

ATWATER KENT RADIO

Service Data

PARTS LIST AND PRICE LIST FOR TYPE L, F, P, Q AND D CHASSIS RECEIVERS AND TYPE N, N-3, J AND JB SPEAKERS

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CHASSIS DATA

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ATWATER KENT RADIO

**TABLE OF PRICES, TUBE EQUIPMENT, AND OTHER DATA
FOR MODELS 70, 72, 74, 75 AND 76**

	POWER SOURCE	PRICE COMPLETE LESS TUBES	TYPE CHASSIS	PART NO.	TYPE SPEAKER	PART NO.	COLOR CODE	TUBES	SHIPPING WEIGHT		
									CHAS- SIS	SPKR.	CAB.
Model 70 Low-boy	60 cycles 110 volts A. C.	\$119.	L	16000	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	47 lbs.	21 1/4 lbs.	54 lbs.
	25 cycles 110 volts A. C.	129.	F	16100	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	51 1/4 lbs.	21 1/4 lbs.	
	110 volts Direct Current	129	D	16700	N-3	16900	Blue	3-UX-222 2-UX-112A 2-UX-171A	44 1/2 lbs.	22 1/2 lbs.	
24 3/4" wide 15 1/4" deep 38 3/4" high	Battery	99.	Q	16800	J	15920	Orange	3-UX-222 2-UX-112A 2-UX-171A	36 lbs.	10 3/4 lbs.	
Model 72 (Super-Heterodyne) Low High-boy	60 cycles 110 volts A. C.	133.	H	16500	N	16400	Green	3-UY-224 3-UY-227 2-UX-245 1-UX-280	47 lbs.	21 1/4 lbs.	26 1/2 lbs.
Model 74 Table	60 cycles 110 volts A. C.	125.	L	16000	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	47 lbs.	21 1/4 lbs.	51 lbs.
	25 cycles 110 volts A. C.	135.	F	16100	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	51 1/4 lbs.	21 1/4 lbs.	
	110 volts Direct Current	135.	D	16700	N-3	16900	Blue	3-UX-222 2-UX-112A 2-UX-171A	44 1/2 lbs.	22 1/2 lbs.	
24 1/2" wide 16 1/2" deep 30 1/4" high											
Model 75 Phonograph-Combination 26 3/4" wide 17" deep 40 1/4" high	60 cycles 110 volts A. C.	195.	P	16600	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	45 3/4 lbs.	21 1/4 lbs.	85 lbs.
Model 76 High-boy	60 cycles 110 volts A. C.	145.	L	16000	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	47 lbs.	21 1/4 lbs.	78 1/2 lbs.
	25 cycles 110 volts A. C.	155.	F	16100	N	16400	Green	3-UY-224 2-UY-227 2-UX-245 1-UX-280	51 1/4 lbs.	21 1/4 lbs.	
	110 volts Direct Current	155.	D	16700	N-3	16900	Blue	3-UX-222 2-UX-112A 2-UX-171A	44 1/2 lbs.	22 1/2 lbs.	
	Battery	125.	Q	16800	J	15920	Orange	3-UX-222 2-UX-112A 2-UX-171A	36 lbs.	10 3/4 lbs.	
26" wide 16 1/4" deep 45 3/4" high											
Inductor Type Speaker	(Price) \$28.00					JB	17010	Black			20 1/4 lbs.

December, 1930. These prices are subject to change without notice. WEST COAST PRICES SLIGHTLY HIGHER.

SYNCHRONIZING CONDENSERS

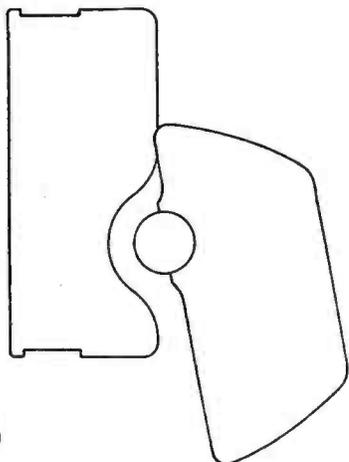


FIG. 218. POSITION OF ROTOR BLADES FOR 1500 K. C.

When the variable-condenser unit has been replaced or adjusted in any way, it is necessary to check the alignment as follows:—

- (1) Loosen the pointer set-screws.
- (2) Move the rotor plates to the position shown in Figure 218.
- (3) With the rotor in this position, adjust the pointer to the 1500 K. C. position and tighten the pointer set screws.
- (4) Note how far down on the 1500 K. C. mark the pointer comes, then turn the condenser knob to the 550 K. C. mark. The pointer should come down on this mark approximately the same as on the 1500 K. C. mark. If it does not, it is an indication that the front panel is not centered.
- (5) If the front panel is not centered, loosen the screw at each end of the bottom of the front panel and shift the panel one way or another as necessary. Tighten the panel screws and then reset the pointer accurately.

ADJUSTING TRIMMER CONDENSERS

When adjusting the trimmer condensers, it is necessary to have a four-wave oscillator, providing modulated signals at 1500, 1000, 800 and 600 kilocycles. The oscillator signals should come in at exactly these settings on two or more Type L sets THAT HAVE THE ORIGINAL FACTORY SYNCHRONISM.

1. Connect the common pick-up lead from the four R. F. oscillators to one end of a No. 8112 condenser. Connect the other end of this condenser to the Long-Antenna post. Connect the oscillator container to the Ground post.
2. Connect the output measuring circuit shown in Figure 259 to the speaker-plug socket on the set. Close S₂ and S₃. Throw S₁ to the left.
3. Put all tubes in the set; power switch on; volume control at maximum; local-distance switch at distance.

Break away the sealing wax on the trimmer-condenser screws.

4. Turn pointer exactly to the 1500 K. C. mark. Reduce or increase the amount of pick-up from the 1500 K. C. oscillator to secure a reading of about 20 on the output meter.
5. With a screw-driver, turn the pressure screw of the 4th trimmer condenser (on front variable condenser) one way or the other, as necessary, to the point where the reading on the output meter is greatest. Repeat this process on the 3rd trimmer, then on the 2nd, and finally on the 1st. Reduce the pick-up from the 1st oscillator if necessary in order to keep the needle of the galvanometer near the centre of its scale.

This adjustment of the trimmer-condenser screws is termed the CORRECT POSITION.

IMPORTANT SERVICE NOTES

1. In the Types L, F, P, D and Q chassis receivers, it is very important to arrange the three control-grid leads to the screen-grid tubes exactly parallel to each other. If these leads are not parallel, and two of them come close together, the dial readings will not be accurate, especially at the high-frequency end of the scale.
2. When replacing a flexible resistor, care must be taken to use a resistor having the same value. In the event of any uncertainty, make a continuity meter reading of a good

resistor of the same type in a stock set, and then use a replacement resistor that gives the same reading on the continuity meter.

3. A number of different code markings may be used to identify by-pass condensers that have the same part number. If the part number is the same, the condensers are interchangeable, even though the code markings are different. (See Page 253.)

TYPE L-1 CHASSIS, VOLTAGE TABLE AND DIAGRAM

VOLTAGE TABLE FOR TYPE L-1 CHASSIS

Set in operation. Volume control at maximum.
L-D Switch at distance.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

APPROX. VOLTAGES, USING 120 V LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	2.4	185	6	85
2nd-R.F.	2.35	185	4.5	86
3rd-R.F.	2.35	185	4.5	86
Detector	2.35	120	12**	—
1st-A.F.	2.35	75	3.5	—
2A	2.45	265	55*	—
2Aa	2.45	265	55*	—
Rectifier	5.	—	—	—

* Use 250-volt scale.
** This is the voltage across the detector bias resistor; when measuring from grid to cathode, the voltage reading is only 2.
All readings made from cathode in heater-type tubes, and from —F in plain-filament-type tubes.

In order to identify modifications of each chassis, where such modifications require new part numbers, a numeral is used after the type letter. Thus the 1st style of Type L chassis (below No. 6,234,881) is termed Type L-1, and the 2nd style (above No. 6,234,881) is termed Type L-2. This marking is for use only in Service literature and will not appear on the serial-number plates.

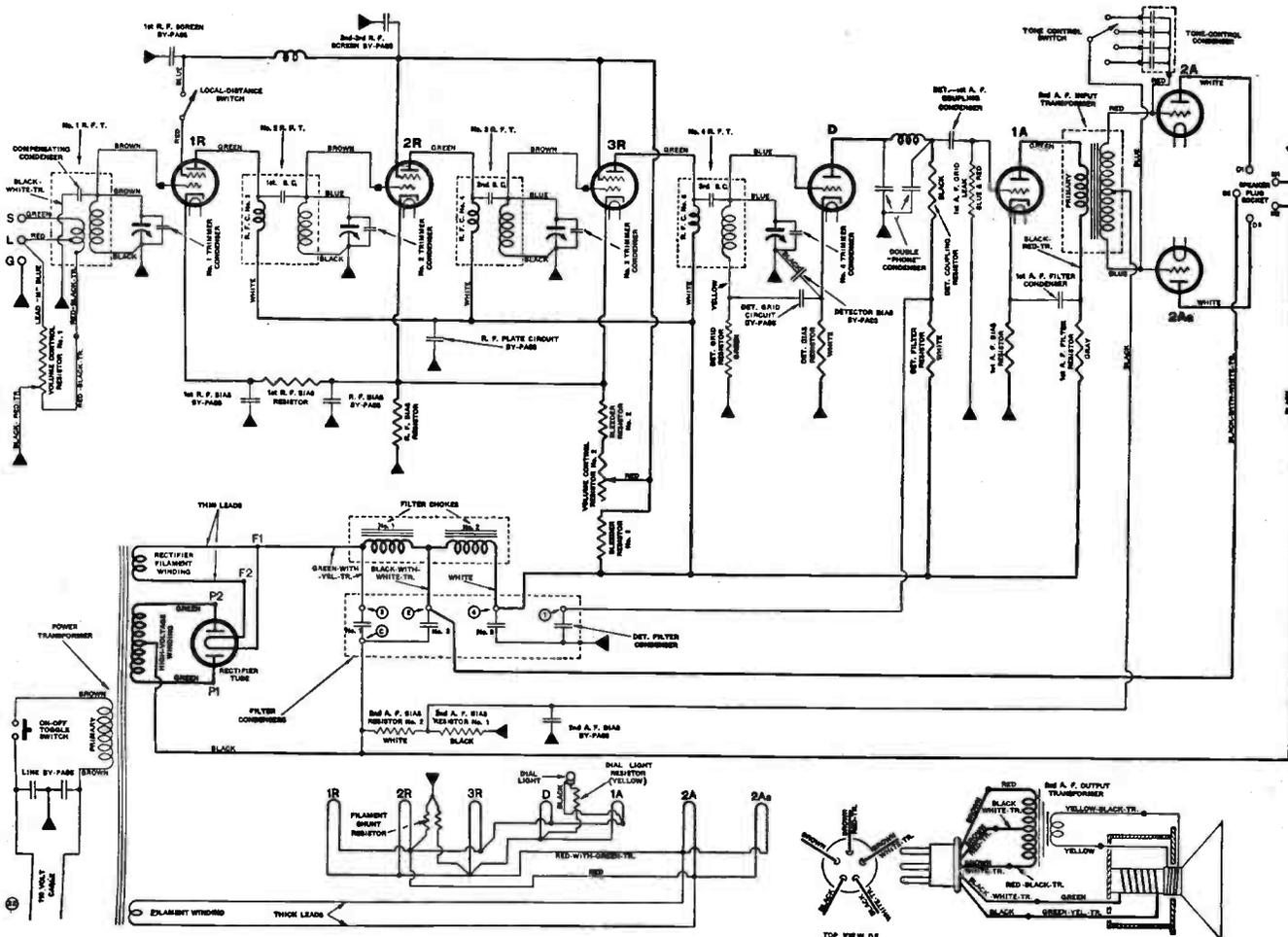


FIG. 219. DIAGRAM OF L-1 CHASSIS.

TYPE L-2 CHASSIS, VOLTAGE TABLE AND DIAGRAM

VOLTAGE TABLE FOR TYPE L-2 AND P CHASSIS

Set in operation. Volume control at maximum.
LD (or 'phono) switch up.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

APPROX. VOLTAGES, USING 120 V. LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	2.4	180	5	85
2nd-R.F.	2.35	180	4.5	86
3rd-R.F.	2.35	180	4.5	86
Detector	2.35	110	14**	—
1st-A.F.	2.35	70	2	—
2A	2.45	250	55*	—
2Aa	2.45	250	55*	—
Rectifier	5.	—	—	—

* Use 250-volt scale.
** This is the voltage across the detector bias resistor; when measuring from grid to cathode, the voltage reading is only 2.
All readings made from cathode in heater-type tubes, and from -F in plain-filament-type tubes.

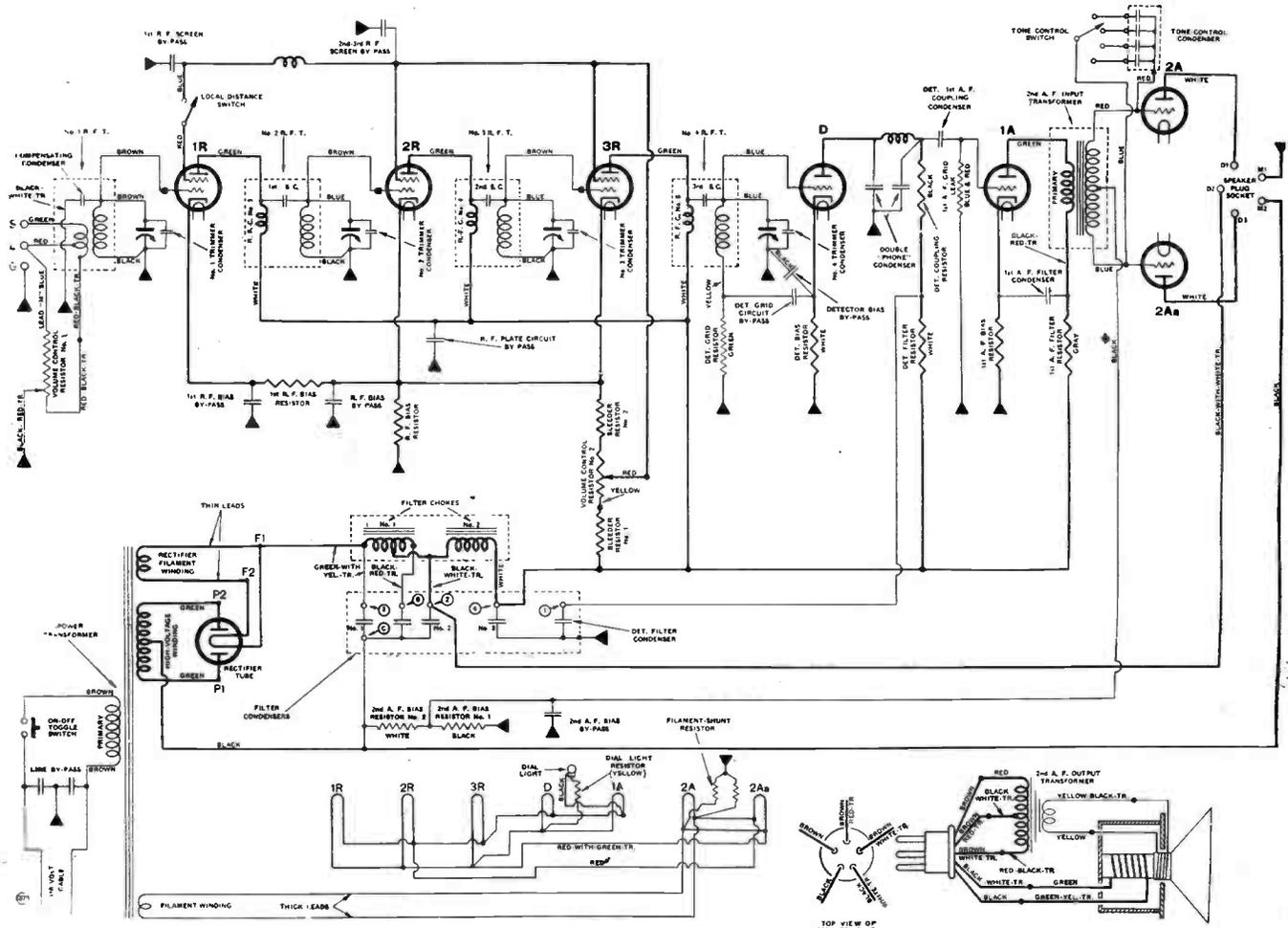


FIG. 220. DIAGRAM OF L-2 CHASSIS.

In the majority of L-2 sets, the filament shunt resistor is connected across the R.F. filaments, as shown in Fig. 219. Also, a 2-ampere fuse is connected in one side of the 110-volt line.

TYPE L-1 CHASSIS RECEIVER

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

- L—Line by-pass.
- L—Line by-pass.
- C—2nd-A.F. bias by-pass.
- E—1st-R.F. screen by-pass.

Condensers in R.F. By-Pass No. 2

- A—1st-R.F. bias by-pass.
- B—R.F. bias by-pass.
- U—1st-A.F. filter condenser.

Condensers in R.F. By-Pass No. 3

- D—Detector bias by-pass.
- H—R.F. plate-circuit by-pass.
- T—Detector grid-circuit by-pass.

Condensers in Detector By-Pass

- F—2nd-3rd R.F. screen by-pass.
- M—Detector-1st A.F. coupling condenser.
- P—Phone condenser.
- P—Phone condenser.

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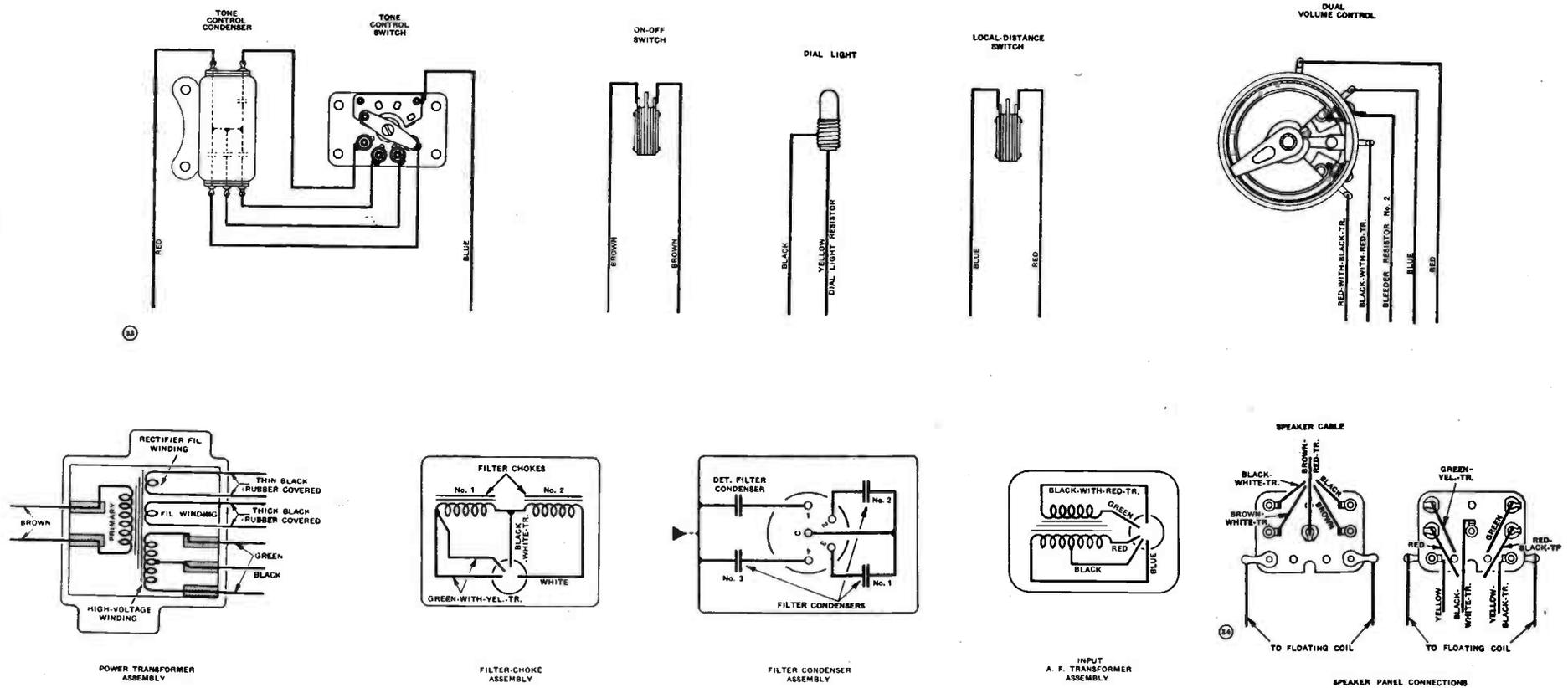


FIG. 221. CONNECTION OF UNITS IN TYPE L-1 CHASSIS, AND, AT RIGHT, CONNECTIONS TO TERMINAL PANEL OF TYPE N SPEAKER.

The rectifier filament winding leads come out the left-hand side of the power transformer; these are thin leads covered with black sleeving. The filament winding has thick leads covered with black sleeving.

TYPE L-2 CHASSIS RECEIVER

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

- L—Line by-pass.
- L—Line by-pass.
- C—2nd-A.F. bias by-pass.
- E—1st-R.F. screen by-pass.

Condensers in R.F. By-Pass No. 2

- A—1st-R.F. bias by-pass.
- B—R.F. bias by-pass.
- U—1st-A.F. filter condenser.

Condensers in R.F. By-Pass No. 3

- D—Detector bias by-pass.
- H—R.F. plate-circuit by-pass.
- T—Detector grid-circuit by-pass.

Condensers in Detector By-Pass

- F—2nd-3rd R.F. screen by-pass.
- M—Detector-1st A.F. coupling condenser.
- P—Phone condenser.
- P—Phone condenser.

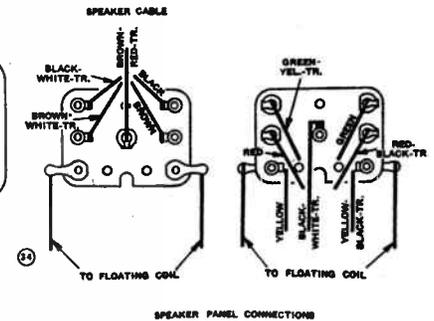
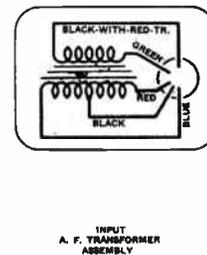
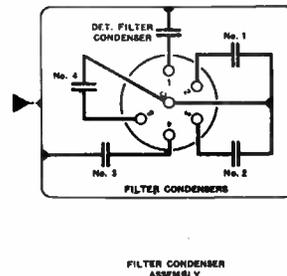
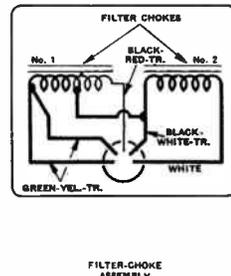
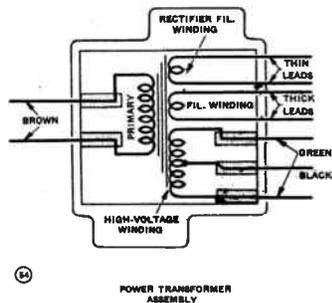
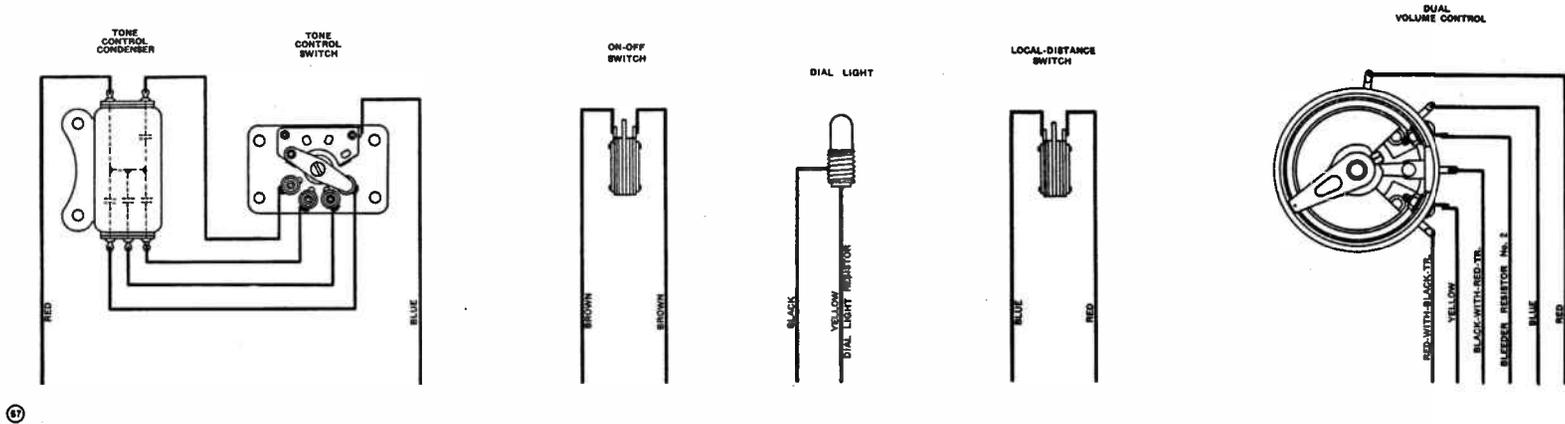


FIG. 223. CONNECTION OF UNITS IN TYPE L-2 CHASSIS, AND, AT RIGHT, CONNECTIONS TO TERMINAL PANEL OF TYPE N SPEAKER.

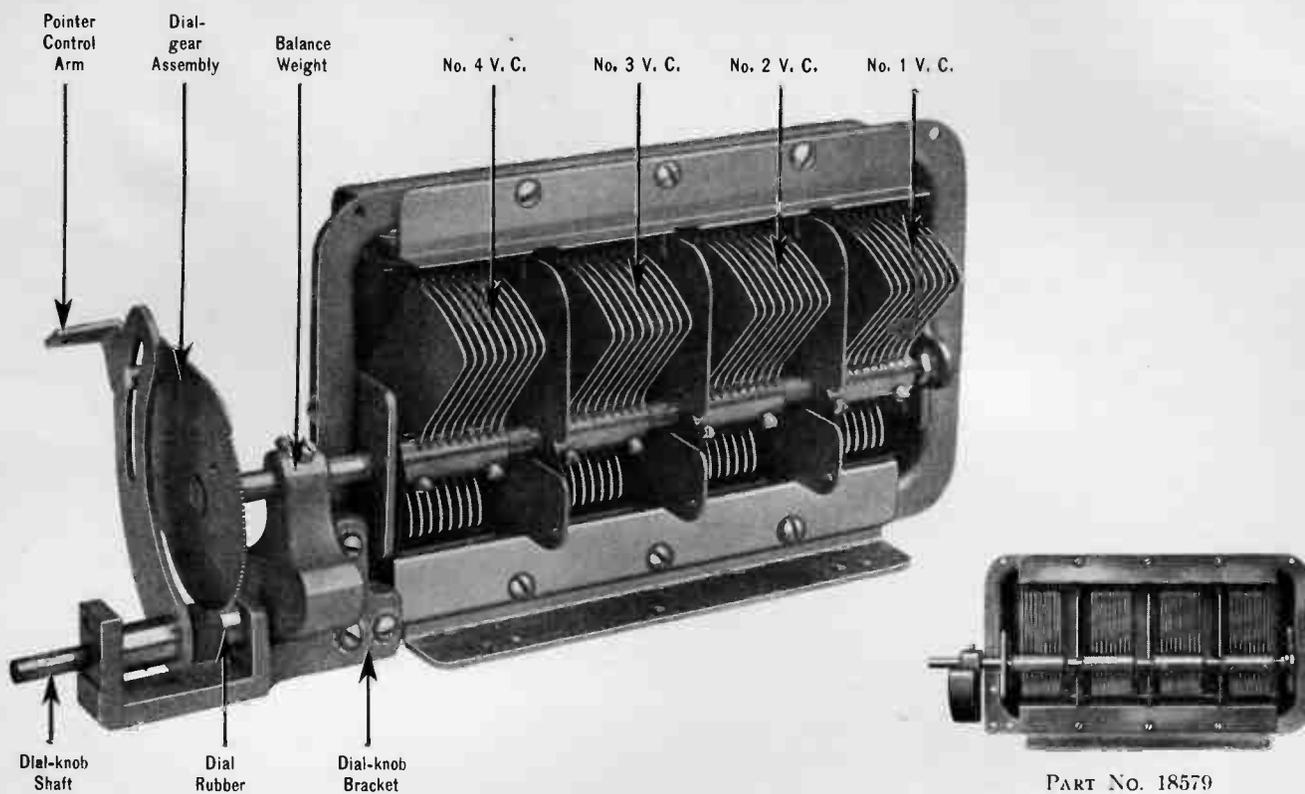


FIG. 225. VARIABLE-CONDENSER ASSEMBLY.

If any section of this condenser is seriously damaged, the stator, rotor and frame (with balance weight) unit (No. 18579) should be replaced.

IMPORTANT: DO NOT disturb the adjustment of the rotor set-screws nor the bearing screw at the rear end of the shaft.

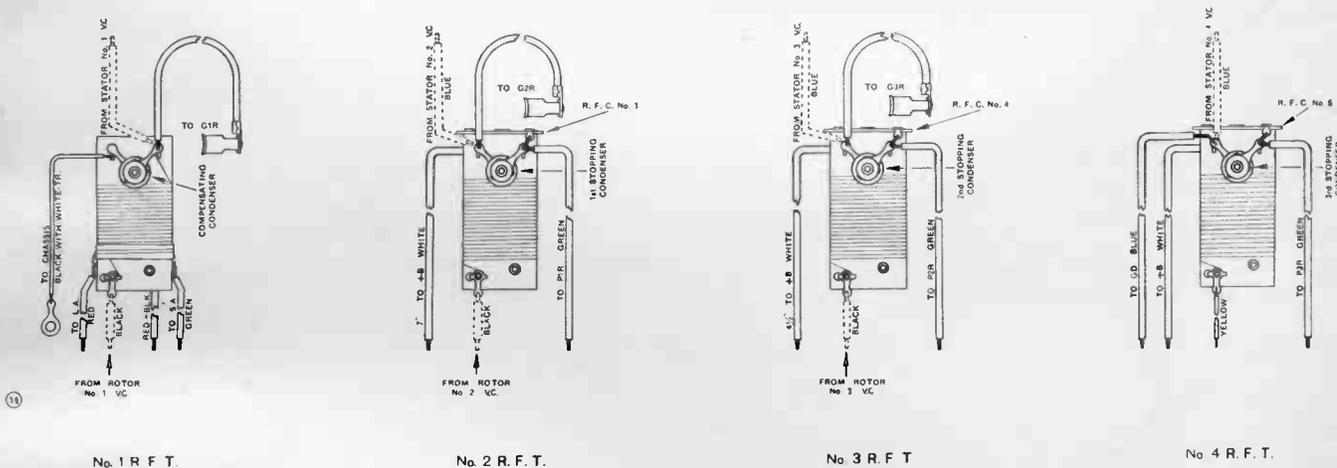


FIG. 226. CONNECTIONS OF R. F. COIL GROUP IN L-2 AND F CHASSIS.

If one R. F. coil or R. F. C. Nos. 3, 4 or 5, is defective, the complete coil group must be replaced. If the compensating condenser or one of the stopping condensers is defective, it may be replaced without changing anything else.

PARTS AND PRICE LIST—TYPE L, No. 16000, CHASSIS

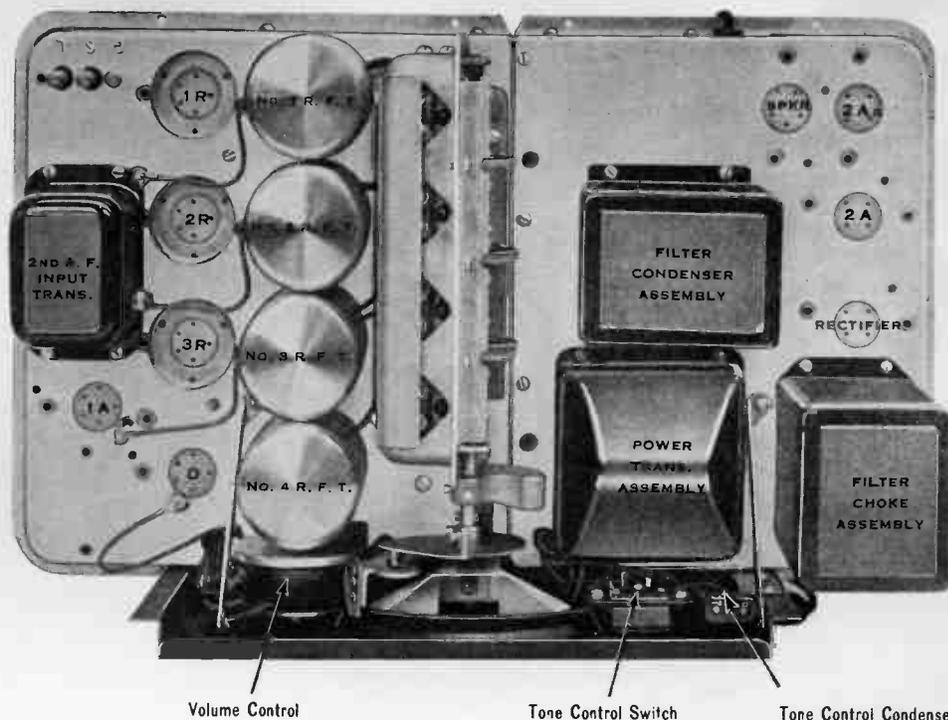


FIG. 227.

TOP VIEW OF TYPE L CHASSIS.

Type P Chassis is similar except for the addition of two binding posts at the rear of the front panel for connection to the pick-up transformer.

Type F Chassis has a different style of power transformer.

Part No.	FRONT PANEL ASSEMBLY	Price
18085	Front panel with dial plate.....	\$1.25
18581	Front panel complete.....	2.50
17224	Front panel brace (2 used).....	.10
17985	Escutcheon.....	1.00
17244	Volume-control or tone-control knob.....	.30
16370	On-off switch complete.....	1.10
16380	Local-distance switch.....	1.25
16270	Volume-control.....	3.70
17876	Volume-control bracket.....	.20
16576	Volume-control cover.....	.05
18223	Tone-control condenser clamp.....	.05
17814	Dial knob.....	.30
17959	Dial pointer.....	.05

Part No.	POWER UNITS	Price
16660	Power-transformer.....	\$7.50
17825	Power-transformer spring.....	.10
17824	Power-transformer cover.....	.50
17563	Power-transformer insulating sheet.....	.02
	Filter Condenser Unit For L-1	
15480	Filter-condenser (5 taps).....	7.95
17429	Filter-condenser cover.....	.40
17534	Filter-condenser spacer (fibre).....	.25/c
	Filter Condenser Unit For L-2	
15850	Filter-condenser (6 taps).....	7.95
18188	Filter-condenser case.....	.45
17534	Filter-condenser spacer (fibre).....	.25/c
16680	Filter-choke (5 leads)*.....	5.75
17302	Filter-choke lid.....	.20
15520	2nd-A. F. input transformer.....	3.75

*No. 16680 choke assembly is for use in Type L-2 chassis, but it may be used in Type L-1 chassis by cutting off the black-with-red-tracer lead.

Part No.	VARIABLE-CONDENSER STATOR, ROTOR AND FRAME (WITH LEADS AND BALANCE WEIGHT)	Price
18579	VARIABLE-CONDENSER STATOR, ROTOR AND FRAME (WITH LEADS AND BALANCE WEIGHT).....	\$9.60
17107	Rotor-connection (long).....	.10
17291	Rotor-connection (short).....	.10
15404	Dial light.....	.25
16420	Dial-light socket and reflector, one-hole mounting (less lead and resistor).....	.40
16420-A	Dial-light socket and reflector, two-hole mounting (less lead and resistor).....	.40
18615	Dial-gear.....	.40
17936	Dial-knob bracket (one-hole mounting).....	.35
18144	Dial-knob bracket (two-hole mounting).....	.35
17935	Dial-knob bracket support (threaded).....	.03
17961	Dial-rubber assembly.....	.15
17941	Dial-knob shaft.....	.05
17962	Pointer-control arm.....	.30

No separate parts, except those listed above, will be supplied for the variable-condenser unit.

Part No.	TONE-CONTROL SWITCH COMPLETE	Price
16430	TONE-CONTROL SWITCH COMPLETE.....	.75
18148	Base.....	.60
18146	Shaft.....	.12
18112	Contact blade.....	.03

Part No.	COIL GROUP	Price
18327	R. F. coil group.....	\$4.00
15540	Stopping condenser (3 used).....	.10
15540	Compensating condenser (1 used).....	.10
17295	R. F. coil shield (4 used).....	.50

If one R. F. coil, or R. F. C. No. 3, No. 4, or No. 5 is defective, the ENTIRE coil group must be replaced.

December, 1930. These prices supersede all previous prices and are subject to change without notice.

PARTS AND PRICE LIST—TYPE L, No. 16000, CHASSIS (Cont'd)

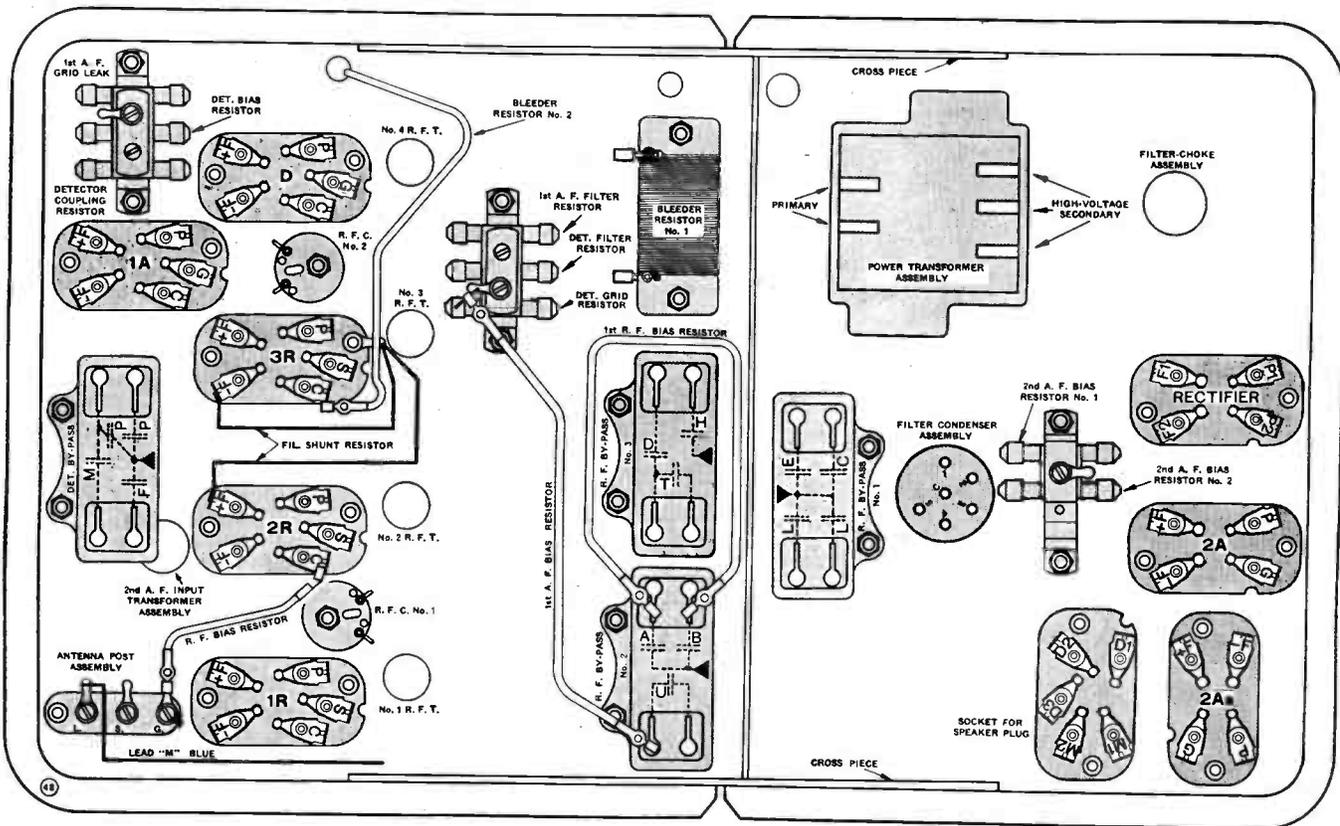


FIG. 228. BOTTOM VIEW OF TYPE L-2 AND P CHASSIS.

A line fuse (2-amperes) and fuse holder are mounted at the right of R.F. by-pass No. 1 in later-type sets.
In L-1 chassis, the filter condenser assembly has five contacts instead of six as shown.

**TUBULAR RESISTORS
TWO-RESISTOR GROUP**

Part No.	Price
15592 2nd-A.F. bias resis. No. 1 (black)	\$.25
16724 2nd-A.F. bias resis. No. 2 (white)	.25
17341 Mounting bracket	.05
17344 Fibre pad	.25/c
17343 Metal clamping strip	.02

THREE-RESISTOR-GROUPS

Part No.	Price
16282 1st-A.F. grid leak (blue or blue and red)	\$.25
16724 Detector bias resistor (white)	.25
15592 Detector coupling resistor (black)	.25
15285 1st-A.F. filter resistor (gray)	.50
16724 Detector filter resistor (white)	.25
15892 Detector grid resistor (green)	.25
17341 Mounting bracket	.05
17342 Fibre pad	.25/c
17345 Metal clamping strip	.02

FLEXIBLE RESISTORS

Part No.	Price
16350 R.F. bias resistor	\$.20
16320 1st-R.F. bias resistor	.20
16320 1st-A.F. bias resistor	.20
17090 Bleeder resistor No. 2	.20
18236 Dial light resistor (yellow)	.15
17077 Filament shunt resistor	.15

Part No.	Price
16330 Bleeder resistor No. 1 (flat type)	\$.40
13306 Insulator (1½" x 3")	.25/c
15271-A R. F. CHOKE No. 1, NO. 2 (2 used)	.25

FIXED CONDENSERS

Part No.	Price
15790 R.F. by-pass No. 1	\$1.00
15770 R.F. by-pass No. 2	1.00
15780 R.F. by-pass No. 3	1.10
15640 Detector by-pass	1.00
16490 Tone-control condenser	1.00

SOCKETS

Part No.	Price
17518 R.F. sockets (3 used)	\$.30
17519 Detector or 1st-A.F. socket (2 used)	.30
17511 2Aa socket	.25
17509 2A socket	.25
17508 Rectifier socket	.25
18007 Speaker-plug socket	.30
17377 Socket insulator (fibre sheet) (5 used)	.25/c
18016 Speaker-plug-socket insulator	.25/c
18449 Fuse socket	.15
16420 Dial-light socket and reflector, one-hole mounting (less leads)	.40
16420-A Dial-light socket and reflector, two-hole mounting (less leads)	.40

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PARTS AND PRICE LIST—TYPE L, No. 16000, CHASSIS (Cont'd)
MISCELLANEOUS PARTS

Part No.	Price	Part No.	Price
17524	110-volt cable with plug \$1.90	15214	Tube-shield base (3 used)..... \$.03
8956	110-volt plug only30	17326	Detector cap..... .30
16741	Insulating bushing for 110-volt cable05	17223	Cross piece (10" x 7/8"—2 used) .. .25
16742	Bushing-retaining spring05	17632	Detector-cap lead (brown)..... .10
17521	Antenna binding posts and base45		Trimmer-condenser sealing wax .. .50 lb.
17323	Antenna and ground post base..... .05	18118	"Guide" Card (form F-680)..... .75/c net
8215	Binding post20	18119	Log Card (form F-681)..... .75/c net
17536	Bottom plate 1.30	17989	Tuned-radio-frequency name-plate .06
18117	Balance weight for variable condenser .35	18534	Line fuse (2-ampere)..... .05
13989	Ground clamp30	16220	Literature assembly..... .20 net
15213	Tube-shield (3 used)15	18122	Instruction book..... .10 "
		18123	Shipping container..... .65 "

SMALL PARTS ON L, F, P, Q, D RECEIVERS, AND J, JB, N, N-3 SPEAKERS
ILLUSTRATIONS ARE FULL SIZE

18092 \$.04 18391 \$.02 3718 \$.02 13052 \$.30/c 9689 \$.30/c 8221 \$.30/c 9274 \$.30/c 7697 \$.30/c 8106 \$.30/c 16158 \$.30/c 15283 \$.30/c 17516 \$.30/c 14394 \$.30/c 14379 \$.35/c 15766 \$.35/c 9209 \$.35/c 14788 \$.20/c 969 \$.30/c

7977 \$.50/c 15562 \$.30/c 14687 \$.50/c 15133 \$.04 8188 \$.01 15006 \$.02 17507 \$.05 17868 \$.02 16492 (Felt) \$.04—3/8" thick 15134 (Leather) \$.01 13928 \$.01 13145 (Fibre) \$.25/c 3419 (Fibre) \$.15/c

17679 \$.01 8249 \$.50/c 16771 \$.30/c 9128 \$.30/c 9206 \$.20/c 8272 \$.02 18095 \$.40/c 17204 \$.40/c 17433 \$.50/c 17432 \$.50/c 18127 \$.45/c 8220 \$.10/c 17775 \$.02 9678 \$.50/c 9675 \$.50/c

16495—\$.10

16512—Clamp—\$.05

18389—Strap—\$.05

17827 \$.05

16168—Rubber \$.02

16499 \$.15

15414—Foot \$.08

18388 \$.25

December, 1930. These prices supersede all previous prices and are subject to change without notice.

TYPE F CHASSIS, DIAGRAM AND PARTS LIST

(For Voltage Table, See Page 253)

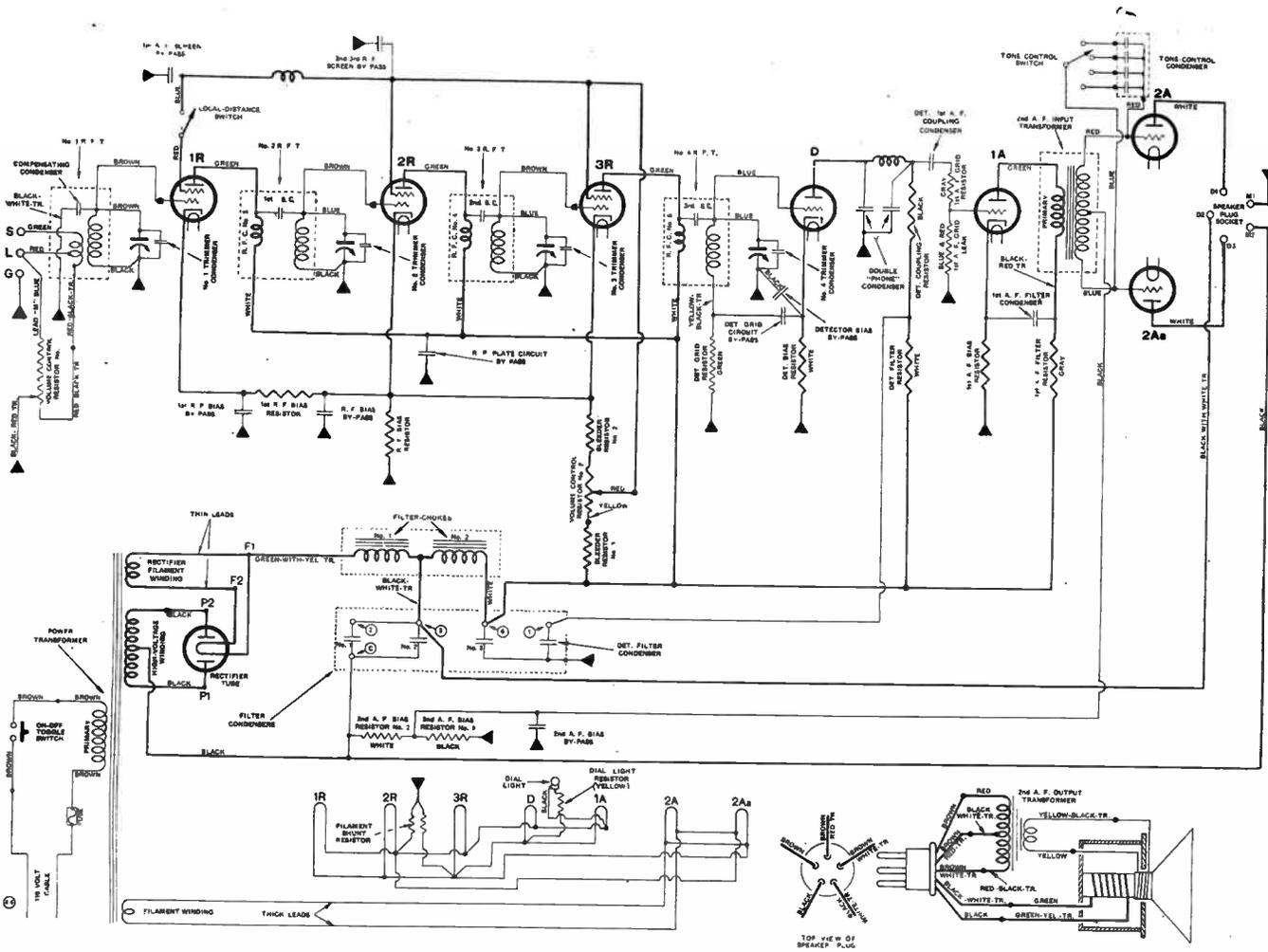


FIG. 229. WIRING DIAGRAM OF TYPE F CHASSIS.

In some early-type F chassis, a line by-pass condenser is used and the 1st-A. F. grid resistor (gray) is omitted. In later-type F chassis, the filter condenser has only four contacts, as shown on Page 232, and the top of the 1st-A.F. grid leak is connected to the opposite end of the 1st-A.F. grid resistor, as shown on Page 233.

PARTS AND PRICE LIST—TYPE F, No. 16100, CHASSIS

All parts not listed below are same as those used in Type L, No. 16000, Chassis, on Pages 227, 228 and 229.

Part No.	Price	Part No.	Price		
15880	Power-transformer	\$12.00	15790	R.F. by-pass No. 1 (before No. 5802566).....	\$1.00
18645	Power-transformer lid with name-plate.....	.20	15262	R.F. by-pass No. 1 (after No. 5802566).....	1.00
16520	Filter-condenser assembly	7.95	15285	1st-A.F. grid resistor, gray (after No. 5802566).....	.50
18188	Filter-condenser case45	16590	Literature assembly.....	.20 net
17534	Filter-condenser spacer (fibre).....	.25/c	18256	Instruction book.....	.10 "
16260	Filter-choke	7.50	18257	Shipping container.....	.65 "
17302	Filter-choke lid20			

December, 1930. These prices supersede all previous prices and are subject to change without notice.

TYPE P CHASSIS, DIAGRAM AND PARTS LIST

(For Voltage Table, See Page 221.)

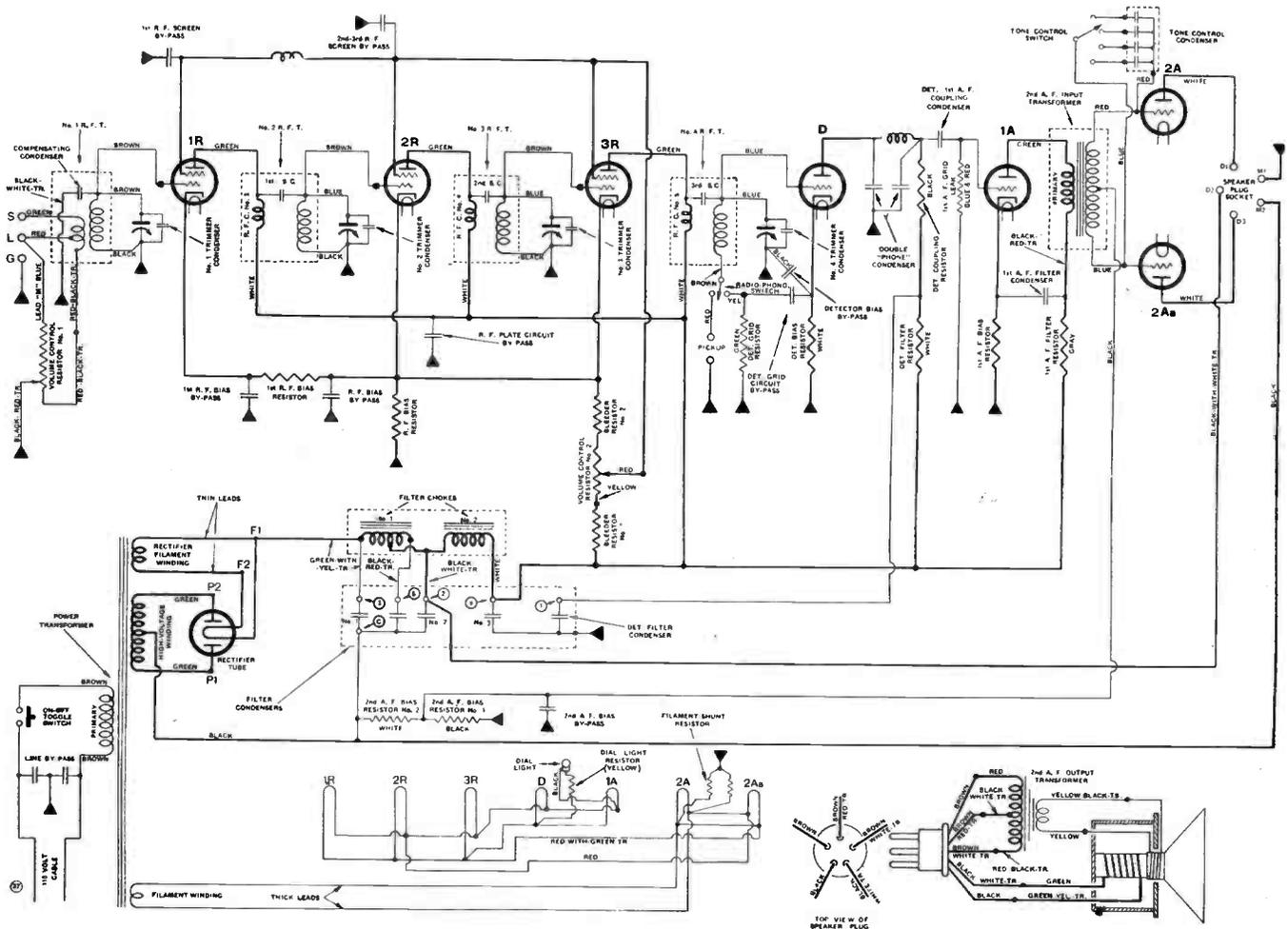


FIG. 230. WIRING DIAGRAM OF TYPE P CHASSIS.

In later-type P sets, the filament shunt resistor is connected across the R.F. filaments, as shown in Fig. 229. Also, a 2-ampere fuse is connected in one side of the 110-volt line.

PARTS AND PRICE LIST—TYPE P, No. 16600, CHASSIS

All parts not listed below are same as those used in Type L, No. 16000, Chassis, on Pages 227, 228 and 229.

Part No.	Price	Part No.	Price
18544	Phono-radio switch \$1.25	18548	Instruction sheet \$.10 net
17040	Phonograph post assembly45	17060	Literature assembly20 "
18546	Binding post (marked G)20	18547	Shipping container65 "
8215	Binding post (plain)20		

For phonograph parts, see Page 239.

December, 1930. These prices supersede all previous prices and are subject to change without notice.

TYPE F CHASSIS RECEIVER

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

- C—2nd-A.F. bias by-pass.
- E—1st-R.F. screen by-pass.
- F—2nd-3rd-R.F. screen by-pass.

Condensers in R.F. By-Pass No. 2

- A—1st-R.F. bias by-pass.
- B—R.F. bias by-pass.
- U—1st-A.F. filter condenser.

Condensers in R.F. By-Pass No. 3

- D—Detector bias by-pass.
- H—R.F. plate-circuit by-pass.
- T—Detector grid-circuit by-pass.

Condensers in Detector By-Pass

- M—Detector-1st A.F. coupling condenser.
- P—"Phone" condenser.
- P—"Phone" condenser.
- R—Filament by-pass.

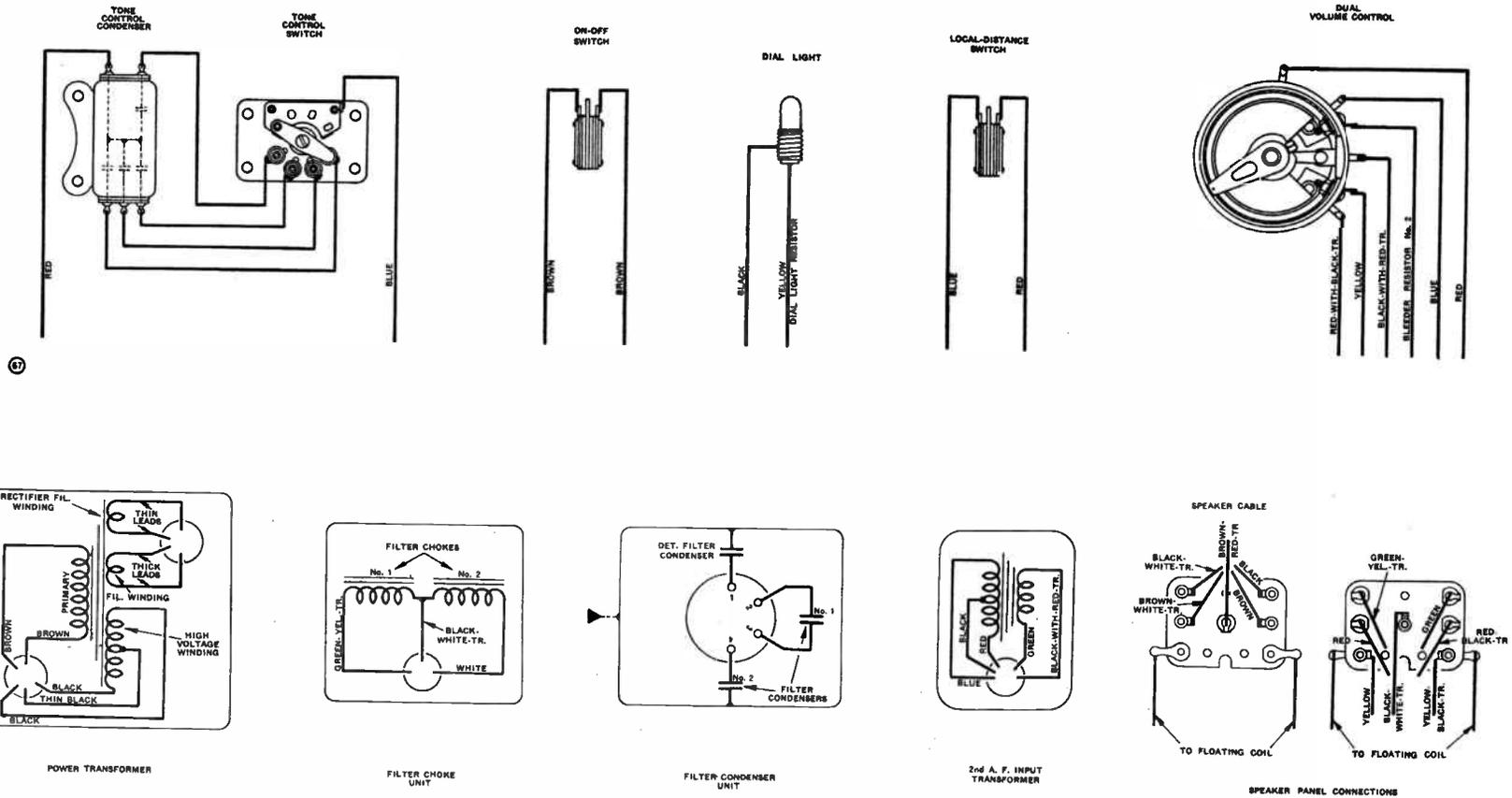


FIG. 231. CONNECTIONS OF UNITS IN TYPE F CHASSIS.
 In some early Type F Chassis, the filter condenser has five contacts, as shown on Page 230.

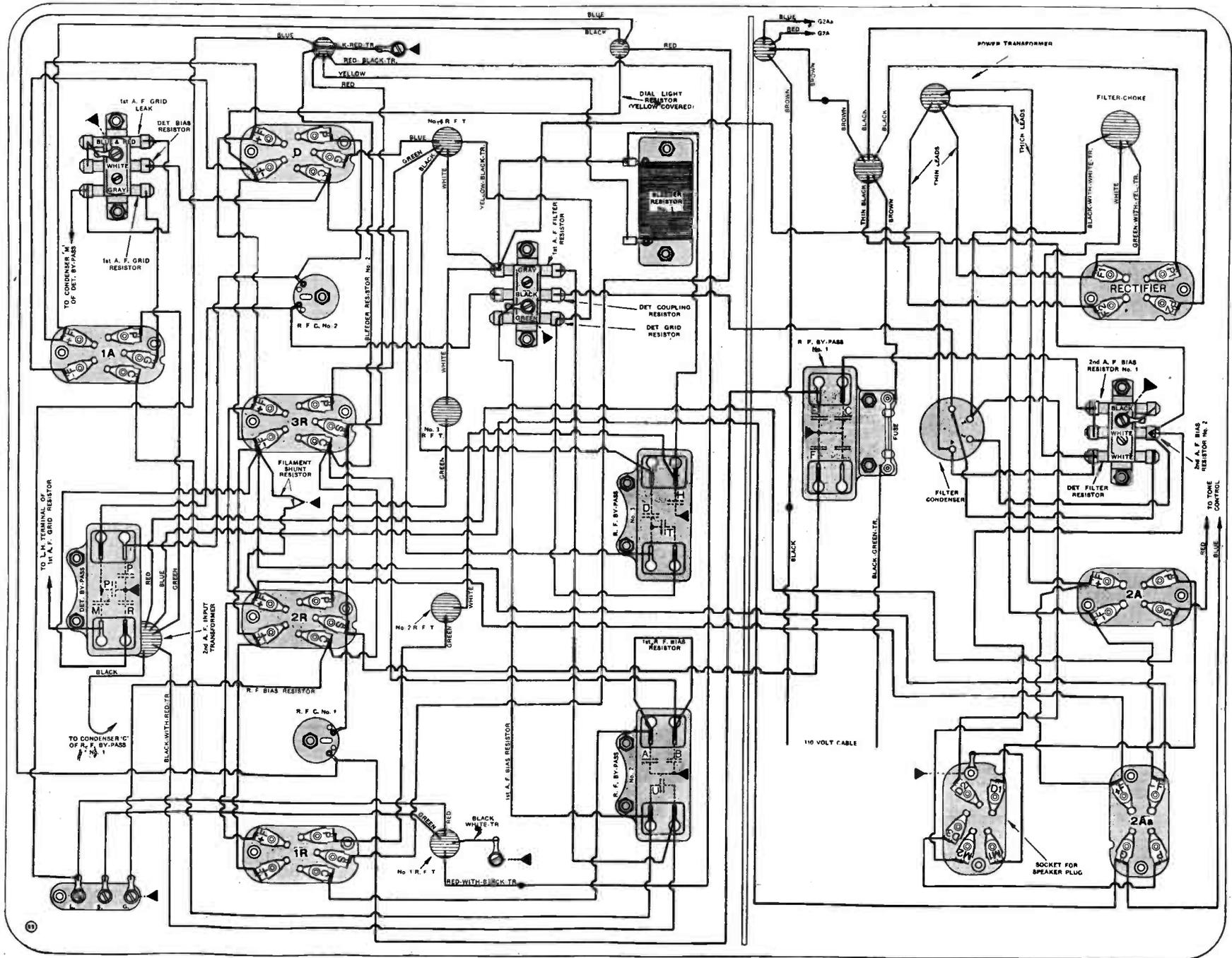


FIG. 232. BOTTOM WIRING OF TYPE F CHASSIS RECEIVER

In some early Type F Chassis, a line by-pass condenser is used, and the 1st-A. F. grid resistor (gray) is omitted. Also, the filter condenser has five contacts, as shown on Page 230.

TYPE P CHASSIS RECEIVER

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

- L—Line by-pass.
- L—Line by-pass.
- C—2nd-A.F. bias by-pass.
- E—1st-R.F. screen by-pass.

Condensers in R.F. By-Pass No. 2

- A—1st-R.F. bias by-pass.
- B—R.F. bias by-pass.
- U—1st-A.F. filter condenser.

Condensers in R.F. By-Pass No. 3

- D—Detector bias by-pass.
- H—R.F. plate-circuit by-pass.
- T—Detector grid-circuit by-pass.

Condensers in Detector By-Pass

- F—2nd-3rd R.F. screen by-pass.
- M—Detector-1st A.F. coupling condenser.
- P—Phone condenser.
- P—Phone condenser.

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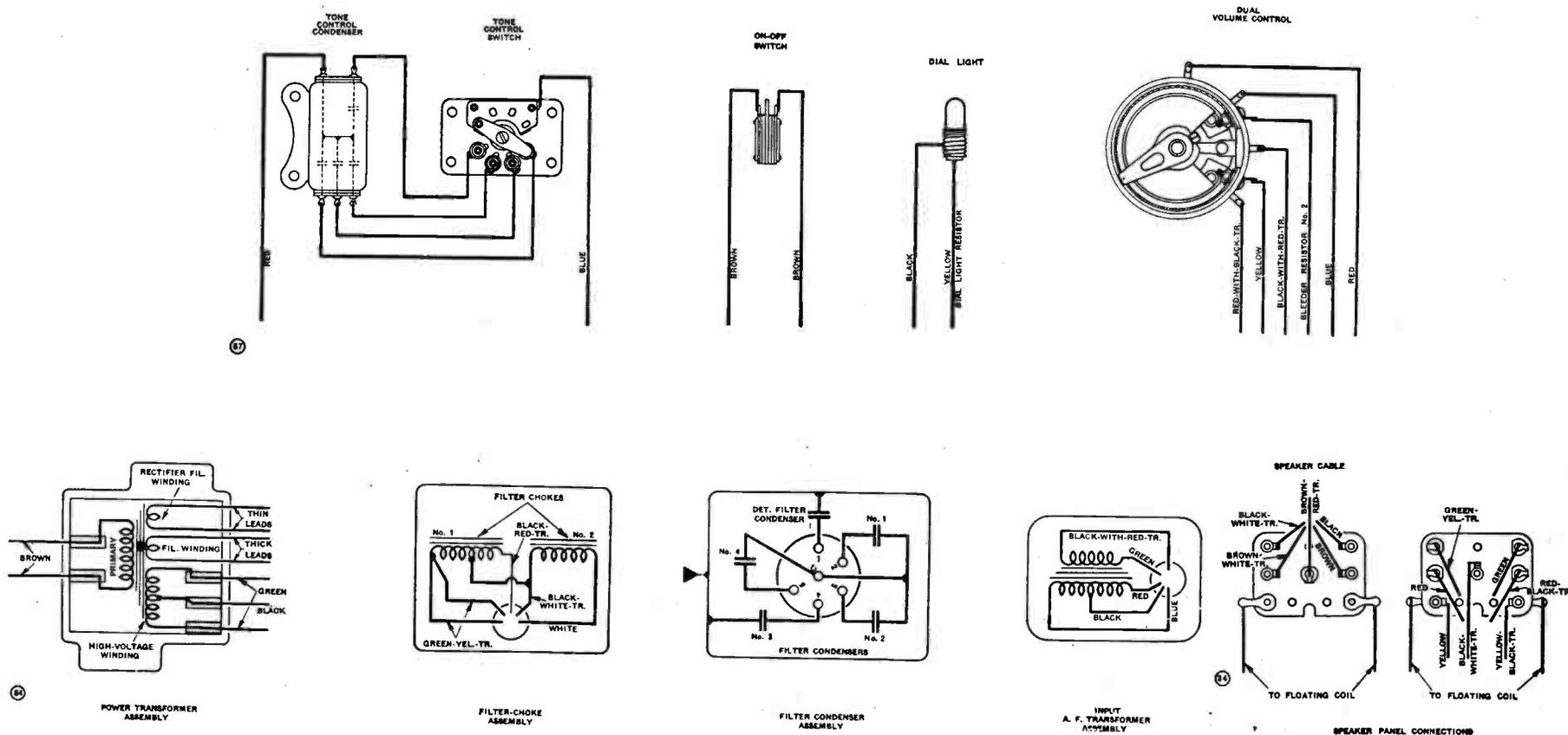


FIG. 233. CONNECTION OF UNITS IN TYPE P CHASSIS, AND, AT RIGHT, CONNECTIONS TO TERMINAL PANEL OF TYPE N SPEAKER.

PHONOGRAPH PICK-UP

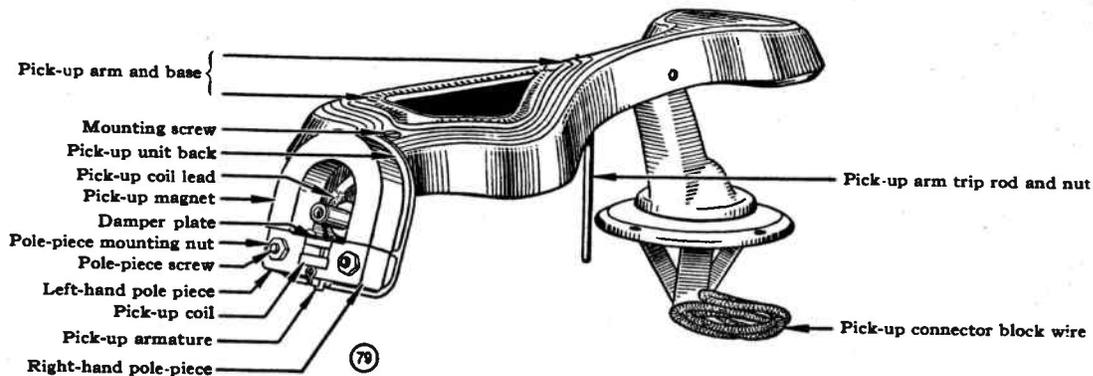


FIG. 235. DRAWING OF PHONOGRAPH PICK-UP AND ARM USED IN MODEL 75.

ACTION OF PICK-UP

The phonograph pick-up is a miniature alternating-current generator, but instead of having a rotating armature, it has a vibrating armature. The vibrations of the armature are produced by the movement of the pick-up needle in the grooves on a phonograph record.

The armature vibrates in a narrow gap between the pole pieces of a strong permanent magnet, thus causing a variation of the magnetic field in the gap. This variation of the magnetic field "cuts" the turns of a small pick-up coil which is also mounted in the field of the magnet, thus generating a weak alternating current in the pick-up coil.

The weak alternating current generated in the pick-up coil is passed through a volume control into the primary (small winding) of a step-up transformer.

The resultant voltage developed across the secondary of this transformer is impressed on the grid circuit of the detector tube in the P Chassis. The signal is amplified to loud-speaker volume by the audio amplifier in the P Chassis, and then reproduced by the speaker.

Thus the image of sound waves cut in the grooves in a phonograph record generates similar audio-frequency electrical impulses in the pick-up. These impulses are amplified in the radio set and then converted into sound waves by the speaker.

ARMATURE ADJUSTMENT

The armature-pivot bearings consist of two small strips of rubber (armature spacing cushions) which space the armature from the bearing surfaces on each pole piece.

The top end of the armature fits in a slit in a flat rubber damper. The damper is fastened to a small brass plate that may be adjusted to the right or to the left, in order to center the armature in the magnet gap.

If the armature is off center, as indicated by erratic reproduction, loosen the two round-head screws that hold the damper plate, and move the plate slightly to the right or left to a point where the armature is centered. Tighten the two screws.

When the armature is correctly centered, it should take as much force to move the needle to the left as to the right.

If the rubber damper plate or armature spacing cushions are dried out, or lack life, replace them with new pieces of rubber, which may be secured from your distributor.

USE KEEPER ON PICK-UP MAGNET

If the pick-up magnet must be removed from the pick-up, **FIRST** place a steel or iron keeper (a large nail will do) across the sides of the magnet poles, **THEN** remove the magnet.

Do **NOT** take off the keeper until **AFTER** the magnet is placed back on its pole pieces in the pick-up.

If the magnet is weak, have it re-magnetized, but be sure to place a keeper across the sides of the magnet poles before removing it from the magnetizer, and do not remove the keeper until after the magnet is placed back on its pole pieces in the pick-up.

CONTINUITY TESTS

Test across the two contacts on the neck of the molded pick-up back. The continuity reading should be nearly full. No reading indicates an open pick-up coil or leads.

Test from either contact on the pick-up to each pole piece, and to the armature. If there is any reading, it indicates that the pick-up coil or leads are grounded. This must be eliminated. Use two small pieces of thin cambric cloth to insulate the pick-up coil from the pole pieces.

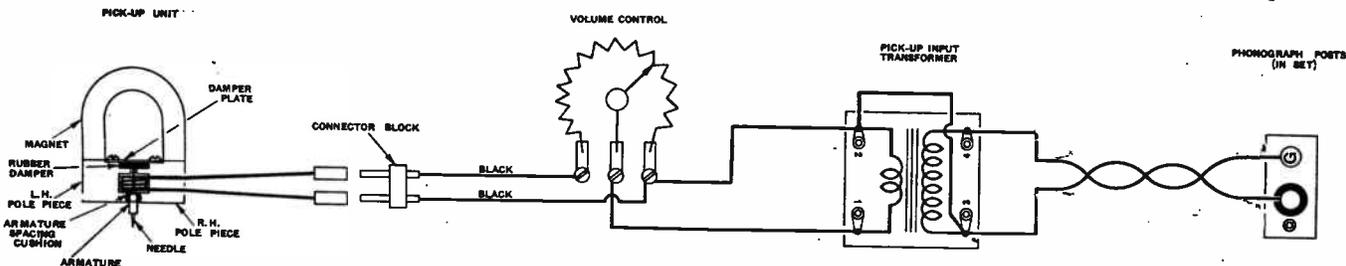


FIG. 236. ELECTRICAL CONNECTIONS OF PICK-UP, VOLUME CONTROL AND INPUT TRANSFORMER.

INDUCTION DISC PHONOGRAPH MOTOR

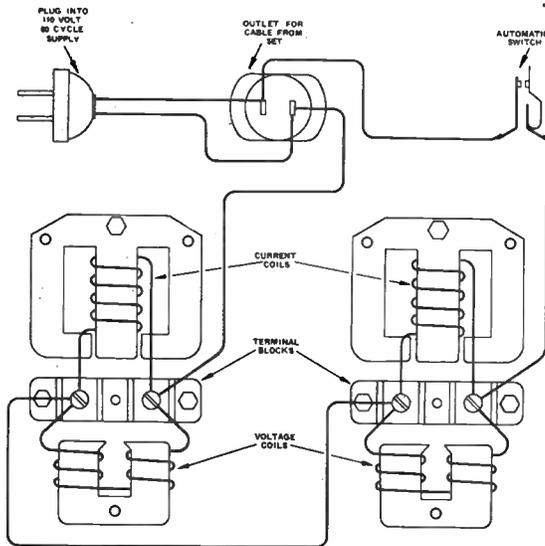


FIG. 237. ELECTRICAL CONNECTIONS OF THE INDUCTION-DISC PHONOGRAPH MOTOR.

The induction-disc phonograph motor has two sets of field coils or "inductors." Each inductor has three coils and five "poles." A magnetic field is produced between the poles by the alternating current flowing through the three coils.

The edge of a non-magnetic rotor disc fits in the narrow gap between the poles on each inductor. The magnetic field between the poles causes the disc to rotate.

The rotor disc itself has no coils, and there are no electrical connections to it.

The speed of the rotor disc is controlled by a governor and a regulating screw device. The correct speed is 78 revolutions per minute (with pick-up on record). The speed may be determined by counting the number of revolutions made by the turntable in one minute. It is preferable, however, to regulate the speed with the aid of a stroboscope disc, which may be purchased from your distributor. Simple instructions for the use of this inexpensive device are printed on the back of the stroboscope disc. The speed should be checked at least twice a year.

The motor and governor bearings and gears must be kept well greased at all times. See chart on bottom of motor board.

When an induction-disc motor requires repair, it is advisable to tear it down completely, replace the defective parts, clean and grease all parts, and reassemble correctly.

December, 1930.

AUTOMATIC ELECTRIC SWITCH and FRICTION BRAKE

GENERAL DESCRIPTION

A trip rod on the pick-up arm engages with the slot between the brake and switch levers on the automatic brake illustrated below. As the arm moves toward the center of the record, the trip rod swings these two levers and the brake-latch trip anti-clockwise. As the needle nears the end of the record, the brake-latch trip engages with the toothed edge of the latch plate, as shown. When the record is finished, the needle runs into an eccentric groove that swings the pick-up arm away from the center of the record. This movement pushes the trip against the latch plate, and frees the latch from the hand lever at point "A." This opens the A. C. switch and throws the friction leather against the inside edge of the turntable, thus stopping the motor and turntable.

ADJUSTMENTS

(1) If the latch does not trip, or trips before completion of a record, bend the hand-lever stop slightly to the right or left, as necessary.

(2) If the latch trip does not engage correctly with the latch-plate, loosen the two latch-plate screws and shift the plate one way or the other, as necessary. Re-tighten the screws. Remove any burrs from the teeth of the latch plate with fine emery paper.

(3) If the electric switch does not make and break contact when the hand-lever is turned on and off, it may be necessary to bend the long contact spring, or loosen the two switch screws and move the switch until the correct position is found. In the off position, there should be at least $\frac{1}{8}$ " gap between the contact points.

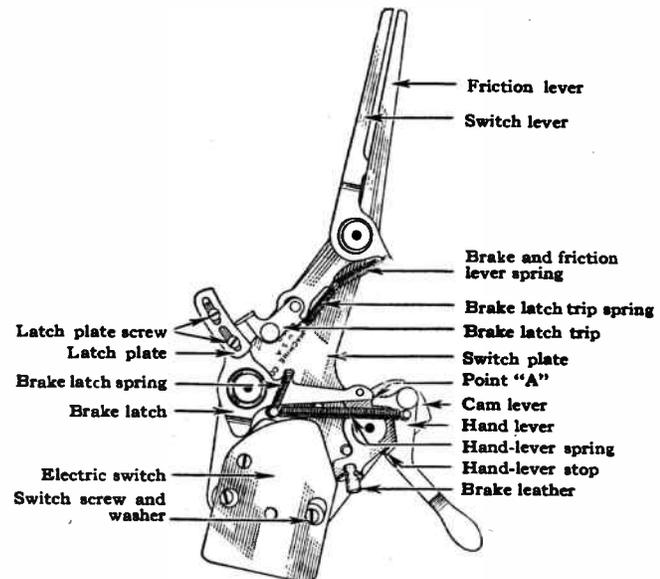


FIG. 238. DETAILED VIEW OF THE AUTOMATIC SWITCH AND BRAKE.

PHONOGRAPH MOTOR BOARD

FIG. 239. TOP VIEW OF MOTOR BOARD.

The slot in the board is not used in current models.

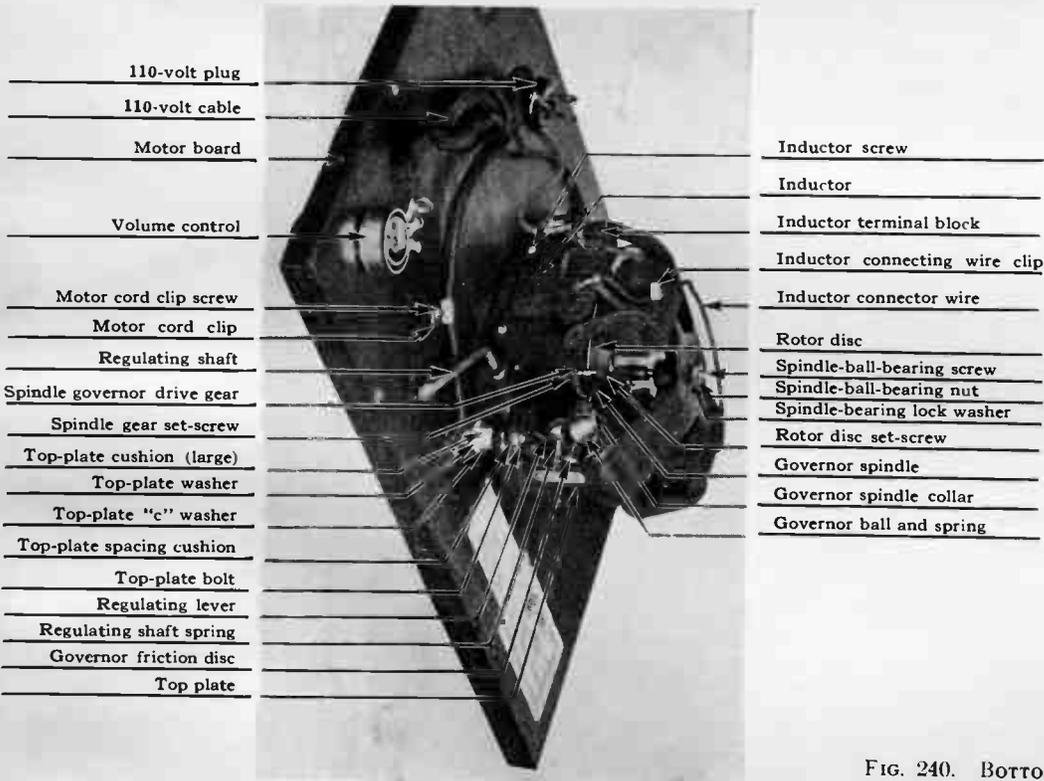
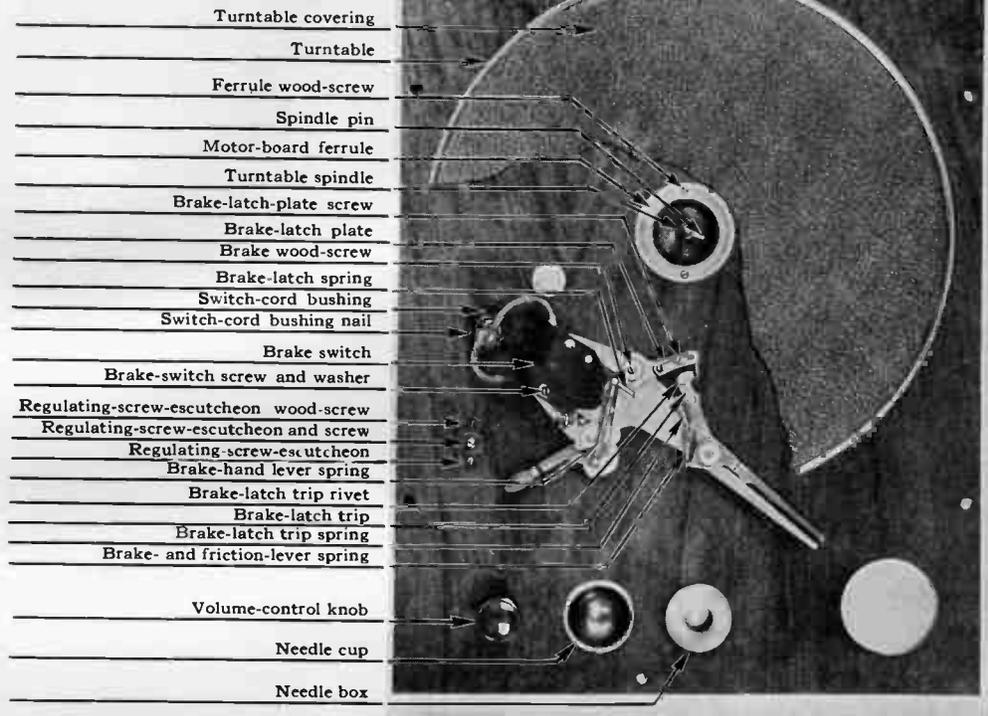


FIG. 240. BOTTOM VIEW OF MOTOR BOARD.

PARTS AND PRICE LIST — MODEL 75 PHONOGRAPH PARTS

Part No. PICK-UP UNIT Price		Part No. TURNTABLE SPINDLE Price	
19056	Pick-up unit, complete, less arm. \$12.50	19164	Turntable spindle. \$.75
19057	Pick-up coil. .50	19166	Turntable-spindle pin. .02
19101	Pick-up-coil insulator. .05/doz.	19082	Turntable-spindle ball-bearing. .01
19061	Pick-up magnet. 2.60	19086	Turntable-spindle ball-bearing screw. .36/doz.
19094	Pick-up-magnet spring (flat). .10/doz.	19108	Turntable-spindle ball-bearing lock-washer. .02
19059	Pick-up pole piece (left-hand). .40	19107	Turntable-spindle ball-bearing nut. .01
19065	Pick-up pole piece (right-hand). .40	19133	Turntable-spindle governor drive gear. .30
19095	Pick-up-pole-piece nut. .12/doz.	19109	Governor-drive-gear set-screw. .15/doz.
19058	Pick-up armature. .30	Part No. SPEED REGULATOR Price	
19358	Armature spacing cushion. .12/doz.	19134	Regulating shaft. \$.12
19066	Pick-up needle screw. .08	19122	Regulating-shaft spring. .02
19365	Damper plate. .10	19123	Regulating lever. .15
19387	Damper-plate screw. .14/doz.	19125	Regulating-lever leather. .01
19364	Pick-up rubber damper. .06	19124	Regulating-lever set-screw. .02
19063	Pick-up cover. .50	19153	Regulating-screw escutcheon and screw. .23
19093	Pick-up-cover screw. .03	19154	Escutcheon wood screw. .12/doz.
19102	Pick-up-unit back. .50	Part No. BRAKE Price	
19096	Pick-up mounting screw. .02	19145	Brake, complete. \$ 3.40
19098	Pick-up mounting lock-washer. .06/doz.	19081	Brake switch. 1.50
19097	Pick-up mounting nut. .04	19155	Brake-switch screw. .02
Part No. PICK-UP ARM AND BASE Price		19156	Brake-switch washer. .04
19068	Pick-up arm and base, less unit. \$ 5.50	19161	Brake wood-screw. .10/doz.
19067	Pick-up connector block and wire. 1.10	19158	Brake-switch-cord bushing. .12
19069	Pick-up-arm trip rod and nut. .04	19157	Brake-switch-bushing nail. .08/doz.
19092	Pick-up-arm trip-rod nut. .01	19152	Brake hand-lever spring. .05
19099	Pick-up-arm wood-screw. .20/doz.	19147	Brake and friction lever spring. .05
19087	PICK-UP INPUT TRANS-FORMER. 5.50	19149	Brake-latch trip. .20
19353	Transformer leads. .30	19151	Brake-latch-trip rivet. .02
Part No. VOLUME CONTROL Price		19148	Brake-latch-trip spring. .06
19077	Volume control, complete, less knob. \$ 1.40	19162	Brake-latch plate. .06
19079	Volume-control knob. .30	19163	Brake-latch-plate screw. .08/doz.
19146	Volume-control-knob set-screw. .06/doz.	19159	Brake-latch spring. .06
19141	Volume-control connection screw. .06/doz.	Part No. TOP PLATE Price	
19138	Volume-control washer. .12/doz.	19119	Top plate. \$ 5.00
19139	Volume-control nut. .08	19126	Top-plate bolt. .10
19078	Volume-control cord. .25	19131	Top-plate bolt "C" washer. .03
Part No. INDUCTION DISC MOTOR Price		19107	Top-plate nut. .01
19071	60-cycle motor. \$36.50	19085	Top-plate-washer. .01
19073	60-cycle inductor. 10.00	19128	Top-plate lock-washer. .10/doz.
19104	Inductor terminal block. .20	19127	Top-plate spacing cushion. .06
19103	Inductor screw. .25/doz.	19143	Top-plate rubber cushion (small). .06
19106	Inductor connector wire. .20	Part No. MISCELLANEOUS Price	
19105	Inductor-connector-wire clip. .08/doz.	19135	Motor-cord clip. \$.04
19072	Rotor disc. 4.00	19136	Motor-cord-clip wood-screw. .04/doz.
19109	Rotor-disc set-screw. .15/doz.	19137	Motor-cord eyelet. .16/doz.
Part No. GOVERNOR Price		19144	Motor-cord outlet. .60
19074	Governor, complete. \$ 2.50	19168	Turntable (with covering). 4.00
19111	Governor spindle. .75	19169	Turntable covering. 1.50
19112	Governor-spindle collar. .20	19083	Needle box. .30
19113	Governor-spindle-collar set-screw. .12/doz.	19084	Needle cup. .15
19075	Governor ball and spring. .10	19165	Motor-board ferrule. .10
19115	Governor-ball-and-spring washer. .03/doz.	19167	Motor-board-ferrule wood-screw. .08/doz.
19114	Governor-ball-and-spring screw. .12/doz.	19359	Light grease (can). .25
19121	Governor friction. .75	19361	Heavy grease (tube). .25
19076	Governor bearing. .03	19362	Stroboscope disc. .05
19116	Governor bearing (grooved). .03	19354	Speed tag. .01
19117	Governor-bearing ball. .01	19355	60-cycle tag. .01
19118	Governor-bearing set-screw. .12/doz.		

December, 1930. These prices supersede all previous prices and are subject to change without notice.

Tabulated Service Data for Phonograph

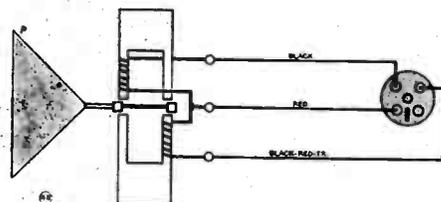
Important. It is advisable for the dealer to inspect and adjust radio-phonograph combinations at least twice a year. Clean off the old grease, put fresh grease and oil on the bearings, and regulate the motor speed to 78 revolutions per minute. If necessary, install a new rubber damper and armature spacing cushions in the pick-up. Tighten all screws and bolts. Finally, check over the radio set and tubes.

TROUBLE	PROBABLE CAUSE
No reproduction.	Defective volume control, input transformer, or pick-up coil.
Weak reproduction.	Weak magnet, shorted pick-up coil, or armature off center.
Distortion.	Loose or worn needle, defective rubber damper or armature spacing cushions, dirt in magnet gap, or needle screw touching pick-up cover.
Motor fails to operate.	Defective automatic switch, wrong or open connections in motor circuit, defective inductor, or jammed motor.
Irregular speed.	Poor lubrication, defective governor, improperly mounted motor, weak inductor, worn bearings.
60-cycle hum.	Loose inductor coils (use wedges to tighten) or loose laminations in inductor cores (tighten bolts).
Wabbling turntable.	Bent turntable spindle.
Note.	Bent rotor disc-touching inductors, broken governor springs, defective or improperly lubricated gears or bearings, or bent governor spindle.

TYPE Q CHASSIS, VOLTAGE TABLE AND DIAGRAM

Type Q Chassis (battery operated) has three stages of screen-grid R. F. amplification, grid detection, one stage of transformer-coupled audio, and a double-audio output stage.

An output filter choke and condenser are used in the Q-2 (above Serial No. 5704025), as shown in the diagram below. The Q-1 Chassis does not have these two parts.



CONNECTIONS OF INDUCTOR
TYPE J SPEAKER.

VOLTAGE TABLE FOR TYPE Q CHASSIS

Set in operation. Volume control at maximum.
L-D switch at distance.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

180 VOLTS "B" BATTERY

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	3.3	135	1.5	45
2nd-R.F.	3.3	135	1.5	45
3rd-R.F.	3.3	135	2.5	45
Detector	5.0	70	—	—
1st-A.F.	5.0	67	45	—
2A	5.0	180	45	—
2Aa	5.0	180	45	—

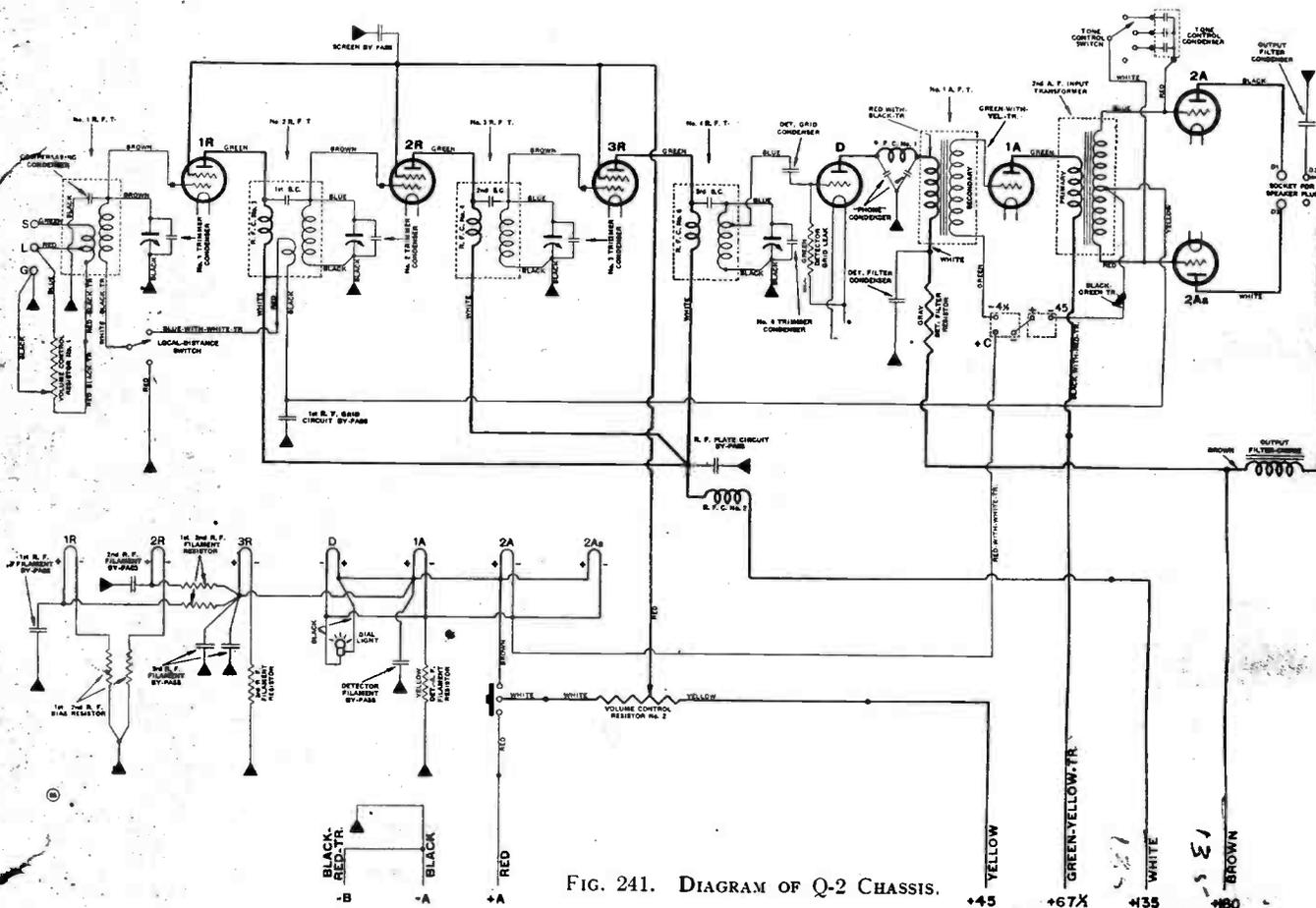


FIG. 241. DIAGRAM OF Q-2 CHASSIS.

The output filter choke and filter condenser are used only in Type Q-2 Chassis. The choke is mounted in the 2nd-A. F. input transformer container. Type Q-1 Chassis may be converted to Q-2 by installing this unit (No. 18020) and connecting it as shown above and on Page 243.

TYPE Q CHASSIS RECEIVER

R.F. By-Pass No. 1

- G—R.F. screen by-pass.
- V—1st-R.F. grid-circuit by-pass.
- Y—Output filter condenser.
- N—1st-R.F. filament by-pass.

R.F. By-Pass No. 2*

- H—R.F. plate-circuit by-pass.
- T—Detector filter condenser.
- P—"Phone" condenser.
- P—"Phone" condenser.

R.F. By-Pass No. 3

- S—Detector filament by-pass.
- R—3rd-R.F. filament by-pass.
- R—3rd-R.F. filament by-pass.
- O—2nd-R.F. filament by-pass.

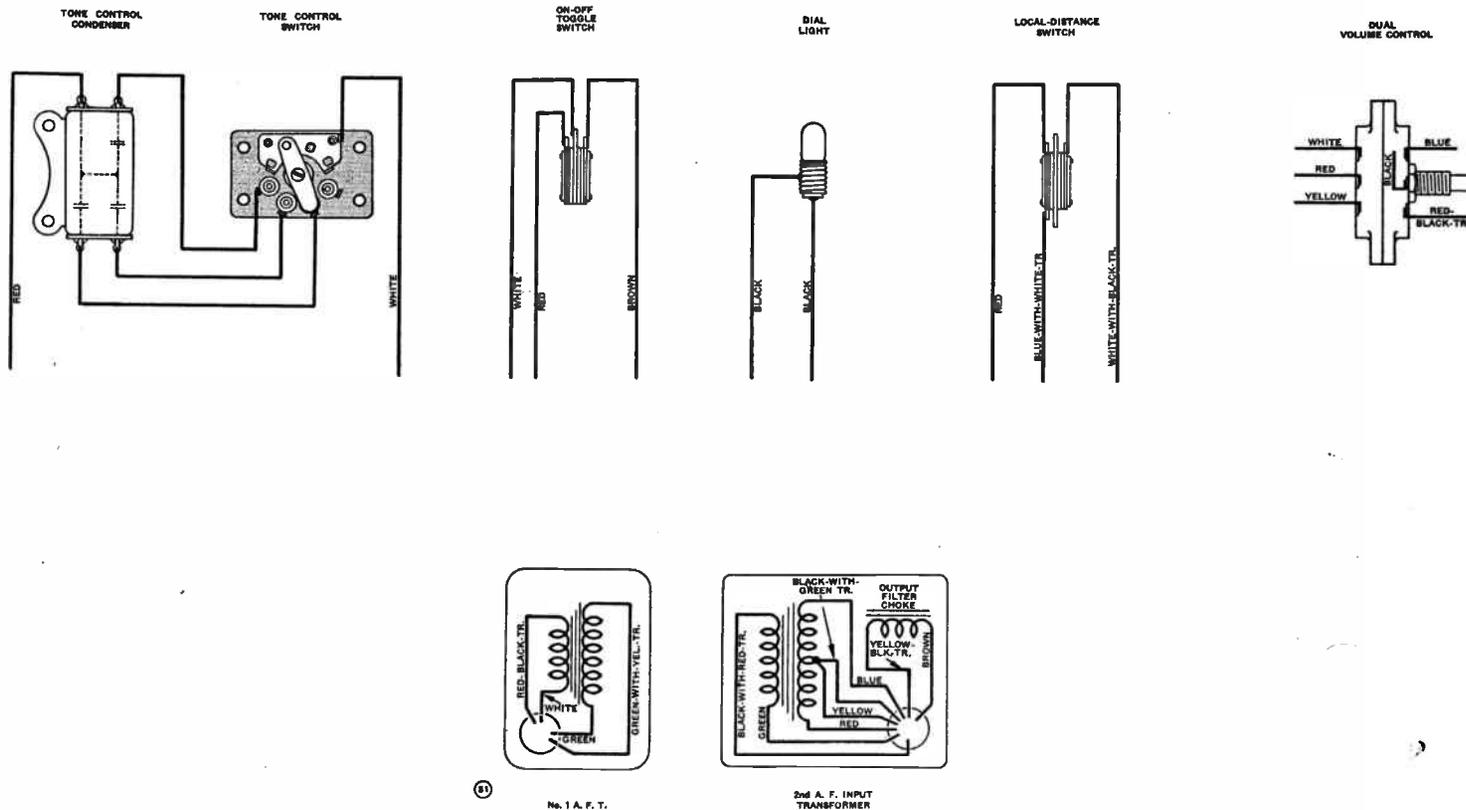


FIG. 242. CONNECTIONS OF UNITS IN Q-1 AND Q-2 CHASSIS.

The output filter choke is not used in the Q-1 chassis.

*The connections shown in Fig. 243 for R. F. by-pass No. 2 are correct when this part is No. 16080 (H-24). However, if a No. 18350 (H-28) is used, "P" and "P" are at top, and "H" and "T" are at bottom; therefore, the connections to this condenser are correspondingly changed.

PARTS AND PRICE LIST—TYPE Q, No. 16800, CHASSIS

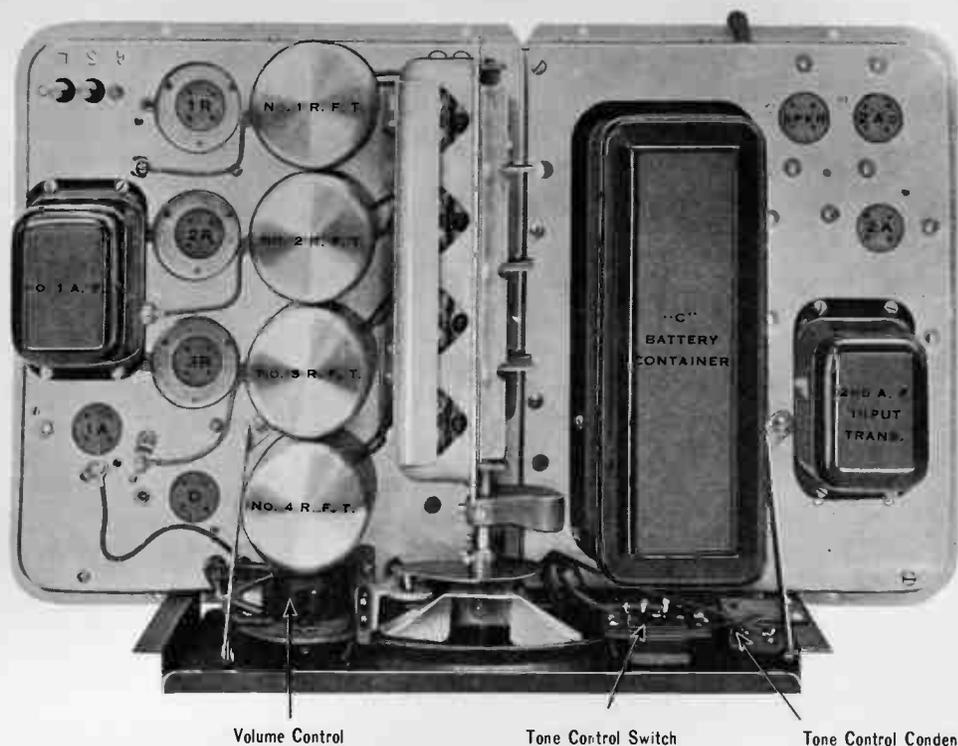


FIG. 244.
TOP VIEW OF TYPE Q
CHASSIS.

FRONT PANEL ASSEMBLY

Part No.		Price
18085	Front panel with dial plate	\$1.25
18581	Front panel complete	2.50
17985	Escutcheon	1.00
17224	Front panel brace (2 used)	.10
17244	Volume-control or tone-control knob	.30
17814	Dial knob	.30
16770	On-off switch	1.60
16760	Local-distance switch	1.25
16010	Volume-control (less bracket)	5.25
18259	Volume-control bracket	.20
18223	Tone-control condenser clamp	.05
17959	Dial pointer	.05
16430	TONE-CONTROL SWITCH COMPLETE	.75
18148	Base	.60
18146	Shaft	.12
18112	Contact blade	.03

AUDIO TRANSFORMERS

Part No.		Price
15960	No. 1 A. F. transformer	\$4.00
18020	No. 2 A. F. transformer (18020 super-sedes No. 15970)	5.25
15978	"C" battery container	1.30
16103	"C" battery container lid	.50
16104	Connection card	.06

Part No.		Price
18579	VARIABLE-CONDENSER STATOR, ROTOR AND FRAME (with leads and balance weight)	\$9.60
18615	Dial gear	.40
17962	Pointer control arm	.30
17961	Dial-rubber assembly	.15
17941	Dial-knob shaft	.05
16420	Dial-light socket and reflector, one-hole mounting (less leads)	.40
16420-A	Dial-light socket and reflector, two-hole mounting (less leads)	.40
17936	Dial-knob bracket (one-hole mounting)	.35
18144	Dial-knob bracket (two-hole mounting)	.35
17935	Dial-knob bracket support (threaded)	.03
17107	Rotor-connection (long)	.10
17291	Rotor-connection (short)	.10
16099	Dial light	.25

No separate parts, except those listed above, will be supplied for the variable-condenser unit.

COIL GROUP

Part No.		Price
17510	R. F. coil group	\$4.00
16360	Stopping condenser (3 used)	.10
16360	Compensating condenser (1 used)	.10
17295	R. F. coil shield (4 used)	.50

If one R. F. coil, or R. F. C. No. 3, No. 4, or No. 5, is defective, the ENTIRE coil group must be replaced.

December, 1930. These prices supersede all previous prices and are subject to change without notice.

PARTS AND PRICE LIST—TYPE Q, No. 16800, CHASSIS

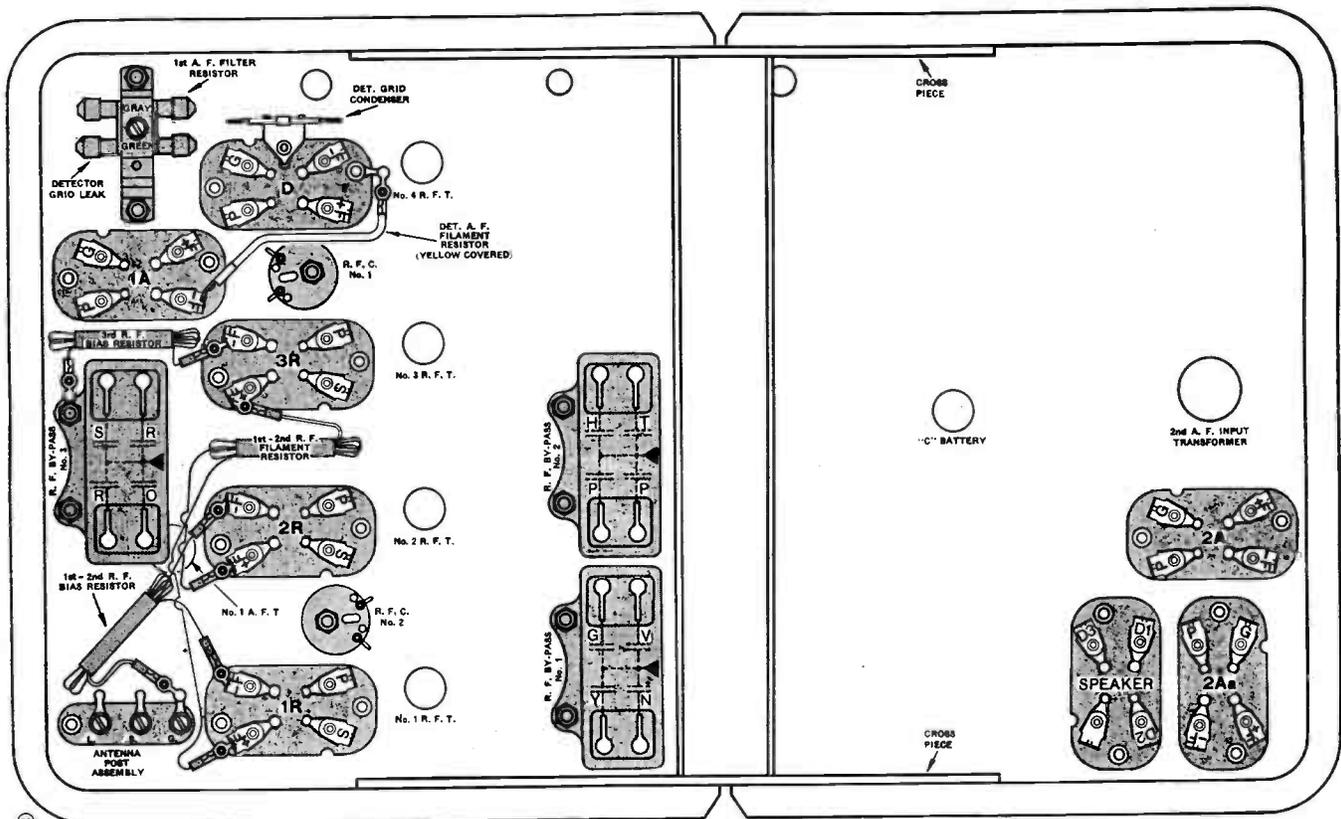


FIG. 245. BOTTOM VIEW OF TYPE Q CHASSIS.

TUBULAR RESISTORS

Part No.	Description	Price
15285	Det. filter resistor (gray)	\$.50
15892	Detector grid-leak (green)	.25
17341	Resistor bracket	.05
17344	Fibre resistor pad	.25/c
17343	Metal clamping strip	.02

FLEXIBLE RESISTORS

Part No.	Description	Price
16081	Detector-A.F. filament resistor	\$.15
16290	1st-2nd R.F. bias resistor (each leg 14" long)	.20
16610	3rd-R.F. bias resistor	.20
16280	1st-2nd R.F. filament resistor (each leg 10" long)	.20
15271-A	R. F. CHOKE NO. 1, No. 2	.25

SOCKETS

Part No.	Description	Price
18417	1R, 2R, 3R tube sockets	\$.25
18418	D, 1A tube sockets	.25
18419	Detector tube socket, and grid cond. assembly	.65
18398	2A tube socket	.25
18399	2Aa tube socket	.25
17512	Speaker plug socket	.25
17377	Socket insulator (8 used)	.25/c

FIXED CONDENSERS

Part No.	Description	Price
15262	R. F. by-pass No. 1	\$1.00
18350	R. F. by-pass No. 2	1.10
15262	R. F. by-pass No. 3	1.00
15870	Tone control condenser	1.00
16088	Grid condenser	.20
18419	Grid condenser and det. socket assembly	.65

MISCELLANEOUS PARTS

(Screws, nuts, washers, and small parts—see page 229)

Part No.	Description	Price
16165	Battery cable	\$3.50
15739-A	Cable clamp	.02
17521	Antenna binding posts and base	.45
17323	Antenna and ground base	.05
8215	Binding post	.20
18493	Bottom plate	1.30
13989	Ground clamp	.30
15213	Tube-shield (3 used)	.15
15214	Tube-shield base (3 used)	.03
17326	Detector cap	.30
18117	Balance-weight for variable condenser	.35
18118	"Guide" card (form F-680)	.75/c net
18119	Log card (form F-681)	.75/c net
17223	Cross piece (10" x 7/8"—2 used)	.25
17632	Detector cap lead (brown)	.10
	Trimmer-condenser sealing wax	.50 lb.
18114	Tuned-radio frequency name-plate	.06
15990	Literature assembly	.20 net
17885	Instruction book	.10 "
18485	Shipping container	.65 "

December, 1930. These prices supersede all previous prices and are subject to change without notice.

TYPE D-1 CHASSIS, VOLTAGE TABLE AND DIAGRAM

VOLTAGE TABLE FOR TYPE D CHASSIS

Set in operation. Volume control at maximum.
L-D switch at distance.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

APPROX. VOLTAGES, USING 120 V. LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	3.3	75	4.2	60*
2nd-R.F.	3.3	75	1.3	50
3rd-R.F.	3.3	75	1	50
Detector	5	20	—	—
1st-A.F.	5	45	6	—
2A	5	75	10	—
2Aa	5	80	10	—

All readings made from cathode in heater-type tubes, and from —F in plain-filament-type tubes.
Use 250-volt scale to measure and A. F. grid voltage.

*This is 50 volts in D-2 chassis.

Type D Chassis (D. C. operated) has three stages of screen-grid R. F. amplification, detector, one stage of transformer-coupled A. F., and a "double-audio" output stage.

This set is designed for use with an electro-dynamic type N-3 speaker.

The early Type D Chassis is known as the D-1. A later modification is known as the D-2. For an explanation of the difference between these two types, see Page 249.

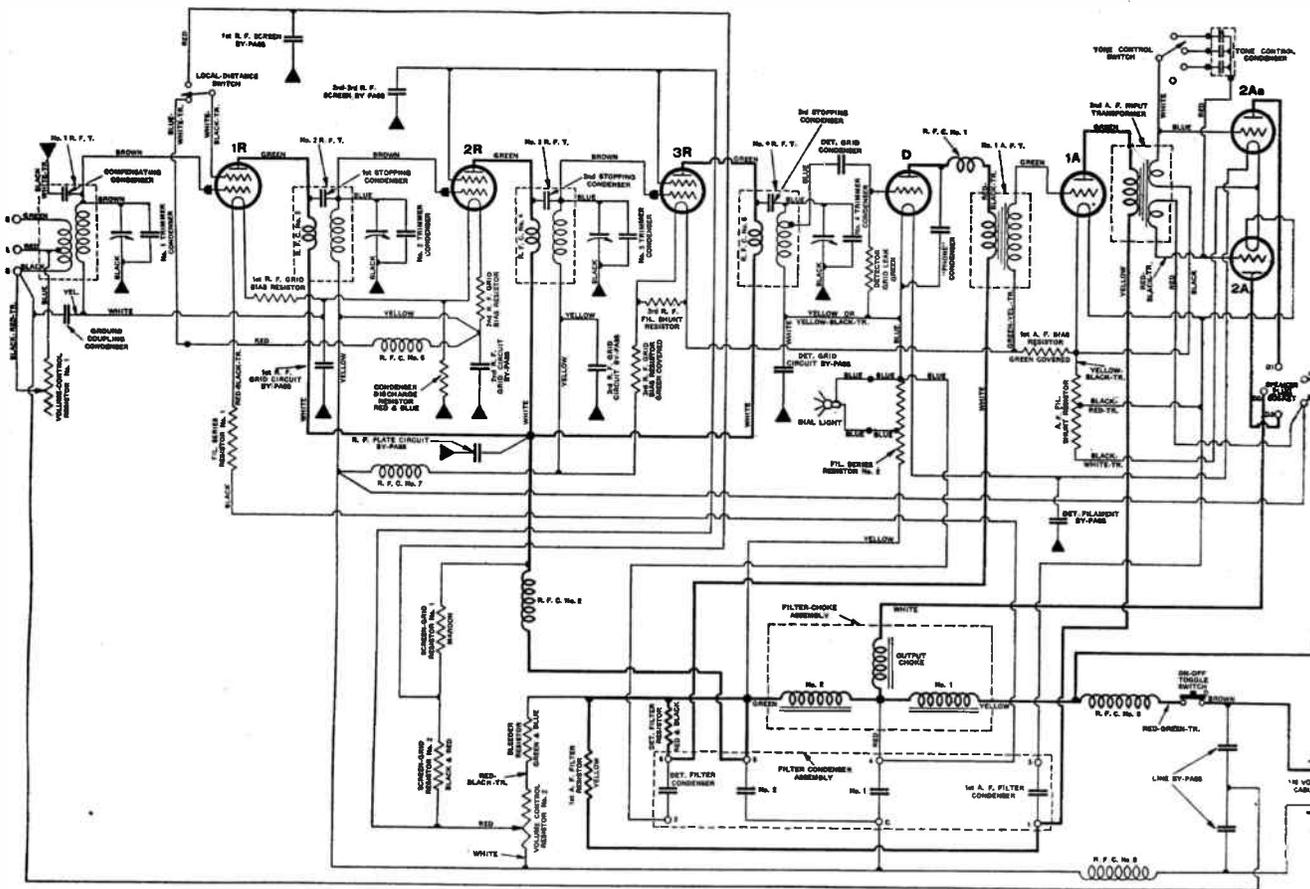


FIG. 246. DIAGRAM OF D-1 CHASSIS.

TYPE D CHASSIS RECEIVER

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

- L—Line by-pass.
- E—Line by-pass.
- U—Ground coupling condenser.

Condensers in R.F. By-Pass No. 2

- E—1st-R.F. screen by-pass.
- F—2nd-3rd-R.F. screen by-pass.
- V1—1st-R.F. grid-circuit by-pass.
- W1—2nd-R.F. grid-circuit by-pass.

Condensers in R.F. By-Pass No. 3

- H—R.F. plate-circuit by-pass.
- S—Detector filament by-pass.
- P—"Phone" condenser.

Condensers in R.F. By-Pass No. 4

- D—Detector grid-circuit by-pass.
- V—1st-R.F. grid-circuit by-pass.
- W—2nd-R.F. grid-circuit by-pass.
- X—3rd-R.F. grid-circuit by-pass.

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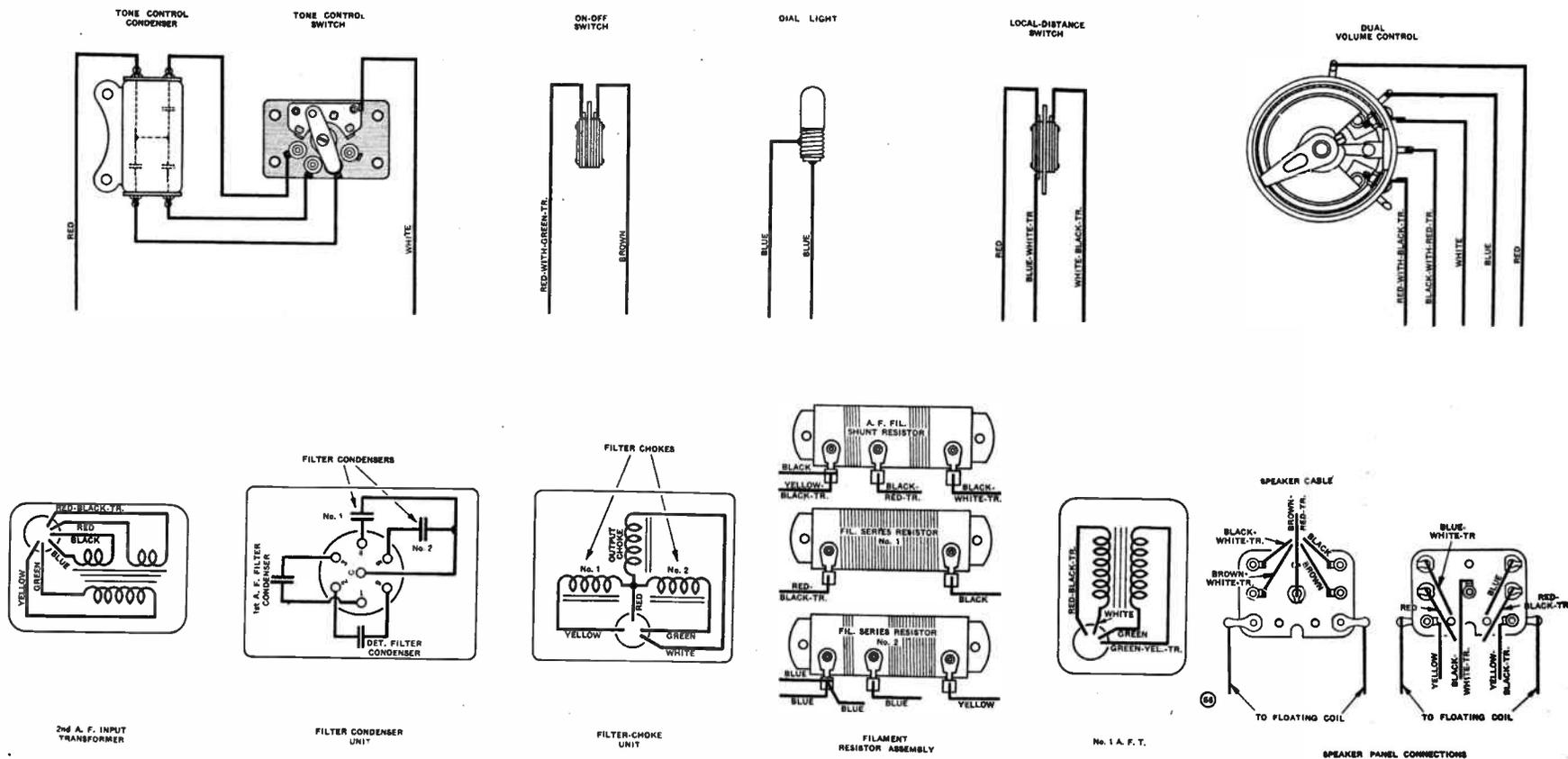


FIG. 249. CONNECTIONS OF UNITS IN TYPE D-1 AND D-2 CHASSIS.

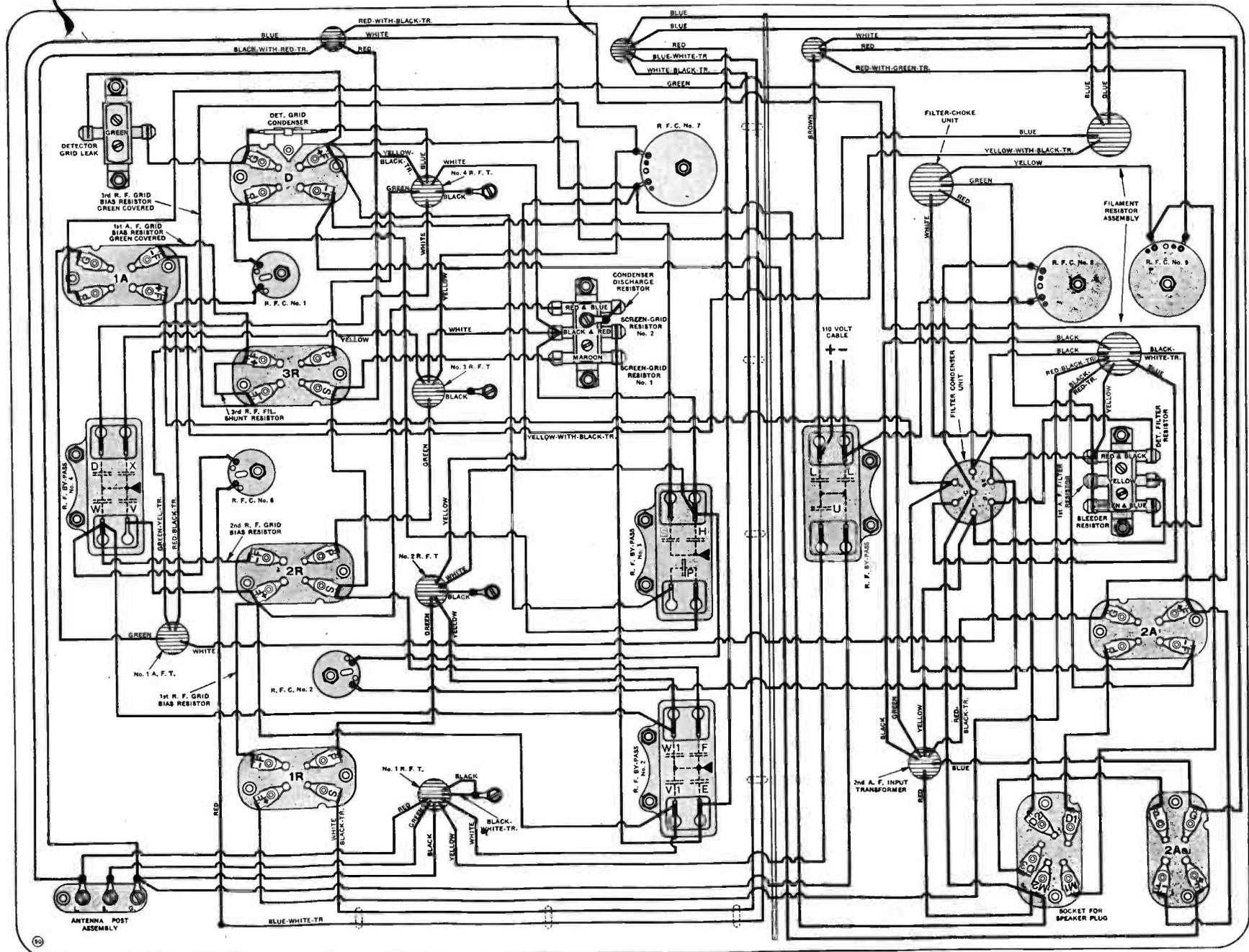
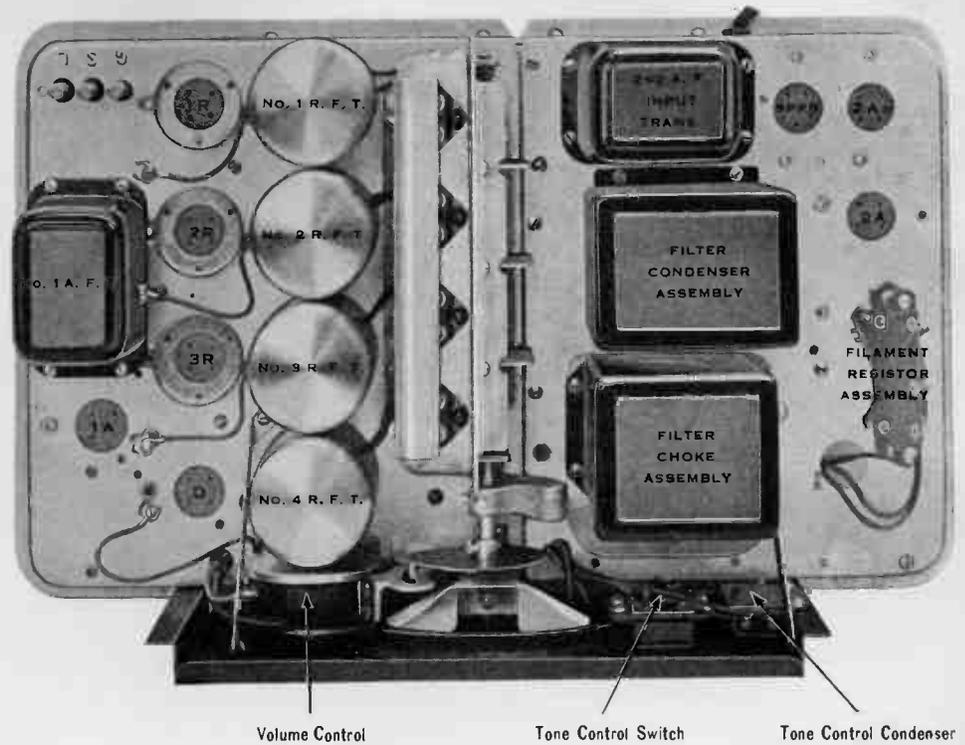


FIG. 250. BOTTOM WIRING OF TYPE D-2 CHASSIS.

The parts in the D-2 are exactly the same as the parts in the D-1. The only difference is in the wiring arrangement and reversal of screen-grid resistors No. 1 and No. 2. The D-1 Chassis may be changed into the D-2 by connecting exactly as shown above.

PARTS AND PRICE LIST—TYPE D, No. 16700, CHASSIS

FIG. 252.
TOP VIEW OF TYPE D
CHASSIS.



FRONT PANEL ASSEMBLY

Part No.	Price
18085	Front panel with dial plate..... \$1.25
18581	Front panel complete..... 2.50
17224	Front panel brace (2 used)..... .10
17985	Escutcheon..... 1.00
17244	Volume-control or tone-control knob... .30
16760	Local-distance switch..... 1.25
16740	On-off switch..... 1.10
16630	Volume-control..... 4.50
17876	Volume-control bracket..... .20
16576	Volume-control cover..... .05
17814	Dial knob..... .30
18223	Tone-control condenser clamp..... .05
17959	Dial pointer..... .05

POWER UNITS

Part No.	Price
16890	Filter-choke..... \$8.60
18232	Filter-choke base plate..... .10
18638	Filter-choke lid and name-plate..... .20
14710	Filter-condenser..... 9.70
18188	Filter-condenser case..... .45
17534	Filter-condenser spacer (fibre)..... .25/c

17070	No. 1 A. F. transformer..... 4.50
16640	2nd-A. F. input transformer..... 4.50

Part No.	Price
16430	TONE-CONTROL SWITCH COMPLETE..... .75
18148	Base..... .60
18146	Shaft..... .12
18112	Contact blade..... .03

Part No.	Price
18579	VARIABLE CONDENSER STATOR, ROTOR AND FRAME (WITH LEADS AND BALANCE WEIGHT) \$9.60
17107	Rotor-connection (long)..... .10
17291	Rotor-connection (short)..... .10
16099	Dial light..... .25
16420	Dial-light socket and reflector, one-hole mounting (less leads)..... .40
16420-A	Dial-light socket and reflector two-hole mounting (less leads)..... .40
18615	Dial-gear..... .40
17936	Dial-knob bracket (one-hole mounting)..... .35
18144	Dial-knob bracket (two-hole mounting)..... .35
17935	Dial-knob bracket support (threaded)..... .03
17941	Dial-knob shaft..... .05
17961	Dial-rubber assembly..... .15
17962	Pointer control arm..... .30

No separate parts, except those listed above, will be supplied for variable-condenser unit.

COIL GROUP

Part No.	Price
17490	R.F. coil group..... \$4.00
16360	Stopping condenser (3 used)..... .10
16360	Compensating condenser (1 used)..... .10
17295	R.F. coil shield (4 used)..... .50

If one R.F. coil or R.F.C. No. 3, No. 4, No. 5, is defective, the ENTIRE coil group must be replaced.

December, 1930. These prices supersede all previous prices and are subject to change without notice.

PARTS AND PRICE LIST—TYPE D, No. 16700, CHASSIS

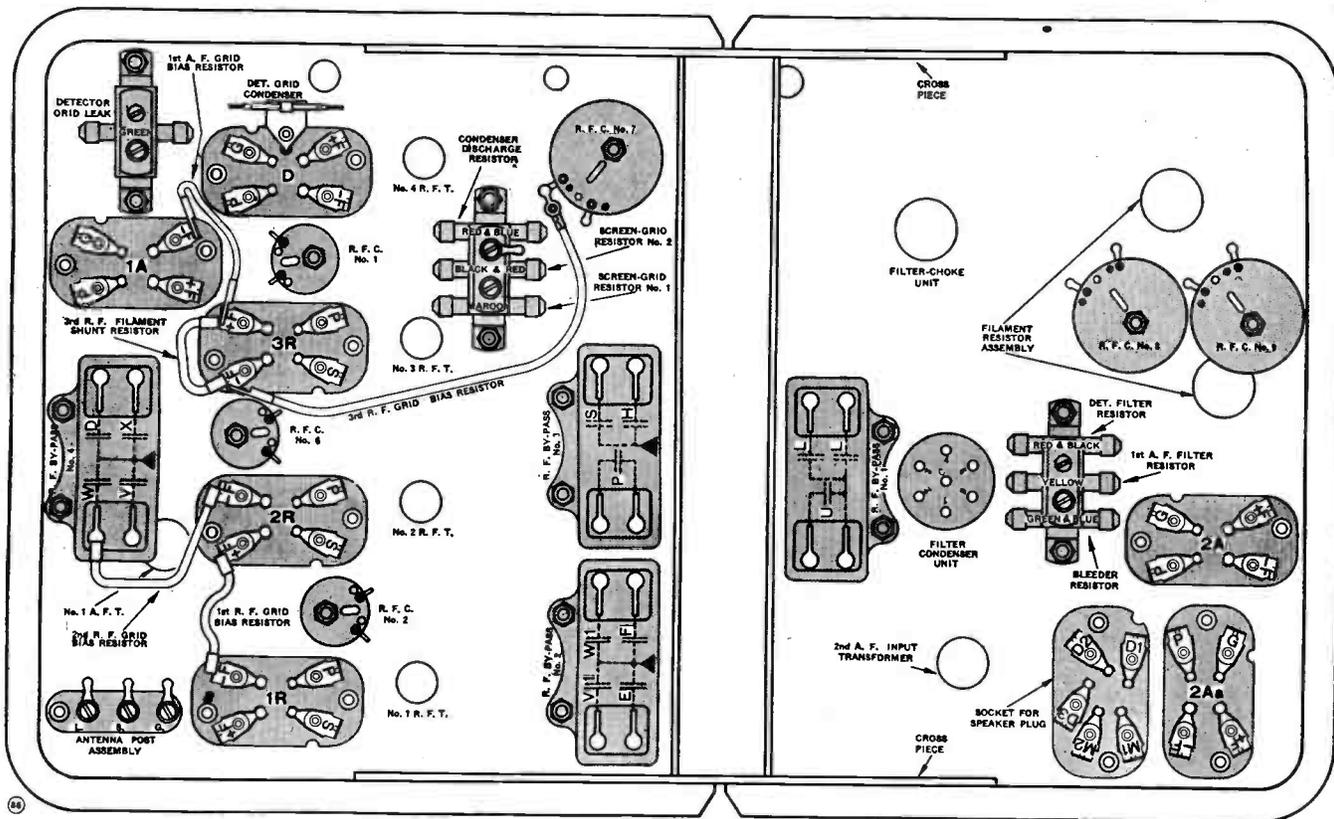


FIG. 253. BOTTOM VIEW OF TYPE D CHASSIS.
In later-type D chassis, a line fuse (2 amperes) is mounted at the right of R. F. by-pass No. 1.

TUBULAR RESISTORS

Part No.	Description	Price
15892	Detector grid leak (green)	\$.25
16282	Condenser discharge resistor (blue and red)	.25
15891	Screen grid resistor No. 2 (black and red)	.25
15545	Screen grid resistor No. 1 (maroon)	.25
15891	Det. filter resistor (red and black)	.25
15544	1st-A.F. filter resistor (yellow)	.25
18049	Bleeder resistor (green and blue)	.30
17341	Mounting bracket	.05
17342	Fibre resistor pad	.25/c
17345	Metal clamping strip	.02

FLEXIBLE RESISTORS

Part No.	Description	Price
16322	1st-A.F. grid bias resistor	\$.20
16322	3rd-R.F. grid bias resistor	.20
16850	2nd-R.F. grid bias resistor	.20
16860	1st-R.F. grid bias resistor	.20
16840	3rd-R.F. filament shunt resistor	.20

WIRE-WOUND RESISTORS

Part No.	Description	Price
18354	Filament series resistor No. 2	\$1.00
18355	Filament series resistor No. 1	1.00
18356	A.F. filament shunt resistor	1.00
15972	Mounting bracket (2 used)	.10

FIXED CONDENSERS

Part No.	Description	Price
15870	Tone-control condenser	\$1.00
16940	R.F. by-pass No. 1	1.10
15262	R.F. by-pass No. 2	1.00
16880	R.F. by-pass No. 3	1.10
15262	R.F. by-pass No. 4	1.00
18419	Grid-condenser assembly (includes detector socket)	.65
16088	Grid condenser	.20
17254	R.F. CHOKE No. 7, No. 8, No. 9	.50
15271-A	R.F. CHOKE No. 1, No. 2, No. 6	.25

SOCKETS

Part No.	Description	Price
18417	1R, 2R, 3R tube sockets	\$.25
18418	Det. or 1st A.F. sockets	.25
18419	Det. socket and grid condenser assembly	.65
18398	2A socket	.25
18399	2Aa socket	.25
17377	Socket insulator (7 used)	.25/c
18007	Speaker-plug socket	.30
18016	Socket insulator	.25/c
18449	Fuse socket	.15
16420	Dial-light socket and reflector, one-hole mounting (less leads)	.40
16420-A	Dial-light socket and reflector, two-hole mounting (less leads)	.40

December, 1930. These prices supersede all previous prices and are subject to change without notice.

PARTS AND PRICES—TYPE D, No. 16700, CHASSIS (Cont'd)

MISCELLANEOUS PARTS

(For screws, nuts, washers and small parts—see page 229.)

Part No.	Price	Part No.	Price
17524	110-volt cable, with plug	17223	Cross piece (10" x 3/8"—2 used) . . \$.25
8956	110-volt plug only	17632	Detector cap lead (brown)
16741	Insulation bushing for 110-volt cable		Trimmer-condenser sealing wax
16742	Retaining spring	18118	"Guide" card (form F-680)
17521	Antenna binding posts and base	18119	Log card (form F-681)
17323	Antenna and ground post base	18113	Tuned radio-frequency name-plate
8215	Binding Post	18534	Fuse (2 amperes)
17536	Bottom Plate	18051	Instruction book
13989	Ground-clamp	15910	Literature assembly
15213	Tube-shield (3 used)	18489	Shipping container
15214	Tube-shield base (3 used)	18117	Balance weight for variable con-
17326	Detector cap		denser

VOLTAGE TABLE FOR TYPE F CHASSIS

Set in operation. Volume control at maximum.
LD switch at distance.

Use High Resistance D. C. Voltmeter (about 0-50-250) to Measure Plate and Grid Voltages.
Use A. C. Voltmeter to Measure Filament Voltages.

APPROX. VOLTAGES, USING 120 V. LINE

TUBE	FILAMENT VOLTAGE	PLATE VOLTAGE	CONTROL-GRID VOLTAGE	SCREEN VOLTAGE
1st-R.F.	2.5	180	6	92
2nd-R.F.	2.5	180	4	93
3rd-R.F.	2.5	180	4	93
Detector	2.5	117	30**	—
1st-A.F.	2.4	70	2	—
2A	2.7	250	55*	—
2Aa	2.7	250	55*	—

All readings made from cathode in heater-type tubes, and from —F in plain-filament-type tubes.

* Use 250-volt scale.

** This is the voltage across the detector bias resistor; when measuring from grid to cathode, the voltage reading is only 2.

IDENTIFICATION OF BY-PASS CONDENSERS IN SCREEN-GRID RECEIVERS

The following list gives the identifying markings that are stamped on each by-pass condenser.

Note that by-pass condensers of one part number may have one of several code markings. Thus No. 15262 may be marked B-1, H-1, H-9 or H-20. As these markings are all for the same part number, the condensers so marked are interchangeable—that is, H-20 may be used in place of B-1, H-1 or H-9; or H-1 may be used in place of B-1, H-9, H-20, and so on.

In many cases the code marking is preceded by a numeral such as 1-H-20 or 2-H-20. In all cases the first numeral should be disregarded.

PART NO.	CODE MARKING	PART NO.	CODE MARKING
15262	B-1, H-1, H-9, H-20	16233	H-4, H-10
15263	B-2, H-2	16461	H-6, H-12
15640	H-16	16462	H-5, H-11
15770	H-15	16490	B-6, L-12
15780	H-17	16745	H-7, H-8, H-13
15790	H-18, H-21	16828	B-5
15837	B-3 (superseded by 16233)	16880	H-23, L-26, (439)
15870	B-7, L-28	16940	H-22, L-10
16060	H-24, L-29, (304) superseded by 18350	17360	H-27, L-32
		17370	H-25, H-26, L-3, L-39
		18350	H-28, L-49

December, 1930. These prices supersede all previous prices and are subject to change without notice.

Centering Top Pole Piece in Electro-Dynamic Speakers

In later-type electro-dynamic speakers, the top pole piece does not have a centering disc. For this reason it is necessary to center the top pole piece whenever this part is replaced or adjusted. This centering requires three gauges. Each gauge may be a three-inch length of No. 54 drill-rod, or if desired the shanks of three No. 54 drills may be used for the same purpose.

Procedure: (1) Loosen the nuts that clamp the top pole piece, the cone housing, and the field-coil case.

(2) Insert the three gauges in the magnet gap, as illustrated in Figure 254. Tighten the bolts very securely and then remove the gauges.

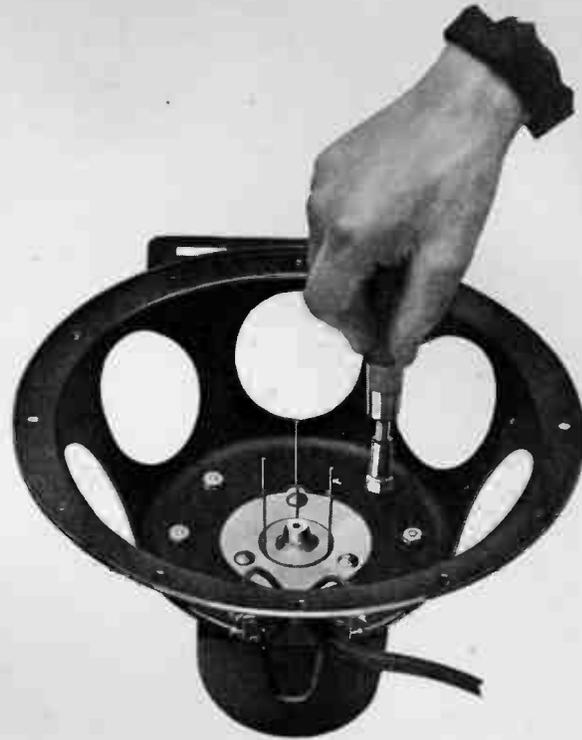


FIG. 254. (AT RIGHT.)

SHOWING GAUGES IN POSITION WHILE TIGHTENING TOP POLE PIECE.

PARTS AND PRICE LIST—TYPE N, N-3, CHASSIS SPEAKERS

(For screws, nuts, and small parts, see Page 229.)

Part No.	TYPE N, No. 16400	Price
18081	Diaphragm.....	\$3.25
16410	Field coil.....	5.00
18093	Field-coil insulator.....	.02
18075	Field-coil spacer.....	.09
18055	Top pole piece.....	1.25

Part No.	TYPE N, No. 16400 (Cont'd)	Price
18073	Cone-housing with terminal card....	\$2.60
17889	Terminal card.....	.12
17796	Terminal-card insulator.....	.02
17803	Terminal-card cover.....	.12
17895	Cable and plug assembly.....	1.65
	18582 Plug only.....	.65
	14382 Steel ring (3 segments).....	1.00
	16390 Output transformer (before No. 6852901 and from 6938001 to 6943001).....	3.25
	16390-A Output transformer (from 6852901 to 6937000, and above 6943001).....	3.25
	5-Conductor Cable.....	.14/ft.
	18068 Instruction sheet.....	.02 net
	15578-N Shipping container.....	.35 "

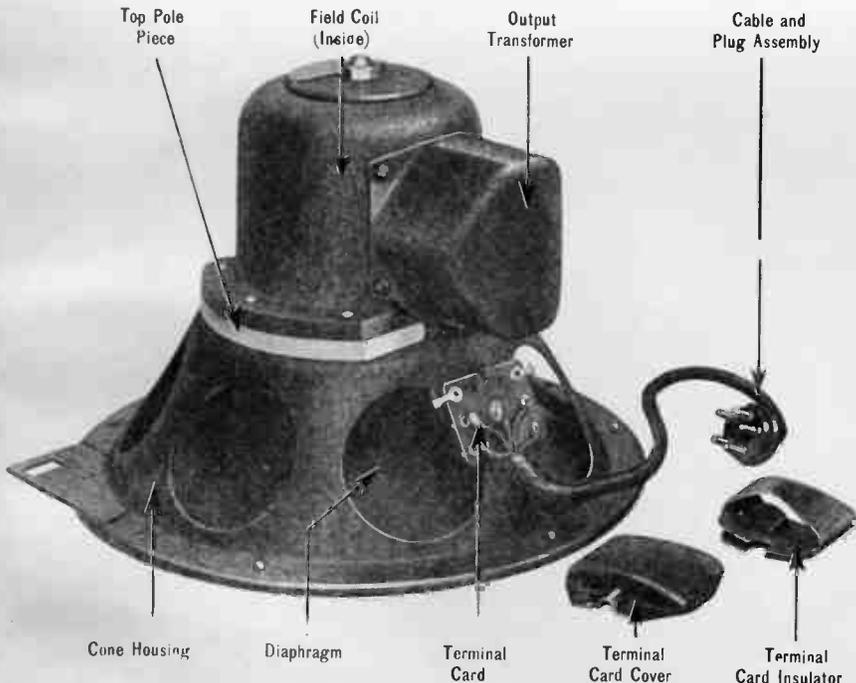


FIG. 255. N OR N-3 SPEAKER.

TYPE N-3, No. 16900
Parts not listed below are same as those used in "N" No. 16400 Chassis speaker.

Part No.	Price
17020	Field coil..... \$8.00
16390	Output transformer (before No. 7477302)..... 3.25
16390-A	Output transformer (after No. 7477302)..... 3.25
	5-Conductor cable..... .14/ft.
18542	Instruction sheet..... .02 net
15578-N-3	Shipping container..... .35 "

December, 1930. These prices supersede all previous prices and are subject to change without notice.

PARTS AND PRICE LIST—TYPES J AND JB INDUCTOR SPEAKERS

(For screws, nuts, and small parts, see Page 229.)

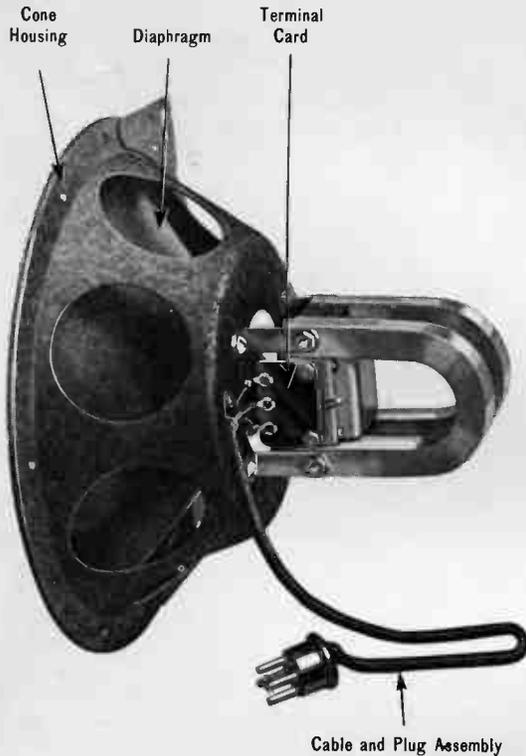


FIG. 256. TYPE J SPEAKER.

TYPE J, No. 15920, CHASSIS SPEAKER

Part No.		Price
17856	Diaphragm.....	\$ 1.50
17864	Sound unit complete.....	10.90
17862	Terminal card.....	.20
17858	Cone housing.....	2.60
17866	Cable and plug assembly.....	1.60
15079	Plug only.....	.65
17827	Cable clamp.....	.05
14382	Steel ring (3 segments).....	1.00
	3-Conductor cable.....	.10/ft.
17872	Instruction sheet.....	.02 net
19336	Shipping container.....	.35 "

IMPORTANT

No separate parts are furnished for the No. 17864 and 17864-B sound units in the type J and JB inductor speakers.

If any part of the sound unit (illustrated at right) requires replacement or adjustment, return the complete unit, exactly as shown, to the factory.



FIG. 257.
No. 17864, SOUND
UNIT, COMPLETE.

TYPE "JB" SPEAKER, No. 17010

NOTE:—All parts not listed below are same as used in Type "J" No. 16920 Chassis Speaker.

Part No.		Price
17847	Cone housing.....	\$ 2.60
17864-B	Sound unit, less resistor.....	10.90
19345	Terminal card, less resistor.....	.20
19346	Resistor (green and red).....	.30
18577	Frame.....	3.75
18578	Felt pad (1 used).....	.75/c
16734	Front frame.....	5.50
16735	Front screen.....	2.10
4259	Cord.....	.80
	2-Conductor Cable.....	.08 /ft.
18573	Instruction sheet.....	.02 net
16695	Shipping container.....	.35 "



FIG. 258. TYPE JB SPEAKER (REAR VIEW).

December, 1930. These prices supersede all previous prices and are subject to change without notice.

Output Measuring Circuit for All Types of Atwater Kent Receivers

In the output measuring circuit, shown in Figure 259, only one speaker, a Type JB, is required in testing any type of Atwater Kent receiver. This eliminates the necessity of tying up four or five electro-dynamic speakers.

This improvement is made possible through the use of a special output transformer, and a series of resistors which take the place of the field coil in the various types of Atwater Kent electro-dynamic speakers.

OPERATION

(A) Throw S₁ to the right to test for quality on the JB speaker. Throw S₁ to the left to pick up oscillator signals on the phones when synchronizing variable condensers.

(B) When testing an A. C.-operated electro-dynamic set, move S₄ to the tap that gives the correct resistance to take the place of the field coil in the speaker for that particular set.

- Tap 1 (left) takes place of F-6 field coil.
- Tap 2 takes place of F-4 or N field coil.
- Tap 3 takes place of F-2 field coil.
- Tap 4 takes place of F field coil.

It is NOT necessary to use a "dummy" field load when testing a battery-operated or D. C.-operated electro-dynamic receiver. When testing such a receiver, S₄ may be turned to the 4th tap (right).

(C) MAGNETIC SETS. When testing a magnetic-type set, such as Models 20, 35, 37, 40, etc., connect the two-conductor cord to the speaker-posts on the set being tested. Close both S₂ and S₃ if a reading on the meter is desired; open either S₂ or S₃ to open the meter circuit.

(D) INDUCTOR SETS. In testing a Type Q Chassis, insert the three-conductor plug in the speaker-plug socket on the Q Chassis. Close both S₂ and S₃ if a reading is desired on the output meter. Open either S₂ or S₃ to open the meter circuit.

(E) FIVE-PRONG ELECTRO-DYNAMIC SETS. In testing an L, P, D, F or H Chassis, insert the five-conductor plug in the speaker-plug socket on the chassis, and, if the chassis is A. C.-operated, set S₄ at the correct tap. To get a reading on the meter, close S₂ and S₃; to open the meter circuit, open either S₂ or S₃.

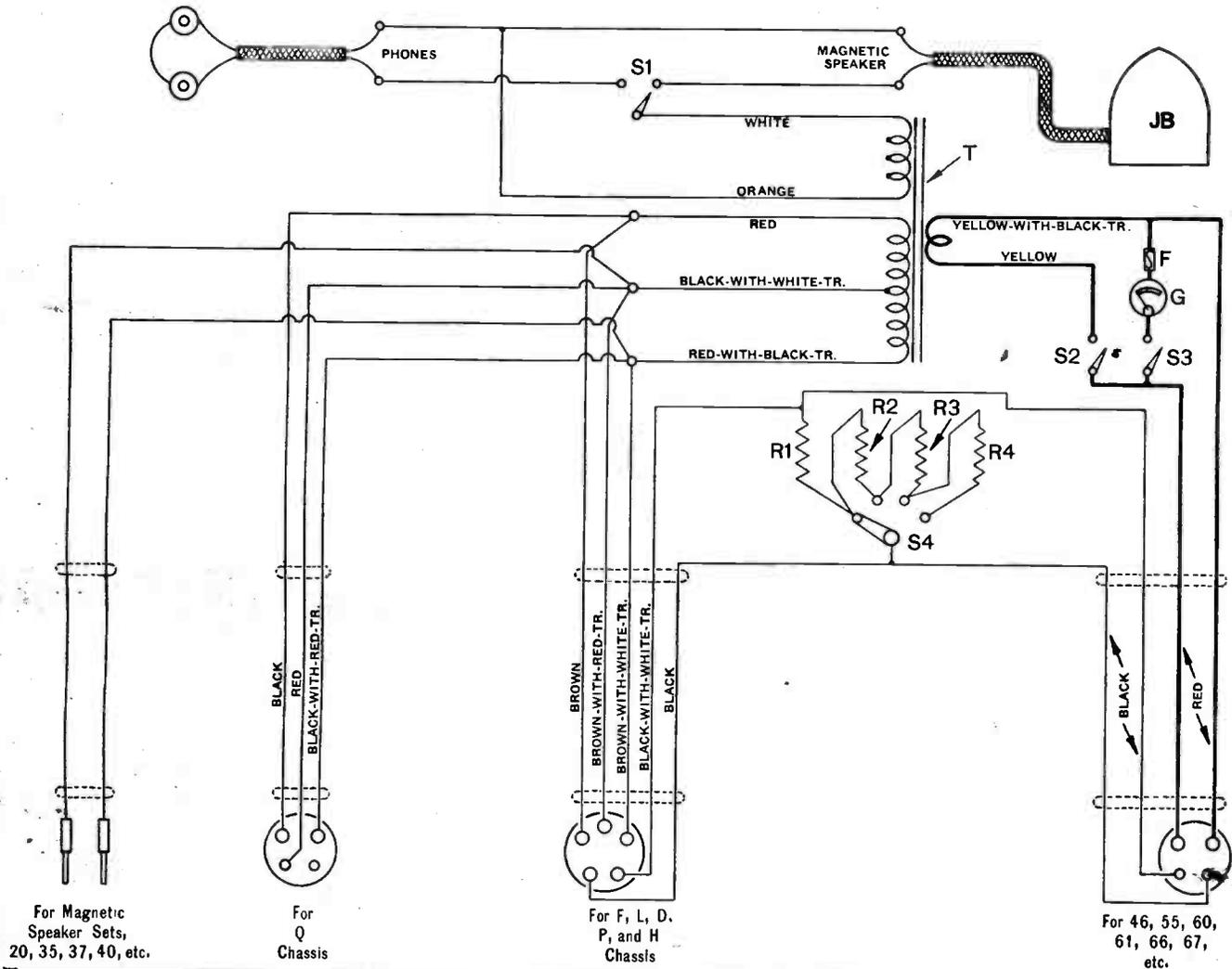
(F) FOUR-PRONG ELECTRO-DYNAMIC SETS. In testing a Model 46, 55, 60, 61, 66, 67, etc., insert the four-conductor plug in the speaker-plug socket on the chassis. If the chassis is A. C.-operated, set S₄ at the correct tap. To get a reading on the meter, close S₃ and open S₂. To operate the phones or JB speaker, close S₂ and open S₃. To operate both the phones and the meter, close both S₂ and S₃.

LIST OF PARTS

(With the exception of fuse ("F") and meter ("G") only standard Atwater Kent parts are used in this circuit.)

T—No. 18911 output transformer. This transformer has an extra winding which couples the speaker or phones to the output circuit of the particular set that is being tested.

- S₁—No. 13678 toggle switch.
- S₂, S₃—No. 9991 toggle switches.
- S₄—No. 16430 switch.
- R₁—Four No. 16988 resistors in series.
- R₂—Three No. 16988 resistors in series.
- R₃—Four No. 16988 resistors in series.
- R₄—Five No. 16988 resistors in series.
- F— $\frac{1}{4}$ ampere fuse.
- G—115 ma, thermo-coupled galvanometer.
- 1—No. 14169 double-conductor cord.
- 1—No. 17866 three-conductor cord-and-plug.
- 1—No. 17556 four-conductor cord-and-plug.
- 1—No. 17895 five-conductor cord-and-plug.



CAUTION: USE ONLY ONE OF THESE FOUR CABLES AT ONE TIME.

FIG. 259. UNIVERSAL OUTPUT MEASURING CIRCUIT FOR ALL TYPES OF ATWATER KENT RECEIVERS.