.

#### Tone-control Condenser (on front panel)

- Two top contacts—2nd-detector screen by-pass and oscillator plate-circuit by-pass.
- Two bottom contacts—tone-control condensers.

# ATWATER KENT RADIO

## MODEL 85-Q TOP VIEW AND CHART

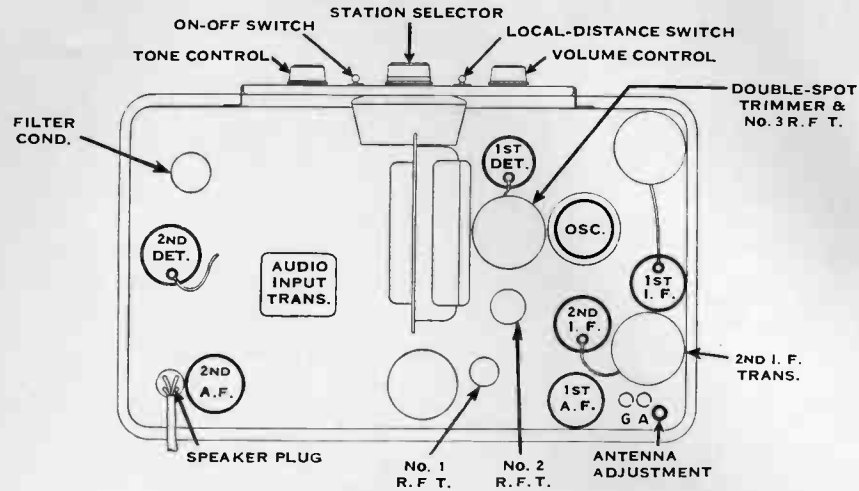


FIG. 310. TOP VIEW OF MODEL 85-Q.

The circle in the top right corner indicates the shield for the coupling unit between the 1st-detector and the 1st-I. F. tubes. The circle in the bottom center is the shield covering the coupling unit between the 2nd-I. F. and the 2nd-detector tubes.

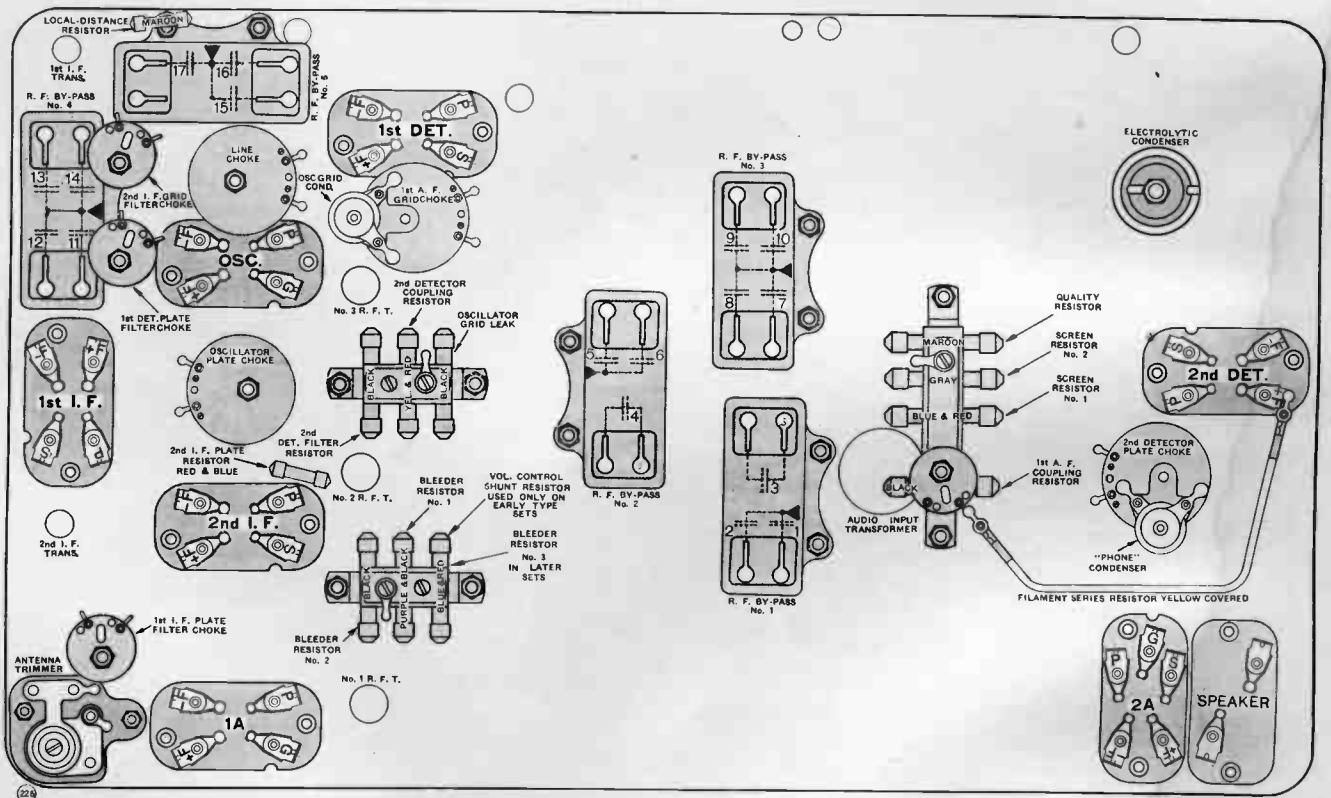


FIG. 311. CHART OF MODEL 85-Q.

### By-pass Condensers in Model 85-Q.

- | R. F. By-pass No. 1                  | R. F. By-pass No. 2                          | R. F. By-pass No. 3                   | R. F. By-pass No. 4                  | R. F. By-pass No. 5                     |
|--------------------------------------|--|---------------------------------------|--------------------------------------|---|
| 1—1st-detector grid-circuit by-pass. | 4—2nd-detector—1st-A. F. coupling condenser. | 7—2nd-detector grid filter condenser. | 11—1st-I. F. plate filter condenser. | 15—1st-detector screen by-pass.         |
| 2—Quality condenser.                 | 5—1st-A. F. grid filter condenser.           | 8—2nd-detector screen by-pass.        | 12—I. F. screen by-pass.             | 16—1st-I. F. grid-circuit by-pass.      |
| 3—Not used.                          | 6—Tracking condenser.                        | 9—2nd-detector filter condenser.      | 13—2nd-I. F. grid-circuit by-pass.   | 17—1st-detector plate filter condenser. |
|                                      |  | 10—1st-A. F. plate filter condenser.  | 14—1st-I. F. grid-circuit by-pass.   |   |



# ATWATER KENT RADIO

## MODEL 86, 86-F TOP VIEW AND CHART

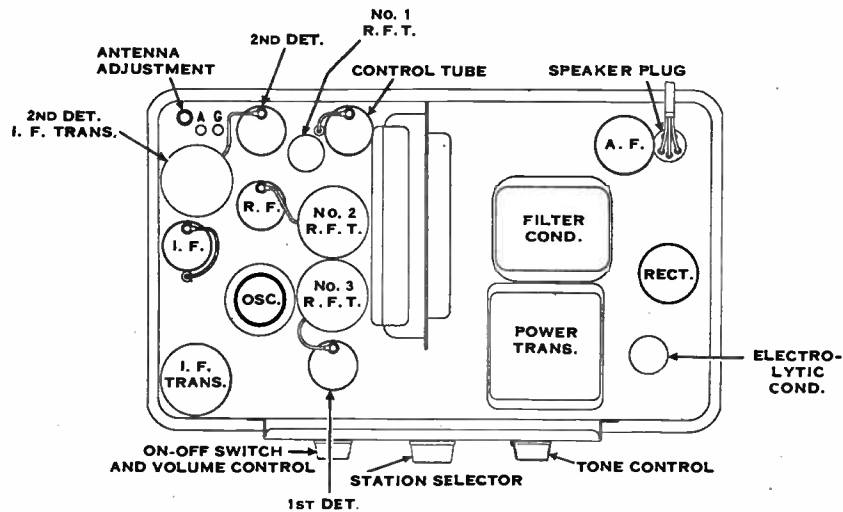


FIG. 312. TOP VIEW OF MODEL 86, 86-F.

The speaker plug has only four prongs instead of five, as indicated above.

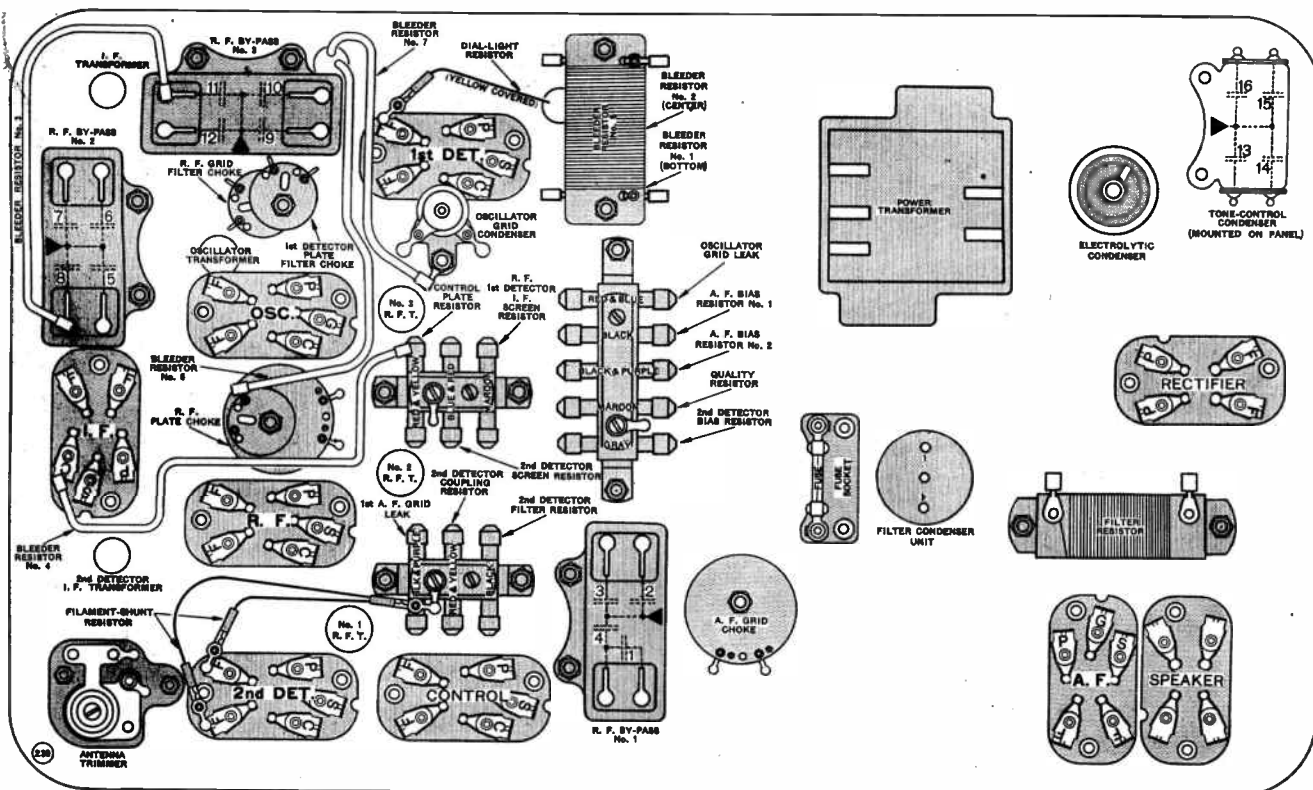


FIG. 313. CHART OF MODEL 86, 86-F.

The filter resistor is not used in Model 86-F.

### By-pass Condensers in Model 86, 86-F

#### R. F. By-pass No. 1

- 1—2nd-detector—A. F. coupling condenser.
- 2—Quality condenser.
- 3—2nd-detector bias by-pass.
- 4—Phone condenser.

#### R. F. By-pass No. 2

- 5—A. F. bias by-pass.
- 6—R. F. grid filter condenser.
- 7—Control plate by-pass.
- 8—R. F.—I. F. bias by-pass.

#### R. F. By-pass No. 3

- 9—1st-detector plate filter condenser.
- 10—R. F.—1st-detector—I. F. screen by-pass.
- 11—1st-detector bias by-pass.
- 12—2nd-detector filter condenser.

#### Tone-control Condenser

- 13—Tone-control condenser.
- 14—Tone-control condenser.
- 15—2nd-detector screen by-pass.
- 16—2nd-detector screen by-pass.

# ATWATER KENT RADIO

## MODEL 87 TOP VIEW AND CHART

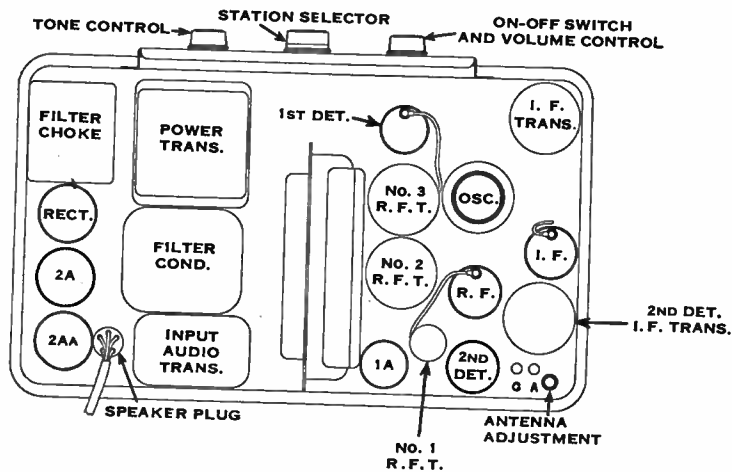


Fig. 314. TOP VIEW OF MODEL 87.

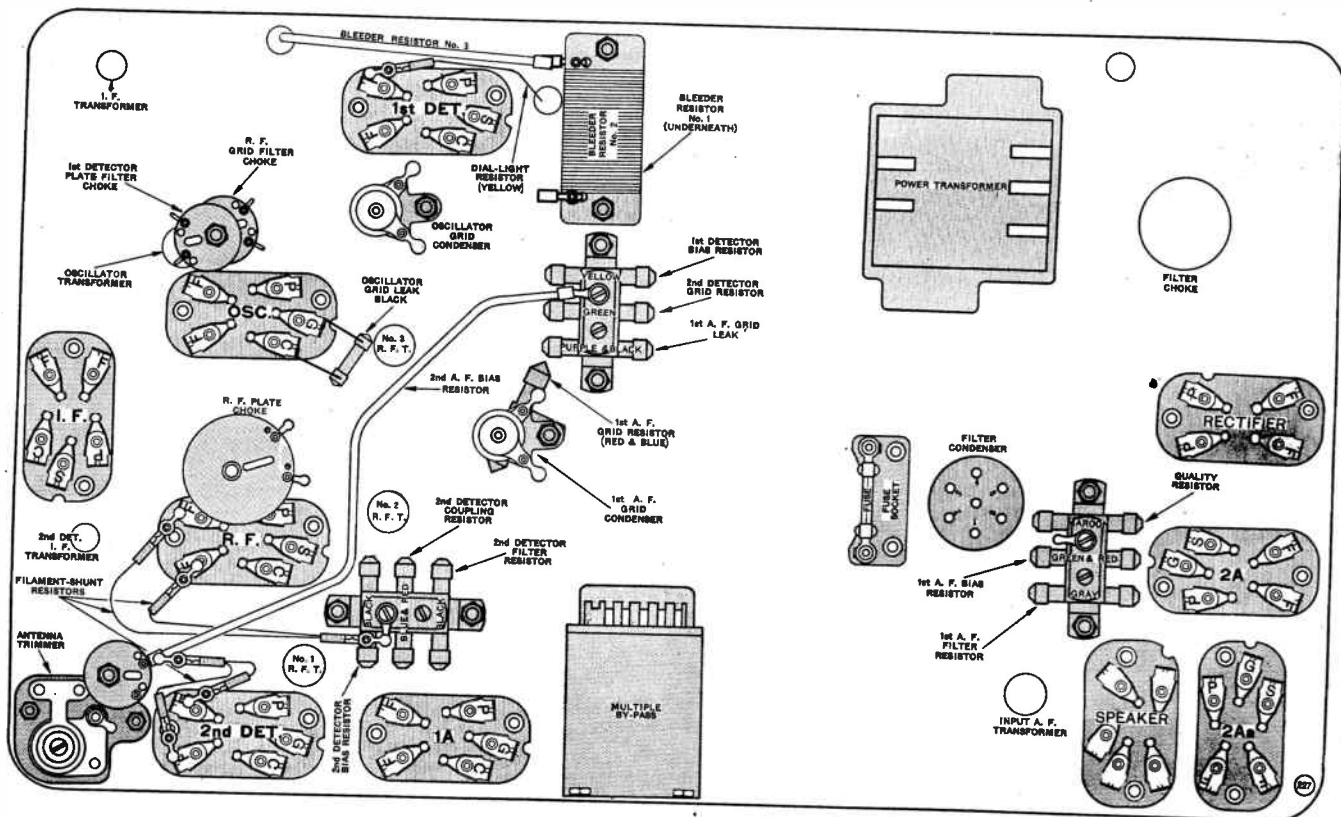


FIG. 315. CHART OF MODEL 87.

### Condensers in Multiple By-pass Model 87

The internal connections of the multiple by-pass are shown on page 292.

- |  |   |   |  |
|--|---|---|--|
| <p>1—1st-detector plate filter condenser.<br/>2—1st-detector bias by-pass.<br/>3—R. F.—I. F. bias by-pass.</p> | <p>4—2nd-detector grid-circuit by-pass.<br/>5—2nd-detector—1st-A. F. coupling condenser.<br/>6—Phone condenser.</p> | <p>7—R. F. grid filter condenser.<br/>8—Quality condenser.<br/>9—2nd-detector bias by-pass.</p> | <p>10—2nd-detector filter condenser.<br/>11—R. F.—1st-detector—I. F. screen by-pass.</p> |
|--|---|---|--|

# ATWATER KENT RADIO

## MODEL 89, 89-F TOP VIEW AND CHART

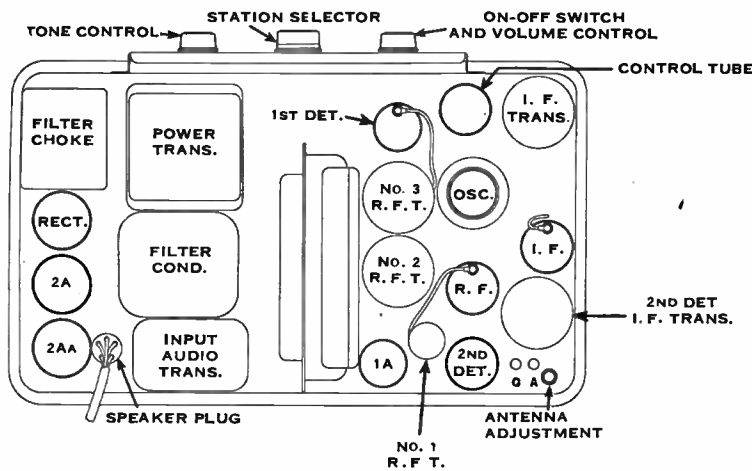


FIG. 316. TOP VIEW OF MODEL 89, 89-F.

Model 89-P has two binding posts for pick-up connection at the rear of the chassis, and a radio-phonograph toggle switch is mounted on the front panel.

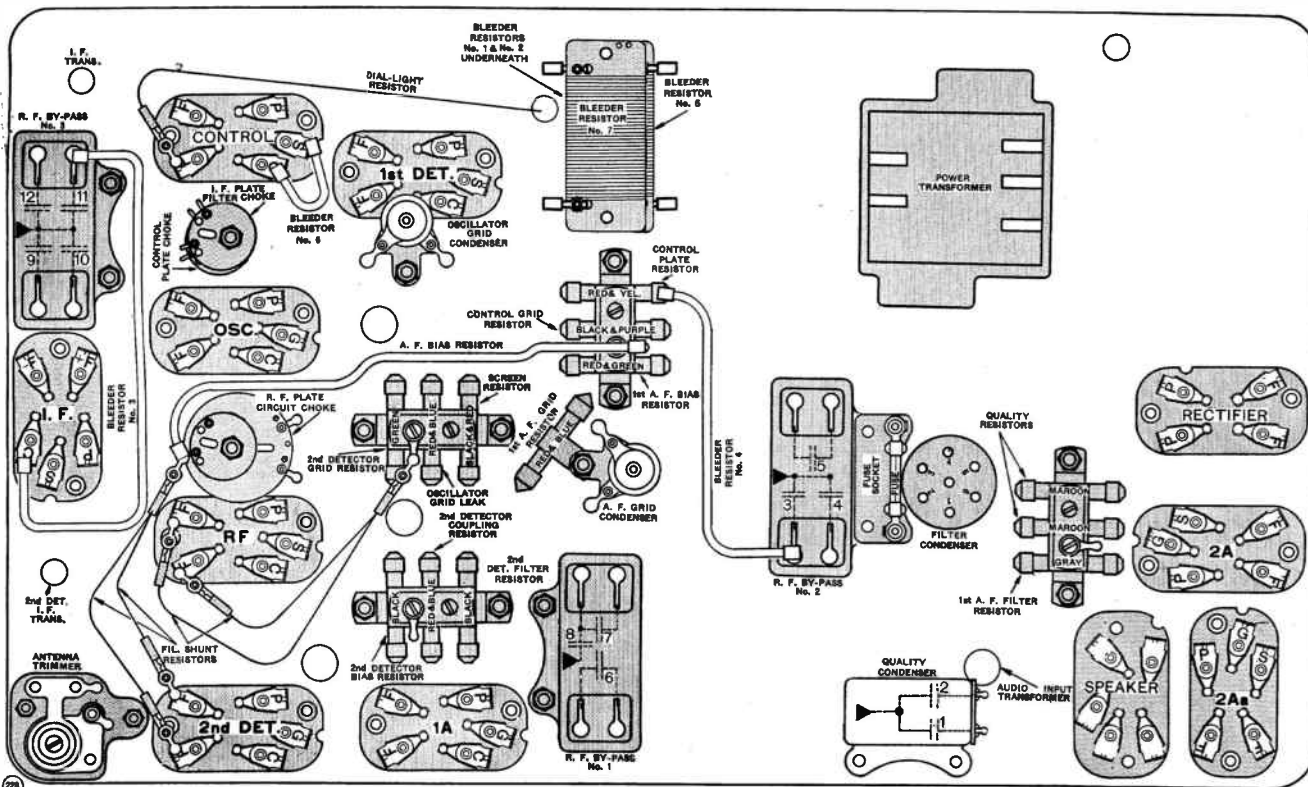


FIG. 317. CHART OF MODEL 89, 89-F.

The 2nd-detector grid resistor is not used in late-type Model 89 89-F, 89-P.

### By-pass Condensers in Model 89, 89-F, 89-P

#### Quality Condenser

- 1—Quality condenser.
- 2—Quality condenser.

#### R. F. By-pass No. 1

- 6—2nd-detector—1st-A. F. coupling condenser.
  - 7—2nd-detector grid-circuit by-pass.
  - 8—2nd-detector bias by-pass.
- (A small "phone" condenser, not shown, is connected internally to the lower-left terminal of by-pass No. 1.)

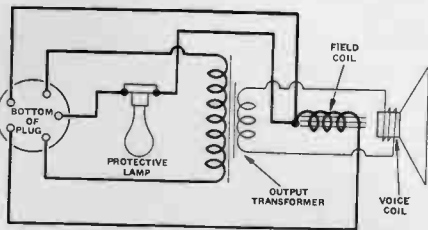
#### R. F. By-pass No. 2

- 3—R. F. bias-by-pass.
- 4—2nd-detector filter condenser.
- 5—I. F. screen by-pass.

#### R. F. By-pass No. 3

- 9—I. F. plate by-pass.
- 10—1st-detector grid-circuit by-pass.
- 11—1st-detector bias by-pass.
- 12—Control-plate condenser.

ILLUSTRATIONS OF SPEAKERS IN A. C. AND BATTERY-OPERATED COMPACT MODELS



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FIG. 318. CIRCUIT OF SPEAKER USED IN MODEL 82-D, 84-D.

The protective lamp (75 watts) is connected in series with the electrolytic filter condenser in the chassis. If the 110-volt D. C. supply plug is reversed, the lamp will light. When the 110-volt plug is properly inserted, the lamp does not light. This action is due to the fact that the electrolytic condenser passes current if the polarity of the applied D. C. voltage is not correct.

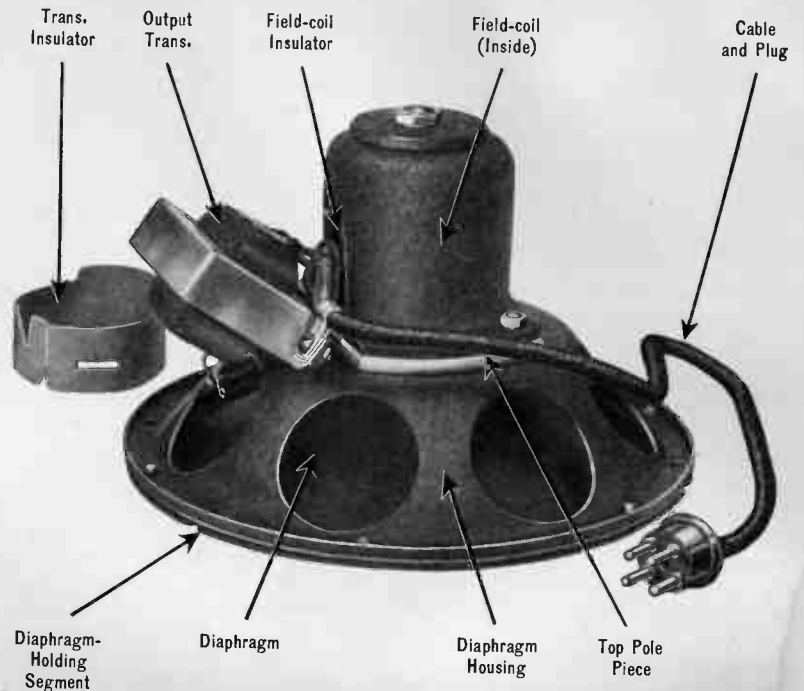


FIG. 319. TYPE S SPEAKER USED IN MODEL 80, 80-F, 82, 82-F, 84 AND 84-F.

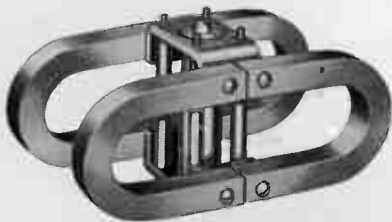


FIG. 320. No. 19918 MAGNET ASSEMBLY USED IN PERMANENT-MAGNET ELECTRO-DYNAMIC SPEAKER.

**IMPORTANT.**—No separate parts are furnished for the No. 19918 magnet assembly in the permanent-magnet electro-dynamic speakers. If any part of the magnet assembly requires replacement or adjustment, return the complete unit, exactly as shown, to your distributor.

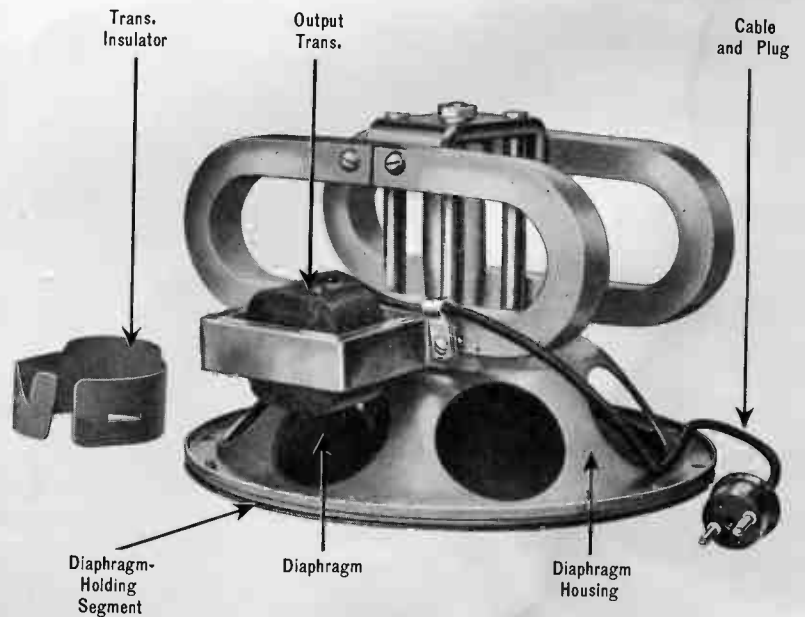


FIG. 321. PERMANENT-MAGNET-TYPE ELECTRO-DYNAMIC SPEAKER USED IN BATTERY-OPERATED MODELS.

ATWATER KENT RADIO

PARTS AND PRICE LIST FOR MODEL 81, No. 20300 MOTOR CAR RADIO

Part No.	Name of Part	List Price	Part No.	Name of Part	List Price
21048	<b>CHASSIS AND BATTERY CONTAINER (less lid)</b>	\$ 3.00		<b>MODEL 81 SPEAKER NO. 22600</b>	
21049	Container lid	1.00	21161	Diaphragm assembly	\$ 2.25
21148	Battery container cardboard	Net .25	19469	Diaphragm holding segment	.15
21331	Battery top pad	“ .03	14394	Diaphragm holding segment screw	.30/c
21061	Mounting bolt 13" long	.10	4795	Diaphragm spider screw	.30/c
21142	Mounting bolt washer	.01	19471	Diaphragm spider washer (fibre)	.30/c
21141	Mounting bolt lockwasher	.70/c	19459	Diaphragm spider washer (hex. metal)	.02
21064	Wing nut	.05	21165	Speaker housing with socket	2.00
21399	<b>VARIABLE CONDENSER STATOR ROTOR &amp; FRAME WITH LEADS</b>	6.00	21337	Socket (5 prongs)	.35
4887	Variable condenser mounting screw	.30/c	17377	Socket insulator	.25/c
18844	Rotor connection (long)	.10	8249	Socket rivet	.50/c
20119	Trimmer mica	.03	21053	Grill	1.00
21126	Control pulley	.75	19484	Cone housing	1.75
21583	Control pulley set screw	.05	14842	Cone housing mounting screw	.01
21479	Control pulley clamp screw	.02	8188	Cone housing mounting nut	.01
21582	Control pulley clamp washer	.01	19475	Cardboard ring	.10
21127	Control pulley spring	.55	22440	Field coil	3.00
20928	Spring centering ring	.05	21508	Field coil insulator	.02
19060	<b>ELECTROLYTIC CONDENSER</b>	2.50	20147	Field coil insulating washer (front)	.05
19716	Clamp for electrolytic without case	.10	19479	Field coil insulating washer (back)	.50/c
17068	Electrolytic clamp rivet	.01	19454	Top pole plate	.65
19543	Clamp screw	.25/c	19538	Pole plate mounting screw	.03
19784	Clamp nut	.01	17433	Pole plate mounting lock washer	.50/c
	<b>FIXED CONDENSERS</b>		14367	Pole plate mounting nut	.02
23140	Multiple by-pass condenser	2.00	22830	Output transformer	3.00
23250	1st R. F. grid circuit by-pass cond.	.35	19463	Output transformer strap	.10
21160	Phone condenser	.50	4214	Output transformer mounting screw	.30/c
21160	Control coupling condenser	.50	17432	Output transformer mounting lock-washer	.50/c
	<b>TRANSFORMERS</b>		8188	Output transformer mounting nut	.01
21398	Antenna transformer	.60	21128	Speaker-to-chassis cable & plugs, 10'	4.80
21397	R. F. Transformer Group	3.75	15739	Cable clamp	.02
21045	R. F. Transformer shield	.50	21132	Cable insulating sleeve	.05
22810	Audio transformer	4.50	21059	Rubber bushing	.05
19623	Grid lead and cap	.12	21315	Cable clamp	.05
	<b>CHOKES</b>		15079	Cable plug (4 prong)	.65
19210	Detector plate choke	.25	18582	Cable plug (5 prong)	.65
19210	1st R. F. grid choke	.25	21164	Armored lead to ungrounded side of battery (5 ft. long)	.50
19210	Control cathode choke	.25	21162	Armored lead clamp	.05
19210	2nd R. F. grid choke	.25	21263	Dash rubber bushing	.10
19210	1st R. F. plate filter choke	.25	21062	Speaker mounting bolt	.10
	<b>TUBULAR RESISTORS</b>		21141	Speaker mounting bolt lockwasher	.70/c
20950	1st R. F. screen resistor (maroon)	.25	21142	Speaker mounting bolt washer	.01
21040	Detector grid bias resistor (black)	.25	23180	<b>CONTROL UNIT COMPLETE SUPERSEDED BY 21492</b>	
21050	Control grid leak (blue and gray)	.25	21492	Control unit complete	13.75
23120	Quality resistor (red and black)	.25	20873	Model nameplate	.05
23130	Control plate resistor (red and gray)	.25	9206	Nameplate rivet	.20/c
	<b>SOCKETS</b>		21323	Dial knob	.30
21396	Socket bracket	.35	21478	Dial knob shaft and gear	.60
19547	Self-tapping screw 3/8" long	.02	21479	Dial knob shaft screw	.02
21041	Tube sockets (7 used)	.35	21481	Dial knob shaft spring washer	.01
21336	Socket (4 prongs)	.30	21579	Dial strip	.25
21337	Socket (5 prongs)	.35	21482	Dial gear	.80
17377	Socket insulator	.25/c	21479	Dial gear bearing screw	.02
8249	Socket mounting rivet	.50/c	21483	Dial gear washer	.01
9678	Solder clip	.50/c	21484	Station selector cable 9' 11" (less sheathing)	.60
			21851	Station selector cable sheathing 9'	2.15
			21485	Station selector cable clamping plate	.10
			21486	Station selector cable clamping screw	.02

November, 1931. THESE PRICES SUPERSEDE ALL PREVIOUS PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

PARTS AND PRICE LIST FOR MODEL 81 (Continued)

Part No.	Name of Part	List Price	Part No.	Name of Part	List Price
21487	Station selector cable chuck complete	\$ .60	21151	Terminal.....	\$ .06
21147	Station selector cable staple.....	.50/c	23260	Generator condenser.....	1.25
21488	Control unit-to-speaker cable and plug (5' 2'').....	2.40	21144	Distributor suppressor (long).....	.60
18582	Plug (5 prong).....	.65	21143	Plug suppressor (short).....	.60
21489	Cable clamp.....	.05	21065	Gasket for chassis & battery container	.30
21486	Cable clamp screw.....	.02	21069	Shielded antenna lead.....	.15
21491	Lock switch.....	.75	21068	Antenna lead rubber bushing.....	.05
21585	Lock switch lock washer.....	.02	22530	Fibre disc (1" diam.) with 2 lugs, used as a terminal block.....	.05
21584	Lock switch mounting nut.....	.10	21149	Shipping container.....	Net .65
20976	Switch key.....	.10	21333	Instructions.....	" .10
21406	Fuse 10 amp.....	.15	23450	PLATE ANTENNA (Complete)....	4.00
21493	Fuse socket.....	.35	21557	Antenna plate.....	3.25
21495	Fuse socket mounting screw.....	.02	21559	Antenna plate mounting bolt.....	.10
21495	Dial lamp socket mounting screw...	.02	21558	Porcelain insulator.....	.12
21496	Volume control.....	1.10	21561	Wood spacing block.....	.01
21325	Volume control knob.....	.30	21369	Insulating washer.....	.03
21497	Volume control mounting nut.....	.05	21562	Iron washer.....	.01
21498	Volume control fibre washer (large) ..	.05	21141	Lock washer.....	.70/c
21586	Volume control fibre washer (small)..	.02	21563	Nut.....	.02
21050	Bleeder resistor (blue-gray).....	.25	21442	Instruction sheet.....	Net .50/c
21499	Control unit base.....	1.00	21565	Shipping container.....	" .20
21501	Control case.....	1.00	23520	IGNITION FILTER (furnished only when defective filter is returned to distributor).....	4.25
21502	Control case insulation.....	.10	21624	Condenser for ignition filter No. 23520 (furnished only when defective con- denser is returned to distributor)..	2.00
21495	Control case mounting screw.....	.02	23530	Choke for ignition filter.....	2.00
21503	Steering column clamp.....	.45		<b>EXTRA-LENGTH CABLES</b>	
21504	Leather for steering column clamp...	.20	21652	Station selector cable, per foot.....	.06
21505	Steering column clamp screw.....	.05	21653	Station selector cable sheathing, per ft.	.25
17432	Steering column clamp lock washer..	.50/c	21654	Speaker-to-chassis cable, per foot...	.35
21507	Steering column clamp set screw....	.05	21655	Control unit-to-speaker cable, per foot	.35
21324	Steering column cable strap.....	.05	21656	Speaker-to-chassis cable (with plugs) 15 ft. long.....	6.55
21494	Dial lamp socket.....	.25			
21407	Dial lamp.....	.25			
	<b>MISCELLANEOUS PARTS</b>				
21153	Lead to grounded side of battery 36" long.....	\$ .15			

BY-PASS AND TONE-CONTROL CONDENSERS USED IN \*SCREEN-GRID AND PENTODE-TYPE RECEIVERS

Part No.	*Code Markings	Type of Cond.	List Price	Part No.	*Code Markings	Type of Cond.	List Price
15262	B-1, H-1, H-9, H-20.....	By-pass	\$1.00	19160	H-30.....	By-pass	\$1.00
15263	B-2, H-2.....	By-pass	.90	19560	H-31.....	By-pass	1.00
15640	H-16.....	By-pass	1.00	19690	H-32.....	By-pass	1.00
15770	H-15.....	By-pass	1.00	19710	H-33.....	By-pass	1.00
15780	H-17.....	By-pass	1.10	19980	H-34.....	By-pass	1.00
15790	H-18, H-21.....	By-pass	1.00	19990	H-35.....	By-pass	1.00
15837	B-3 (superseded by 16233)....	By-pass	....	20010	B-8.....	Tone	1.00
15870	B-7, L-28.....	Tone	1.00	20350	H-36.....	By-pass	1.00
16060	H-24, L-29 (304) Superseded by 18350.....	By-pass	....	20830	L-B-9, J-2, J-1.....	Multiple	2.00
16233	H-4, H-10.....	By-pass	.90	21170	H-37.....	By-pass	1.00
16461	H-6, H-12.....	By-pass	.75	21180	H-38.....	By-pass	1.00
16462	H-5, H-11.....	By-pass	1.00	21250	B-9.....	Tone	1.00
16490	B-6, L-12.....	Tone	1.00	21430	H-39, L-37-A.....	By-pass	1.00
16745	H-7, H-8, H-13.....	By-pass	1.00	21440	H-40, L-44-A.....	By-pass	1.00
16828	B-5.....	Line	.50	21450	B-10, L-36-A.....	Quality	.50
16880	H-23, L-26 (439).....	By-pass	1.10	21530	L-42-A, B-11.....	Tone	1.00
16940	H-22, L-10.....	By-pass	1.10	22050	H-41.....	By-pass	1.00
17360	H-27, L-32.....	By-pass	1.10	22570	J-3.....	Multiple	2.00
17370	H-25, H-26, L-3, L-39.....	By-pass	1.10	23140	J-4.....	Multiple	2.00
18350	H-28, L-49.....	By-pass	1.10	23310	H-42 (superseded by 21180)**		
19150	H-29.....	By-pass	1.00	23330	H-43.....	By-pass	1.00

\*For information about code markings, see Page 253 in the Service Manual.

\*\*Do not use 23310 in place of 21180.

November, 1931. THESE PRICES SUPERSEDE ALL PREVIOUS PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

# PARTS AND PRICE LIST

FOR MODEL 80, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89

(Numbers in Circles Refer to Notes on Page 317)

NAME OF PART	MODEL 84, 84F		MODEL 84 D		MODEL 84 Q		MODEL 85, 85F		MODEL 86, 86F	MODEL 82, 82F	MODEL 82Q	MODEL 82D	MODEL 83, 83F	MODEL 87Q	MODEL 86, 86-F	MODEL 87	MODEL 89, 89F
	EARLY TYPE①	LATER TYPE	EARLY TYPE①	LATER TYPE	EARLY TYPE①	LATER TYPE	EARLY TYPE①	LATER TYPE									
CABINET, Complete.....	19862	19862	19862	19862	19862	19862			21234	21235	21235	21235					
	\$7.60	\$7.60	\$7.60	\$7.60	\$7.60	\$7.60			\$7.60	\$7.60	\$7.60	\$7.60					
Cloth Screen.....	19691	19691	19691	19691	19691	19691	18959	18959	20596	20601	20601	20601	18959	18959	18959	18959	18959
	.75	.75	.75	.75	.75	.75	1.00	1.00	.75	.75	.75	.75	\$1.00	\$1.00	\$1.00	\$1.00	\$1.00
Cabinet feet.....	19527	19527	19527	19527	19527	19527			19527	19527	19527	19527					
	.12	.12	.12	.12	.12	.12			.12	.12	.12	.12					
FRONT PANEL																	
with braces and escutcheon.....							21316	21317				21238	21237	21669	23280	21239	③
							2.50	2.50				2.50	2.50	2.50	2.50	2.50	2.50
Front-Panel brace.....							17224	17224				17224	17224	17224	17224	17224	17224
							.10	.10				.10	.10	.10	.10	.10	.10
ESCUTCHEON.....	19511	19511	19511	19511	19511	19511	18816	21438	20443	19511	19511	19511	21437	21438	21532	21439	21441
	.65	.65	.65	.65	.65	.65	1.00	1.00	.65	.65	.65	.65	1.00	1.00	1.00	1.00	1.00
Escutcheon rivet.....	19552	19552	19552	19552	19552	19552	8272	8272	19552	19552	19552	19552	8272	8272	8272	8272	8272
	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.02	.02	.50/c	.50/c	.50/c	.50/c	.02	.02	.02	.02	.02
DIAL PLATE AND BRACKET ASSEMBLY.....	19750	19750	19750	19750	19590	19590	19750	19750	19750	19750	19590	19750	19750	19590			
	.65	.65	.65	.65	.50	.50	.65	.65	.65	.65	.50	.65	.65	.50			
Dial-light socket and reflector.....															16420A	16420A	16420A
															.40	.40	.40
Dial plate.....	18882	18882	18882	18882	19932	19932	18882	18882	18882	18882	19932	18882	18882	19932			
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30			
Dial-plate rivet.....	15734	15734	15734	15734	15734	15734	15734	15734	15734	15734	15734	15734	15734	15734			
	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c			
Dial lamp.....	19644	19644	16099	16099			19644	19644	19644	19644		16099	19644		19644	19644	19644
	.25	.25	.25	.25			.25	.25	.25	.25		.25	.25		.25	.25	.25
Dial knob.....	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814	17814
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
VOLUME CONTROL, complete less leads④.....	19040	20180	19040	20389⑥	19040	19040	19040	20030	20840⑦	20990⑦	16122②	20389⑥	22330⑦	16122②	23410⑦	22650⑦	20389⑥
	2.45	2.90	2.45	3.45	2.45	2.45	2.45	2.45	2.75	2.75	3.00	3.45	2.75	3.00	2.75	2.75	3.45
Volume-control mounting bracket.....							19777	20646				20646	21236	20646	20646	20646	20646
							.20	.30				.30	.30	.30	.30	.30	.30
Volume-control mounting insulation.....								20135	20135	20135	20135	20135	20135	20135	20135	20135	20135
								.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Volume-control mounting nut.....	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093	20093
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
TONE-CONTROL Condenser.....		16490		16490		16490	16490	20010		21250	16490	16490		16490	20010	21530	21530
		1.00		1.00		1.00	1.00	1.00		1.00	1.00	1.00		1.00	1.00	1.00	1.00
Tone-control condenser clamp.....							18223	18223						18223	18223	18223	18223
							.05	.05						.05	.05	.05	.05
Tone-control switch, complete.....		20730		20730		20730	16430	20730	20730	20730	20730	20730	20730	20730	20730	16430	16430
		.75		.75		.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75
Tone-control-switch base.....							18148									18148	18148
							.60									.60	.60
Tone-control-switch shaft.....							18146									18146	18146
							.12									.12	.12

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Tone-control-switch blade.....						18112										18112	18112
						.03										.03	.03
ON-OFF SWITCH.....	19050	⑦	19050	⑥	19902	20420	19480	⑦	⑦	⑦	20420	⑥	⑦	22010	⑦	⑦	⑥
	1.10		1.10		1.50	1.50	1.10				1.50			1.50			
On-off switch nut.....	19546		19546														
	.03		.03														
LOCAL DISTANCE SWITCH (Phonograph switch in 89P).....											22590			13664			17461
											1.50			1.00			1.00
KNOB for switch or volume control.....	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244	17244
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
POWER TRANSFORMER, 60 Cycle.....	19070	19070				19420	19420	20890	21140				22680	23430	21660	21660	
	7.50	7.50				7.50	7.50	7.50	7.50				7.50	7.50	8.25	8.25	
Power Transformer, 25 Cycle.....	19290	19290				22060	23190	23110					22470	23560	22610	22610	
	9.50	9.50				9.50	9.50	9.50					9.50	9.50	10.75	10.75	
Power Transformer, 220 Volts.....								23040	23060								
								11.50	11.50								
Power-transformer cover or lid, 60 cycle.....	17824	17824				17824	17824	20469	17824				17824	17824	17824	17824	17824
	.50	.50				.50	.50	.50	.50				.50	.50	.50	.50	.50
Power-transformer-cover spring, 60 cycle.....	17825	17825				17825	17825	17825	17825				17825	17825	17825	17825	17825
	.10	.10				.10	.10	.10	.10				.10	.10	.10	.10	.10
Power-transformer cover or lid, 25 cycle.....	17824	17824				17824	20469	20469					20469	20469	21032	21032	
	.50	.50				.50	.50	.50					.50	.59	.50	.50	
AUDIO INPUT TRANSFORMER.....			19870	19870							23510	19870		23440		21670	21670
			4.00	4.00							4.00	4.00		4.00		3.75	3.75
Audio-transformer or choke strap.....			19463	19463							19463	19463					
			.10	.10							.10	.10					
R. F. TRANSFORMER group④.....	19797	19797	20165	20165	20407	20406	20361	20361	21241	21242	21274	21243	20361	21244	21436	21245	⑩ 21246
	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00	3.00
R. F. Transformer cap (aluminum).....	19443	19443	19443	19443			19443	19443	19443	19443	19443	19443	19443	19443	19443	19443	19443
	.05	.05	.05	.05			.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
OSCILLATOR TRANSFORMER.....	19260	20210	⑩ 19260	19920	19660	19970	19260	20270	⑫ 20910	20910	22150	22110	22670	22150	21580	22240	21580
	1.00	1.25	1.00	1.25	1.00	1.25	1.00	1.25	1.25	1.25	1.25	1.00	1.25	1.25	1.25	1.25	1.25
Oscillator-transformer shield.....		20348		20127		20127		20313	20313	20313	20313	20906	20313	20313	20313	20313	20313
		.30		.30		.30		.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
1st-I. F. Transformer, less trimmers.....															20713	⑪ 20713	20713
															2.00	2.00	2.00
2nd-I. F. transformer, less trimmers.....															20963	⑫ 2.00	
2nd-detector I. F. transformer, less trimmers.....	19573	19573	19573	19573	19573	19573	19573	19573	20621	19573	21031	19573	19573		20716	20716	20716
	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00	2.00		2.00	2.00	2.00
SHIELD for R. F. or I. F. transformer.....	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295	17295
	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50	.50
FILTER-CHOKE UNIT.....			19770	19770									19770			21680	21680
			5.00	5.00									5.00			5.75	5.75
Filter-choke cover or lid.....			17824	17824									17824			17302	17302
			.50	.50									.50			.20	.20
Filter-choke cover spring.....			17825	17825									17825				
			.10	.10									.10				
Antenna choke.....	19250		19250		19250		19250										
	.60		.60		.60		.60										
R. F. line choke No. 1 or No. 2.....			17254	17254								17254		17254			
			.50	.50								.50		.50			
R. F. plate choke.....					⑬ 17015						17015			17015	17015	17015	
					.50						.50			.50	.50	.50	

THIS LIST SUPERSEDES ALL PREVIOUS LISTS. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.



# PARTS AND PRICE LIST (Continued)

FOR MODEL 80, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89  
(Numbers in Circles Refer to Notes on Page 317)

NAME OF PART	MODEL 84, 84F		MODEL 84 D		MODEL 84 Q		MODEL 85, 85F		MODEL 80, 80F	MODEL 82, 82F	MODEL 82Q	MODEL 82D	MODEL 83, 83F	②④ MODEL 85Q	②⑤ MODEL 86, 86F	MODEL 87	②⑥ MODEL 89, 89F 89P
	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE									
1st-detector plate choke .....	19571 1.00	20331 1.00	19571 1.00	19571 1.00	19571 1.00	19571 1.00	19571 1.00	20307 1.00	17390 1.00	20307 1.00	20307 1.00	19571 1.00	20307 1.00	①①			
1st-detector filter choke .....	19210 .25				19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25
I. F. stopping choke .....	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25	19210 .25			
I. F. filter choke .....										19210 .25				19210 .25			19210 .25
1st-I. F. grid choke .....		17390 .60						17390 .60	20307 .60	17390 .60	17390 .60		17390 .60	①①			
and-I. F. plate choke .....															20307 1.00		
and-detector plate or pentode grid choke ..	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60	17390 .60		
and-detector grid, or 1st-A. F. grid, choke ..														17390 .60	17390 .60		
Oscillator plate choke .....										17015 .50				17015 .50			
Control plate choke (R. F. grid choke in 86)															19210 .25		19210 .25
FLEXIBLE AND WIRE-WOUND RESISTORS (for tubular resistors, see Page 317).																	
1st-detector bias resistor .....	19190 .20	①③ 20380 .20							21030 .20					21030 .20			
I. F. bias resistor .....	16320 .20		19830 .15	19830 .15				16320 .20						19830 .15			
A. F. bias resistor .....																21420 .20	21420 .20
Filament-shunt resistor .....	17077 .15	17077 .15						17077 .15	17077 .15	17077 .15	17077 .15			17077 .15	17077 .15	17077 .15	17077 .15
and-A. F. filament shunt resistor .....			19820 .20	19820 .20								19820 .20					
Filament-series resistor No. 1 .....			19850 1.00	19850 1.00	19610 .15	19610 .15					19610 .15	19850 1.00		19610 .15			
Filament-series resistor No. 2 .....			19840 .20	19840 .20								19840 .20					
Bleeder resistor No. 1 .....	16330 .40	16330 .40						16330 .40	20150 .40		20150 .40				20150 .40	22660 .40	21050 .40
Bleeder Resistor No. 2 .....	16330 .40	17610 .40						16330 .40	16330 .40		20140 .40				20140 .40	22660 .40	20150 .40

Bleeder resistor No. 3.....	18520								20050	20050					16320	20040	21030
	.20								.20	.20					.20	.20	.20
Bleeder resistor No. 4.....									20040	20040	20040		20040		17380		17380
									.20	.20	.20		.20		.20		.20
Bleeder resistor No. 5.....									20150	20150				20150			20150
									.40	.40				.40			.40
Bleeder resistor No. 6.....									20120	20120				20120			20120
									.20	.20				.20			.20
Bleeder resistor No. 7.....									20520	20520				20520			17610
									.20	.20				.20			.40
1st-detector plate resistor.....	20320																
	.20																
Filter resistor.....	19180	19180					19180	19180	19180					19180			
	1.00	1.00					1.00	1.00	1.00					1.00			
Dial-light resistor.....														18236	18236	18236	
														.15	.15	.15	
<b>VARIABLE CONDENSER ROTOR, STATOR AND FRAME.....</b>	19861	19861	19861	19861	19861	19861	19861	19861	21252	21252	21252	21252	19861	19861	21358	20794	20794
	6.00	6.00	6.00	6.00	6.00	6.00	6.00	6.00	5.00	5.00	5.00	5.00	6.00	6.00	9.60	9.60	9.60
Rotor connection, long.....	18844	18844	18844	18844	18844	18844	18844	18844	20235	20235	20235	20235	18844	18844	20795	20795	20795
	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10	.10
Rotor connection, short.....	19554	19554	19554	19554	19554	19554	19554	19554					19554	19554	20796	20796	20796
	.10	.10	.10	.10	.10	.10	.10	.10					.10	.10	.10	.10	.10
Stopping spring.....	19968	19968	20065	20065	20065	20065	19968	19968					19968	19968	19968	19968	19968
	.12	.12	.12	.12	.12	.12	.12	.12					.12	.12	.12	.12	.12
Dial-knob shaft.....	18809	18809	18809	18809	18809	18809	19751	19751	18809	18809	18809	18809	19751	19751	17941	17941	17941
	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Dial-knob shaft bracket.....	19505	19505	19505	19505	19505	19505	19505	19505	20116	20116	20116	20116	19505	19505	18144	18144	18144
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.35	.35
Dial-knob-shaft-bracket support.....	17935	17935	17935	17935	17935	17935	17935	17935					17935	17935	17935	17935	17935
	.03	.03	.03	.03	.03	.03	.03	.03					.03	.03	.03	.03	.03
Dial rubber and bushing.....	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961	17961
	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15
Dial pointer.....	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959	17959
	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Dial-pointer shim.....	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823	18823
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Dial gear and balance weight.....	19529	19529	19529	19529	19529	19529	19529	19529	20149	20149	20149	20149	19529	19529			
	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75	.75			
Dial gear.....															18615	18615	18615
															.40	.40	.40
Balance weight.....															18117	18117	18117
															.35	.35	.35
Pointer control arm.....															17962	17962	17962
															.30	.30	.30
Trimmer mica.....	17062	17062	17062	17062	17062	17062	17062	17062	20119	20119	20119	20119	17062	17062	17062	17062	17062
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03
<b>MULTIPLE-TYPE BY-PASS CON- DENSER (Other by-pass condensers are listed on Page 309).....</b>									20830				20830		22570		
									2.00				2.00		2.00		

# PARTS AND PRICE LIST (Continued)

FOR MODEL 80, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89

(Numbers in Circles Refer to Notes on Page 317)

NAME OF PART	MODEL 84, 84F		MODEL 84 D		MODEL 84 Q		MODEL 85, 85F		MODEL	MODEL	MODEL	MODEL	MODEL	MODEL	MODEL	MODEL	
	EARLY TYPE <sup>①</sup>	LATER TYPE	EARLY TYPE <sup>①</sup>	LATER TYPE	EARLY TYPE <sup>①</sup>	LATER TYPE	EARLY TYPE <sup>①</sup>	LATER TYPE <sup>②</sup>	80, 80F	82, 82F	82Q	82D	83, 83F	MODEL 85Q <sup>②④</sup>	MODEL 86, 86F <sup>②⑤</sup>	MODEL 87	MODEL 89, 89F <sup>②⑥</sup>
FILTER CONDENSER UNIT, paper and foil type.....									20370					20370	20370	21520	21520
									\$7.50					\$7.50	\$7.50	\$7.95	\$7.95
Filter-condenser cover and spring.....									20398					20398	20398	18188	18188
									.45					.45	.45	.45	.45
Filter condenser No. 1 (Electrolytic).....	19728	19728	20049	20049	19728	19728	19728		19728	19728	19728	20049		19060			
	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60	\$2.60		2.60	\$2.60	\$2.60	\$2.60		\$2.50			
Filter condenser No. 2 (Electrolytic).....	19060	19060							19728	19060	19060						
	2.50	2.50							2.60	2.50	2.50						
Filter condenser No. 3 (Electrolytic).....									19060	19060				19060	19060		
									2.50	2.50				2.50	2.50		
Fibre insulating case for electrolytics.....	19551	19551	19551	19551	19551	19551	19551		19551	19551	19551	19551					
	.10	.10	.10	.10	.10	.10	.10		.10	.10	.10	.10					
MOUNTING ACCESSORIES FOR EARLY-TYPE ELECTROLYTICS																	
Case solder clip.....	19559	19729	19559	19729	19559	19729	19559		19729	19729	19729	19729					
	.01	.02	.01	.02	.01	.02	.01		.02	.02	.02	.02					
Base insulator.....	19558		19558		19558		19558										
	.20		.20		.20		.20										
Mounting nut.....	19556		19556		19556		19556										
	.05		.05		.05		.05										
Mounting lockwasher.....	19557		19557		19557		19557										
	.03		.03		.03		.03										
MOUNTING ACCESSORIES FOR LATER-TYPE ELECTROLYTICS																	
Clamp for electrolytics with fibre case.....		19936		19936		19936			19936	19936	19936	19936					
		.10		.10		.10			.10	.10	.10	.10					
Clamp for electrolytics without fibre case..		19716							19716	19716	19716		19716	19716	19716		
		.10							.10	.10	.10		.10	.10	.10		
Clamp screw.....		19543		19543		19543			19543	19543	19543	19543	19543	19543	19543	19543	19543
		.25/c		.25/c		.25/c			.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c
Clamp nut.....		19784		19784		19784			19784	19784	19784	19784	19784	19784	19784	19784	19784
		.01		.01		.01			.01	.01	.01	.01	.01	.01	.01	.01	.01
Clamp rivet.....		17068		17068		17068			17068	17068	17068	17068	17068	17068	17068	17068	17068
		.01		.01		.01			.10	.01	.01	.01	.01	.01	.01	.01	.01
TRIMMER CONDENSERS																	
Antenna trimmer.....	20340	20340	20340	20340	20340	20340	19326	19326	20340	20340	20340	20340	19326	19326	19326	19326	19326
	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60	.60
Antenna-trimmer mounting bushing.....	19501	19501	19501	19501	19501	19501			19501	19501	19501	19501					
	.03	.03	.03	.03	.03	.03			.03	.03	.03	.03					
Antenna-adjustment instruction-tag.....	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753	20753
	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859	F-859
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Single I. F. trimmer.....	17240	17240	17240	17240	17240	17240	19330	19330	17240	17240	17240	17240	19330	19330			
	.50	.50	.50	.50	.50	.50	.70	.70	.50	.50	.50	.50	.70	.70			

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ATWATER KENT RADIO

Double I. F. trimmer.....	18150	18150	19910	19910	18150	18150	18150	18150	18150	18150	18150	19910	18150	18150	18150	18150	18150
	.95	.95	1.10	1.10	.95	.95	.95	.95	.95	.95	.95	1.10	.95	.95	.95	.95	.95
Double-spot trimmer.....	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230	17230
	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35	.35
Trimmer-condenser sealing wax (used in all sets).....	.50 lb.																

SMALL FIXED CONDENSERS

(See Page 317 for identification.)

R. F. 1st detector stopping condenser.....	17974																	21160		
	.35																	.35		
Oscillator grid condenser.....	17470			21160											21160					
	.35			.35											.35					
I. F. stopping condenser.....	17440	17440	17440	17440	17440	17440	17440	17440	21160	21160	21160	21160	21160	21160	21160	21160	21160			
	.50	.50	.50	.50	.50	.50	.50	.50	.35	.35	.35	.35	.35	.35	.35	.35	.35			
Phone condenser.....	17440	17440	17440	17440			17440	17440	17440			17440			17440					
	.50	.50	.50	.50			.50	.50	.50			.50			.50					
A. F. Grid condenser.....																		22220	22220	
																		.35	.35	

SOCKETS

R. F. Socket.....																		19962	19958	20237			20236	20236	20236
																		.25	.25	.25			.30	.30	.30
1st-detector socket.....	17518	20306	20025	20025	19958	19958	17518	20236	20236	20236	20237	20236	20236	20237	20236	20236	20236								
	.30	.30	.30	.30	.25	.25	.30	.30	.30	.30	.25	.30	.30	.25	.30	.30	.30								
I. F. Socket.....	17518	20306	20025	20025	19958	19958	18774	20236	20236	20236	20237	20236	20236	20237	20236	20236	20236								
	.30	.30	.30	.30	.25	.25	.30	.30	.30	.30	.25	.30	.30	.25	.30	.30	.30								
2nd-detector socket.....	17518	17518	20025	20025	19958	19958	17518	20236	20236	20236	20237	20236	20236	20237	20236	20236	20236								
	.30	.30	.30	.30	.25	.25	.30	.30	.30	.30	.25	.30	.30	.25	.30	.30	.30								
1st-A. F. socket.....	20026			20026	19959	20184						20237	20236	20237		20236	20236								
	.30			.30	.25	.25						.25	.30	.25		.30	.30								
Pentode socket.....	19955	19955	19964	19964	19964	19964	19955	20236	20236	20236	20236	20236	20236	20236	20236	20236	20236								
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30								
Rectifier socket.....	18813	18813					17508	20237	20237	20237						20237	21448	20237	20237						
	.25	.25					.25	.25	.25	.25						.25	.25	.25	.25						
Speaker socket.....	19648	19648	18007	18007	19963	19963	17512	20329	20329	20329	20665	20664	20329	20665	21336	20664	20664								
	.25	.25	.30	.30	.25	.25	.25	.25	.25	.25	.25	.30	.25	.25	.30	.30	.30								
Oscillator socket.....	19533	19533	20026	20026	19961	19961	17519	20236	20236	20236	20237	20236	20236	20237	20236	20236	20236								
	.30	.30	.30	.30	.25	.25	.30	.30	.30	.30	.25	.30	.30	.25	.30	.30	.30								
Automatic volume control socket.....											20236	20236					20236	20236							
											.30	.30					.30	.30							
Socket insulator (fibre sheet).....	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377	17377								
	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c	.25/c								
Socket eyelet.....	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249	8249								
	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c	.50/c								
Fuse socket.....	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449	18449								
	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15								
TUBE SHIELD.....	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213	15213								
	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15	.15								
Tube-shield base.....	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214	15214								
	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03	.03								
Tube-shield base rivet.....	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771	16771								
	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c								
BATTERY CABLE.....																		19939	19939	21665		21664			
																		3.50	3.50	3.75		3.50			
Battery-cable clamp.....																		15739	15739	15739		15739			
																		.02	.02	.02		.02			

THIS LIST SUPERSEDES ALL PREVIOUS LISTS. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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# PARTS AND PRICE LIST (Continued)

FOR MODEL 80, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89  
(Numbers in Circles Refer to Notes on Page 317)

NAME OF PART	MODEL 84, 84F		MODEL 84 D		MODEL 84 Q		MODEL 85, 85F		MODEL 80, 80F	MODEL 82, 82F	MODEL 82Q	MODEL 82D	MODEL 83, 83F	MODEL 84, 84F	MODEL 85, 85Q	MODEL 86, 86F	MODEL 87	MODEL 89, 89F
	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE	EARLY TYPE ①	LATER TYPE										
Battery-cable terminal-clip.....					8352	8352					8352				8352			
					\$.06	\$.06					\$.06				\$.06			
Battery-cable instruction tag.....					19941	19941					21625				21625			
					F-772	F-772					F-855				F-855			
					.02	.02					.02				.02			
110-VOLT DOUBLE-CONDUCTOR CABLE AND PLUG.....	19566	19566	19566	19566			19566	19566	19566	19566		19566	19566		19566	19566	19566	19566
	\$1.90	\$1.90	\$1.90	\$1.90			\$1.90	\$1.90	\$1.90	\$1.90		\$1.90	\$1.90		\$1.90	\$1.90	\$1.90	\$1.90
110-volt-cable instruction tag.....			20073	20073							20073							
			.02	.02							.02							
110-volt plug (male).....	18897	18897	18897	18897			18897	18897	18897	18897		18897	18897		18897	18897	18897	18897
	.15	.15	.15	.15			.15	.15	.15	.15		.15	.15		.15	.15	.15	.15
110-volt cable bushing.....	16741	16741	16741	16741			16741	16741	16741	16741		16741	16741		16741	16741	16741	16741
	.05	.05	.05	.05			.05	.05	.05	.05		.05	.05		.05	.05	.05	.05
Bushing retaining spring.....	16742	16742	16742	16742			16742	16742	16742	16742		16742	16742		16742	16742	16742	16742
	.05	.05	.05	.05			.05	.05	.05	.05		.05	.05		.05	.05	.05	.05
BINDING-POST BASE.....	18363	18363	18363	18363	18363	18363			18363	18363	18363	18363			18363			18363
	.05	.05	.05	.05	.05	.05			.05	.05	.05	.05			.05			.05
Binding post, marked "A".....	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536	19536
	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
Binding post, ground.....	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	8215	18546
	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20	.20
<b>Miscellaneous Parts</b>																		
Self-tapping screw (3/8" long)⑩.....	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547	19547
	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02
Line fuse (2 amperes).....	18534	18534	18534	18534	18534			18534	18534		18534	18534	18534		18534	18534	18534	18534
	.05	.05	.05	.05	.05			.05	.05		.05	.05	.05		.05	.05	.05	.05
Control-grid lead and cap.....	19623	19623	21108	21108	19623	19623	19623	19623	19623	19623	21108	19623	19623	21555	19623	19623	19623	19623
	.12	.12	.15	.15	.12	.12	.12	.12	.12	.12	.12	.12	.12	.15	.12	.12	.12	.12
Fibre disc (1" dia.) with two lugs (used as a terminal block for wire connections).....	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530	22530
	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05	.05
Bottom plate.....							19869	19869				19869	19869	19869	19869	19869	19869	19869
							1.30	1.30				1.30	1.30	1.30	1.30	1.30	1.30	1.30
Ground clamp assembly.....	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989	13989
	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30	.30
Cardboard packing tube (fits on speaker field case).....	19699	19699	19699	19699				19699	19699		19699				19699			
	.10	.10	.10	.10				.10	.10		.10				.10			
Instruction and log card for 60-cycle, battery and D. C. models.....	19542	20339	19995	20395	19934	20374		19858	20765	20608	21626	20877	20875	21627	21549	20923	20729	
	F-755	F-795	F-777	F-793	F-774	F-792		F-767	F-808	F-800	F-853	F-817	F-811	F-854	F-850	F-812	F-813	
	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net		.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	.01 Net	
Instruction and log card for 25-cycle models	19851	20405						19875	20948	20949				20951	21603		20991	
	F-766	F-797						F-771	F-820	F-821				F-822	F-857		F-826	
	.01 Net	.01 Net						.01 Net	.01 Net	.01 Net				.01 Net	.01 Net		.01 Net	
Shipping container for 60-cycle, battery and D. C. models.....	19541	20337	20003	20394	19935	20373	19863	19863	20457	20559	21187	21122	21046	20966	21517	21526	20724	
	.55 Net	.55 Net	.55 Net	.55 Net	.55 Net	.55 Net	.65 Net	.65 Net	.55 Net	.55 Net	.55 Net	.55 Net	.55 Net	.65 Net	.65 Net	.65 Net	.65 Net	
Shipping container for 25-cycle models.....	19541	20422						19876	21353	21365				21368	21651		21374	
	.55 Net	.55 Net						.65 Net	.55 Net	.55 Net				.65 Net	.65 Net		.65 Net	

THIS LIST SUPERSEDES ALL PREVIOUS LISTS. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.

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NOTES

Figures in circles in the parts list refer to the corresponding notes listed below.  
It is important to read these notes before ordering parts.

- ① Changes from early type to late type were not made all at one time.
- ② 85-F was made only in later type.
- ③ Front panel in 89-P is No. 21318.
- ④ Salvage and use leads from the original control.
- ⑤⑥ Control No. 20389 includes the on-off switch which is NOT sold separately.
- ⑦ The on-off switch (on back of volume control) is NOT sold separately. Replace the complete volume control unit.
- ⑧ R. F. transformers are not sold separately.
- ⑩ No. 20210 has 8 leads. Some 84 (A. C.) sets have a 19920 cylindrical transformer with 6 leads, requiring a No. 20127 shield. A few late 84 (A. C.) sets have a 20210A transformer with 6 leads and a mica condenser mounted on the side. This requires a No. 20348 shield.
- ⑪ In late-type Model 85-Q, the 1st-I. F. transformer is not used; the 2nd-I. F. transformer is No. 20713, and the following additional parts are used: 1st-detector plate choke No. 20307, and 1st-I. F. grid choke No. 17390.
- ⑫ In Model 87 after 2525451, 89 after 6743355, 89-F after 1585176, and 89-P after 1935231, the R. F. transformer group is No. 21436, and the variable condenser unit is No. 21358.
- ⑬ No. 19190 is superseded by 19346.
- ⑭ No. 19180 resistor is not used in 84-F, 82-F, 85-F, 86-F.
- ⑮ Sold only as part of the R. F. Trans. group.
- ⑯ Speaker socket insulator is No. 18016.
- ⑰ Used also are No. 21007 ( $\frac{1}{8}$ " ) and No. 19717 (1" ) self-tapping screws.
- ⑱ Log card in 89-P is 21025. Shipping container in 89-P is 21273.
- ⑲ Screen in 80 is 20596. Screen in 82, 82-D, 82-Q is 20601.
- ⑳ In late-type Model 85, after serial No. 4998356, and Model 85-F after No. 5055609, the oscillator transformer is No. 22670.
- ㉑ In a few early-type Model 82-Q and 85-Q, the volume control is No. 19040 and a blue-and-red resistor is shunted across the control. In all other 82-Q and 85-Q, the volume control is No. 16122 and the red-and-blue resistor is not used.
- ㉒ In late-type Model 87, 89, 89-F and 89-P, the output transformer has a metal cover. This transformer, less cover is No. 21693. The insulator for this transformer is No. 21424, list price \$.02.
- ㉓ In 89-P, the 110-volt cable is No. 18589, list price \$1.00.
- ㉔ The list of parts for Model 85-Q apply only to sets having serial numbers below 163767.
- ㉕ The list of parts for Model 86, 89, 89-F, and 89-P apply only to sets having serial numbers as follows: Model 86 below 5876861. Model 89 below 6755181. Model 89-P below 1935904. Model 89-F below 1585395.
- ㉖ Instruction and log card for Model 80 (220-volt type) is No. 20904, F-823, \$.01 net. The log card for Model 82 (220-volt type) is No. 20905, F-824, \$.01 net.



IDENTIFICATION OF SMALL  
FIXED CONDENSERS OF TYPE  
ILLUSTRATED AT LEFT

Part No.	Identification
17440	Copper washers, 7 plates.
17470	"X" scratched on fibre, 4 plates.
17974	Aluminum washers, 4 plates.
21160	Black-finished washers, 4 plates.
22220	Brass-washers, 2 plates.

TUBULAR RESISTORS  
(Large Size,  $1\frac{3}{4}$  inches long)  
USED IN PENTODE-TYPE RECEIVERS

Part No.	*Identifying Color	List Price
15285	Gray	\$.50
15544	Yellow	.25
15545	Maroon	.25
15592	Black	.25
15891	Black-red	.25
15892	Green	.25
16282	Blue-red	.25
16724	White	.25
19346	Green-red	.30
19581	Red-yellow	.25
19649	Black-purple	.25
20151	Purple	.25
20223	Red-gray	.25

MOUNTING ACCESSORIES  
FOR LARGE-SIZE TUBULAR RESISTORS

Part No.	Name	List Price
19508	Single-resistor clamp	\$.05
17341	Three-resistor bracket	.05
17342	Three-resistor pad	.25/c
17345	Three-resistor clamp	.02
17118	Five-resistor bracket	.05
17117	Five-resistor pad	.25/c
17119	Five-resistor clamp	.02

TUBULAR RESISTORS  
(Small Size, 1 inch long)  
USED IN PENTODE-TYPE RECEIVERS

Part No.	*Identifying Color	List Price
20920	Red-yellow	\$.25
20930	Black-purple	.25
20940	Green	.25
20950	Maroon	.25
20960	Gray-yellow	.25
20970	Gray	.25
20980	Red-blue	.25
21040	Black	.25
21050	Blue-gray	.25
23120	Red-black	.25
23130	Red-gray	.25

\*When replacing a tubular resistor, use a resistor of the same identifying color and size. The background color of the resistor is disregarded in the identification except in the case of the all-white or all black resistors. If a resistor has black-and-red coloring on a white base, the identification is black and red, not black, white and red.

November, 1931. THESE PRICES SUPERSEDE ALL PREVIOUS PRICES AND ARE SUBJECT TO CHANGE WITHOUT NOTICE.

## PARTS AND PRICE LIST FOR SPEAKERS IN PENTODE-TYPE RECEIVERS

Numbers in circles refer to notes on Page 317.

NAME OF PART	No. 17300 Compact Speaker in MODEL 80, 82, 84	No. 18600 Compact Speaker MODEL 82-D, 84-D	No. 18400 Compact Speaker MODEL 82-Q, 84-Q	No. 18500 Compact Speaker with output trans. sealed in cylindrical container	No. 18108 Console Speaker MODEL 83, 85 (Early Type)	No. 20500 Console Speaker with output trans. sealed in cylindrical container	No. 19900 Console Speaker in Model 85-Q	No. 24600 Console Speaker in Model 86 and late Models 83 and 85	No. 19800 Console Speaker in Model 87, 89, 89-F, 89-P
DIAPHRAGM.....	19465 \$2.25	19465 \$2.25	19465 \$2.25	19465 \$2.25	19465 \$2.25	19465 \$2.25	19465 \$2.25	20737 \$3.25	20737 \$3.25
Diaphragm-holding segment (3 used).....	19469 .15	19469 .15	19469 .15	19469 .15	19469 .15	19469 .15	19469 .15	14382 \$1 set	14382 \$1 set
Diaphragm-holding segment screw.....	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c	14394 .30/c
Diaphragm-spider screw.....	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c	4795N .30/c
Diaphragm-spider washer (hex. metal).....	19459 .02	19459 .02	19459 .02	19459 .02	19459 .02	19459 .02	19459 .02	19459 .02	19459 .02
Diaphragm-spider washer (fibre).....	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c	19471 .30/c
Diaphragm (or cone) housing.....	19484 1.75	20008 1.75	20231 1.75	19909 1.75	19484 1.75	19909 1.75	20231 1.75	20894 2.50	20894 2.50
FIELD COIL.....	18870 3.00	19860 3.00	18870 3.00	18870 3.00	18870 3.00	18870 3.00	18870 3.00	18870 3.00	21260 3.00
Field-coil insulator.....	19458 .02	19458 .02	19458 .02	19911 .05	19458 .02	19911 .05	19458 .02	19458 .02	19458 .02
Field-coil washer back (2 3/8" dia.).....	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c	19479 .50/c
Field-coil washer front (2 3/8" dia. padded).....	20147 .05	20147 .05	20147 .05	20147 .05	20147 .05	20147 .05	20147 .05	20147 .05	20147 .05
TOP POLE PIECE.....	19454 .65	19454 .65	19454 .65	19454 .65	19454 .65	19454 .65	19454 .65	19454 .65	19454 .65
Top-pole-piece mounting screw.....	19538 .03	19538 .03	19538 .03	19538 .03	19538 .03	19538 .03	19538 .03	19538 .03	19538 .03
Top-pole-piece mounting nut.....	14367 .02	14367 .02	14367 .02	14367 .02	14367 .02	14367 .02	14367 .02	14367 .02	14367 .02
MAGNET ASSEMBLY COMPLETE.....			19918 6.00				19918 6.00		
OUTPUT TRANSFORMER, with strap.....	19697 2.25	19697 2.25	19697 2.25	19670 3.00	19697 2.25	19670 3.00	19697 2.25		21370 3.00
Output-transformer strap.....	19463 .10	19463 .10	19463 .10		19463 .10		19463 .10		19463 .10
Output-transformer (less case)②.....							21672 3.00		21693 3.00

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Output-transformer case <sup>(2)</sup> .....								21418	21418
								.40	.40
Output-transformer fibre insulator.....	19478	19478	19478	19478	19478	19478	19478	21424	19478 <sup>(2)</sup>
	.02	.02	.02	.02	.02	.02	.02	.02	.02
Output-transformer mounting screw.....	7697	7697	7697	7697	7697	7697	7697	7697	7697
	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c	.30/c
Output-transformer mounting nut.....	8188	8188	8188	8188	8188	8188	8188	8188	8188
	.01	.01	.01	.01	.01	.01	.01	.01	.01
CABLE AND PLUG ASSEMBLY.....	19487	20012	19916	19487	19789	19789	20889	19789	20657
	1.60	1.65	1.40	1.60	1.65	1.65	1.50	1.65	1.65
Plug only.....	15079	18582	19884A	15079	15079	15079	19884A	15079	18582
	.65	.65	.40	.65	.65	.65	.40	.65	.65
Cable Clamp.....	19508	19508	19508	19508	19508	19508	19508	19508	19508
	.05	.05	.05	.05	.05	.05	.05	.05	.05
PROTECTIVE LAMP (75 watts).....		20075							
		.35 net							
Lamp socket.....		20014							
		.50							
Lamp socket screw.....		20136							
		.25/c							
<b>Miscellaneous</b>									
Speaker-mounting screw.....	19526	19526	19526	19526					
	.01	.01	.01	.01					
Speaker-mounting nut.....	15006	15006	15006	15006					
	.02	.02	.02	.02					
Speaker-mounting plate.....					19755	19755	19755		
					.75	.75	.75		
Speaker-mounting-plate screw.....					19882	19882	19882		
					.01	.01	.01		
CLOTH SCREEN.....	19691 <sup>(18)</sup>	19691 <sup>(18)</sup>	19691 <sup>(18)</sup>	19691	18959	18959	18959	18959	18959
	.75	.75	.75	.75	1.00	1.00	1.00	1.00	1.00
GAUGES centering voice coil (set of 3).....	20171	20171	20171	20171	20171	20171	20171	20171	20171
	.10	.10	.10	.10	.10	.10	.10	.10	.10
SHIPPING CONTAINER.....					19837	20493	20806	20739	20739
					.35 Net	.35 Net	.35 Net	.35 Net	.35 Net
Instruction Sheet.....						19868			
						.02 Net			
Speaker Packing Tube.....						20447			
						.10			

NOTE: No. 20171 Centering Gauges supersede No. 14622. The No. 20171 gauges are "double-ended," one end being used for type F, N and J speakers, and the other end is used for the speakers in Model 84 and 85, etc.  
The top pole piece may be centered by use of three lengths of 3/64 inch drill rod.

THIS LIST SUPERSEDES ALL PREVIOUS LISTS. PRICES ARE SUBJECT TO CHANGE WITHOUT NOTICE.



# ATWATER KENT RADIO

## SERVICE NOTES

With the exception of Model 81 Motor Car Radio, which has a tuned-radio-frequency circuit, all the receivers described in this supplement employ the super-heterodyne circuit and utilize a frequency of 130 kilocycles for intermediate-frequency amplification.

A general description of the super-heterodyne system appears on page 258 of the Service Manual. A description of the pentode tube is given on page 17. Service notes covering the general adjustment of trimmer condensers, double-spot reception, and testing equipment, are given on pages 259, 260, 261, 262 and 275. Much of this information may be applied in servicing Models 80, 82, 83, 84, 85, 86, 87 and 89.

We want to emphasize the following points:

1. The antenna adjustment must be correctly adjusted

in accordance with the instructions accompanying each set.

2. The tube shields and transformer shields must be tightly seated.

3. Try new tubes before attempting any adjustments or repairs.

4. When replacing a tubular resistor, use a resistor of the same identifying color. In a few cases, owing to engineering changes, the color of a resistor in a chassis may not agree with the color specified in the diagram. In such a case, disregard the diagram and use a replacement resistor having the same color as the defective unit. However, if a resistor has been removed, or its identification destroyed, replace it with a resistor having the color that is specified in the diagram for that set. A list of tubular resistors is given on page 317.

## VOLTAGE TABLE

FOR MODEL 80, 81, 82, 82-D, 82-Q, 83, 84, 84-D, 84-Q, 85, 85-Q, 86, 87 and 89

The voltages listed in this table are only approximate, and are measured values, not actual operating values. Turn volume control to maximum.

Use 250-volt scale of a 1000-ohm-per-volt D. C. voltmeter.

All plate, screen and grid measurements are made from cathode in heater-type tube, and from —F in plain-filament-type tube.

		MODEL 80	MODEL 81	MODEL 82	MODEL 82-D	MODEL 82-Q	MODEL 83	MODEL 84	MODEL 84-D	MODEL 84-Q	MODEL 85	MODEL 85-Q	MODEL 86	MODEL 87	MODEL 89
	LINE VOLTAGE	110	—	110	112	—	110	110	120	—	110	—	115	110	110
	TOTAL "B" VOLTAGE	—	125	—	—	125	—	—	—	125	—	125	—	—	—
R. F. TUBE**	FILAMENT	—	5.5	—	—	2	—	—	—	2	—	—	2.4	2.4	2.4
	PLATE	—	125	—	—	125	—	—	—	125	—	—	125	170	125
	SCREEN	—	75	—	—	60	—	—	—	65	—	—	40	80	50
	GRID	—	SMALL	—	—	3	—	—	—	3	—	—	2	2	2
1ST DET. TUBE†	FILAMENT	2.4	5.5	2.4	5.5	2	2.4	2.4	5.7	2	2.4	2	2.4	2.4	2.4
	PLATE	225	95	135	70	125	225	205	80	125	135	125	125	160	120
	SCREEN	90	—	50	50	40	90	65	50	25	50	40	35	70	45
	GRID	5	7	4	5	3	5	6	5	3	3	3	4	11	4
I. F. TUBE	FILAMENT	2.4	—	2.4	6	2	2.4	2.4	6.5	2	2.4	2	2.4	2.4	2.4
	PLATE	230	—	140	95	125	230	215	105	125	135	125	125	170	125
	SCREEN	95	—	50	50	60	95	65	55	65	50	65	40	80	50
	GRID	2	—	SMALL	SMALL	3	2	3	SMALL	SMALL	2	3	2	2	2
2ND DET. TUBE	FILAMENT	2.4	—	2.4	5.5	2	2.4	2.4	5	2	2.4	2	2.4	2.4	2.4
	PLATE	110	—	105	55	45	110	90	55	60	100	40	95	90	120
	SCREEN	45	—	65	10	25	45	45	10	25	65	25	60	—	—
	GRID	5	—	8	2	3	5	6	1	3	7	3	8	SMALL	15
1ST A. F. TUBE	FILAMENT	2.4	5.5	2.4	5.5	2	2.4	2.4	6	2	2.4	2	2.4	2.4	2.4
	PLATE	230	120	230	75	55	230	205	80	55	215	55	210	90	120
	SCREEN	240	123	240	—	—	240	215	—	—	225	—	220	—	—
	GRID	4	11	5	3	3	4	5	2.5	3	5	3	5	3	4
2ND A. F. TUBE	FILAMENT	—	—	—	2	2	—	—	2	2	—	2	—	2.4	2.4
	PLATE	—	—	—	85	120	—	—	90	120	—	120	—	200	225
	SCREEN	—	—	—	90	125	—	—	95	125	—	125	—	210	235
	GRID	—	—	—	7	15	—	—	7	5	—	15	—	14	14
OSC. TUBE	FILAMENT	2.4	—	2.4	5	2	2.4	2.4	6	2	2.4	2	2.4	2.4	2.4
	PLATE	95	—	95	100	60	100	70	110	60	100	40	95	85	100
	GRID	*	—	*	*	*	*	*	*	*	*	*	*	*	*
CONTROL TUBE	FILAMENT	—	5.5	2.4	—	—	—	—	—	—	2.4	—	2.4	—	2.4
	PLATE	—	3	15	—	—	—	—	—	—	15	—	30	—	25
	SCREEN	—	—	8	—	—	—	—	—	—	7	—	7	—	5
	GRID	—	2	4	—	—	—	—	—	—	5	—	4	—	3

\* The measured oscillator grid voltage will vary dependent on the capacity of the voltmeter leads. In some cases, the presence of the leads will stop oscillation and no reading will be secured for grid bias. In other cases, the reading will be only slight, or it may be as high as 10 volts.

\*\*This includes the 1st, 2nd and 3rd R. F. tubes in Model 81. †This is the detector tube in Model 81.