

MODEL NO. 80

MODEL NOS. 70 (below ser. #B22,000), 270

Signal Generator Connection	Signal Generator Frequency	Dial Position	Wave Band Switch Position	Trimmer Number	Output Signal
Remove grid clip from 1st det.					
Control grid of 1st det.	260 k.c.	55	...	1	Max.
"	"	"	...	2	Max.
"	"	"	...	3	Max.
Connect grid clip to 1st det.					
Ant.*	1400 k.c.	140	...	4	Max.
"	"	"	...	5	Max.
"	"	"	...	6	Max.
"	600 k.c.	60	...	7	Max.**
"	1400 k.c.	140	...	4	Max.

* Connect a 200-mmf. condenser between signal generator and antenna post of set, at the antenna post.

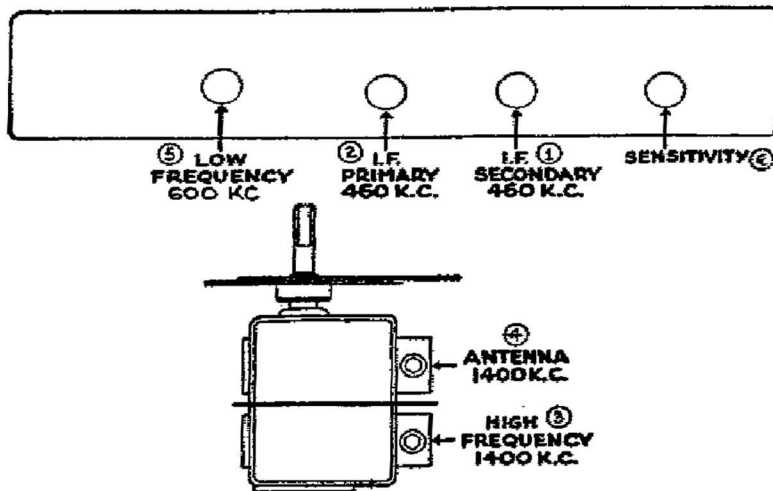
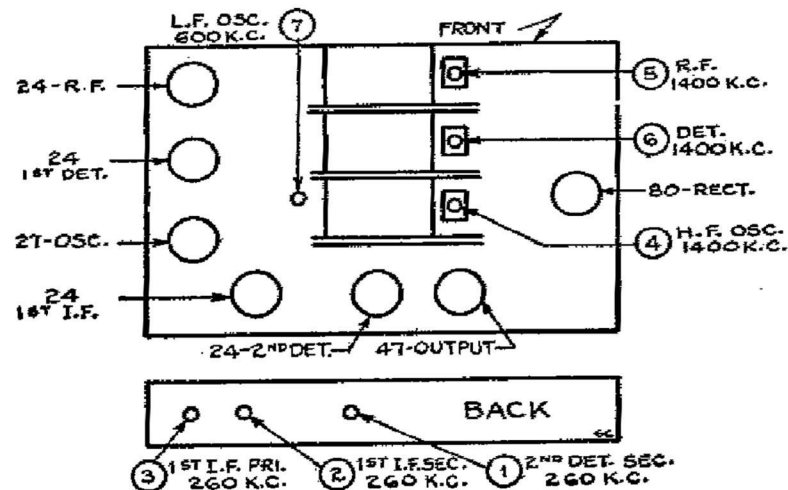
** While rocking.

Signal Generator Connection	Signal Generator Frequency	Dial Position	Wave Band Switch Position	Trimmer Number	Output Signal
Remove grid clip from det.-osc.					
Control grid of det.-osc.	460 k.c.	55	...	1	Max.
"	"	"	...	2	Max.
Connect grid clip to det.-osc.					
Ant.*	1400 k.c.	140	...	3	Max.
"	600 k.c.	60	...	4	Max.
"	1400 k.c.	140	...	5	Max.**
Note 1	Note 1	Note 1	...	6	Note 1

* Use a 100-mmf. condenser as dummy antenna.

** While rocking.

Note 1.—Connect antenna to receiver. Tune in station, first at about 130 and adjust (6) to a point just before squealing starts. Tune in stations along other points on dial. If squealing is present at any point readjust (6) slightly until there is none at any point along dial. This adjustment may have to be changed if set is moved to different location or if antenna length or 2nd det. tube is changed.



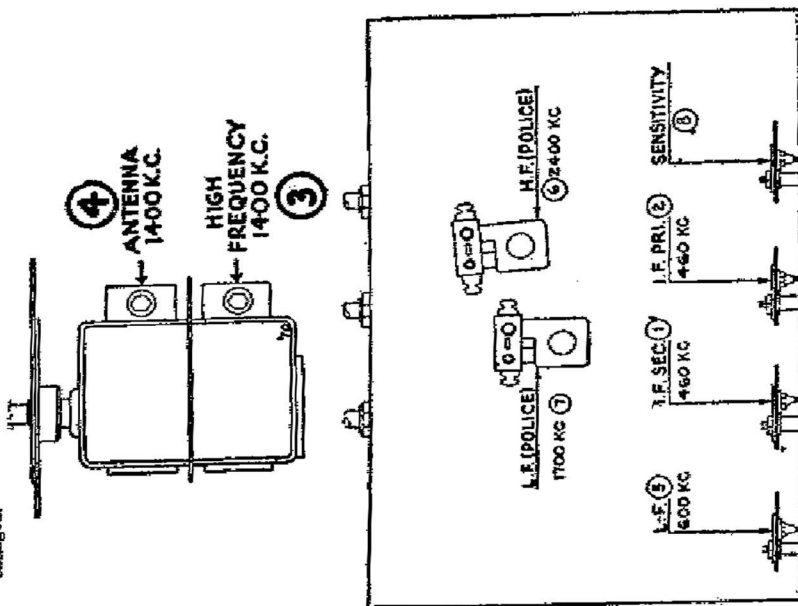
Courtesy of nucow.com

MODEL NO. 81

Signal Generator Connection	Signal Generator Frequency	Dial Position	Wave Band Switch Position	Trimmer Number	Output Signal
Remove grid clip from det.-osc.					
Control grid of det.-osc.	460 k.c.	55	Broadcast	1	Max.
"	"	"	"	2	Max.
Connect grid clip to det.-osc.					
Ant.*	1400 k.c.	140	"	3	Max.
"	"	"	"	4	Max.**
"	600 k.c.	60	"	5	Max.
"	1400 k.c.	140	"	3	Max.
"	2400 k.c.	2400 k.c.	Police	6	Max.
"	1700 k.c.	1700 k.c.	"	7	Max.
Note 1	Note 1	Note 1	Broadcast	8	Note 1

* Use a 100-mmf. condenser as dummy antenna.

** While rocking.
Note 1.—Connect antenna to receiver. Tune in station, first at about 130 and adjust (8) to a point just before squealing starts. Tune in stations along other points on dial. If squealing is still present, back off (8) slightly until there is none at any point along dial. This adjustment may have to be changed if antenna length or 2nd det. tube are changed.



Numbering of Philco Coils

For the purpose of identification, Philco coils are being code numbered.

These numbers are stamped upon the mounting bracket before the part leaves the National Service Station. The following is a list of these coils (Dated Jan. 1932)

KEY NO. IN SERVICE BULLETIN DIAGRAM

CODE NO.	PART NO.	USED IN MODELS	KEY NO. IN SERVICE BULLETIN DIAGRAM
1	3075A	511, 86, 87	000
2	3075B	511, 86, 87	000
3	3506B	65	000
4	3506A	65	000
5	3744A	95, 96	000
6	3744B	95, 96	000
7	3744C	95, 96	000
8	03845	90 (Pentode Output)	000
9	3884A	76, 77, 40, 41	000
10	3884B	76, 77, 40, 41	000
11	3884C	76, 77, 40, 41	000
12	3884N	20, 21	000
13	3884P	20, 21	000
14	3884S	111, 112	000
15	3884T	111, 112	000
16	3884U	111, 112	000
17	3884V	111, 112	000
18	3884X	46, 46E	000
19	3884Y	46, 46E	000
20	4182A	30	000
21	4182B	30	000
22	03014	90 (all Models)	000
23	03015	90 (all Models)	000
24	03016	90 (all Models)	000
25	03082	70, 35	000
26	03083	70, 35	000
27	03084	70	000
28	03253	50	000
29	03254	50	000
30	03320	35	000
31	03321	35	000
32	03860	90 (Pentode Output)	000
33	03013	90 (45'a Output)	000
34	03006	90 (all Models), 35	000
35	03038	111, 112	000
36	03039	111, 112	000
37	03040	111, 112	000
38	03091	70	000
39	03092	70, 35	000
40	03143	90 (45'a Output)	000
41	03734	%, 470, 490	000
42	03850	51	000
43	03881	51	000
44	03882	51	000
45	03887	51	000
46	03887	51	000
47	03886	51	000

Courtesy of nucow.com

Standard Compensating Condensers

The various compensating condensers used in the models 35, 70, 270, 370, 90, 112, and 212 have been changed so as to include a bakelite mounting board on which the code letter of the condenser appears. In the case of the I. F. compensating condensers, which have been used in conjunction with a parallel fixed condenser, the new compensating condensers have been increased in capacity so that the fixed condensers are no longer required. For replacement purposes, if desired, the new compensating condensers can be substituted on earlier sets for the earlier combination of a fixed and an adjustable condenser.

The low frequency compensating condensers have been changed with respect to the bakelite mounting, but their capacity remains unchanged, thereby requiring the parallel fixed condenser as in the past.

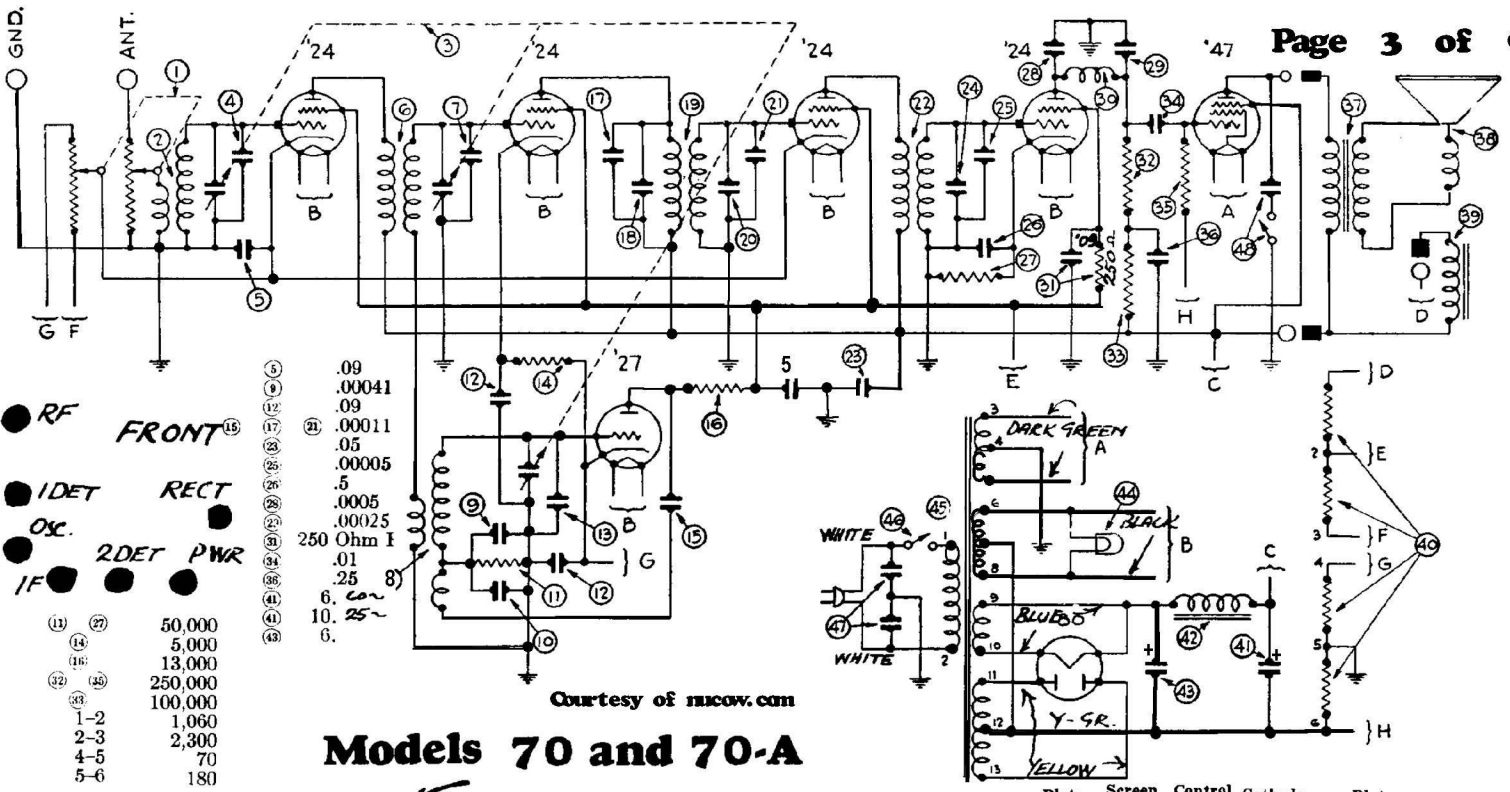
All of these new condensers can be identified by the letter which is stamped on the bakelite mounting board. For example part 04000-E has the letter E stamped over the surface of the mounting board; part 04000-F has the letter F stamped on the board.

The following table lists the part numbers of the various new condensers, their identification code letter, capacity range, where used, the superseded part number, and the part number of the parallel fixed condenser when one is still used.

(#98 - Dated Sept. 1931)

Part Number	Identification Letter	Capacity Range Mmf.	Used on Models	Supersedes	Used with Fixed Condenser
04000-B	B	40-250	90 (Early and Late)	03050	4520 (700 mmf.)
04000-D	D	6-50	112, 212	3772-A	—
04000-E	E	5-30	112, 212	3868-A	—
04000-F	F	40-250	112, 212 370 70, 270	3772-B	4520 (700 mmf.)
04000-H	H	40-180	35 170*, 270*, 370* 190* early	03249	5120 (410 mmf.)
04000-J	J	40-180	170* 270*, 370*, 212* 112*, 90* early	03051	—
04000-K	K	30-140	70*, 370*	3772-C	—
04000-L	L	30-140	270*	03061	—
04000-M	M	15-130	112*	03262	—
			85*	3772-D	—
				03411	—

*FIXED PARALLEL CONDENSER NOT REQUIRED



- RF FRONT
 - 1DET RECT
 - OSC.
 - 2DET PWR
 - IF
- | | |
|-----------|---------|
| (11) (27) | 50,000 |
| (14) | 5,000 |
| (16) | 13,000 |
| (22) (26) | 250,000 |
| (18) | 100,000 |
| 1-2 | 1,060 |
| 2-3 | 2,300 |
| 4-5 | 70 |
| 5-6 | 180 |
- | | |
|------|-----------|
| (6) | .09 |
| (7) | .00041 |
| (8) | .09 |
| (9) | .00011 |
| (10) | .05 |
| (11) | .00005 |
| (12) | .5 |
| (13) | .0005 |
| (14) | .00025 |
| (15) | 250 Ohm I |
| (16) | .01 |
| (17) | .25 |
| (18) | 6. car |
| (19) | 10. 25~ |
| (20) | 6. |

Courtesy of mcow.com

Models 70 and 70-A

I.F. 260 Kc.

MODEL 270 AND 270-A

RADIO-PHONOGRAPH

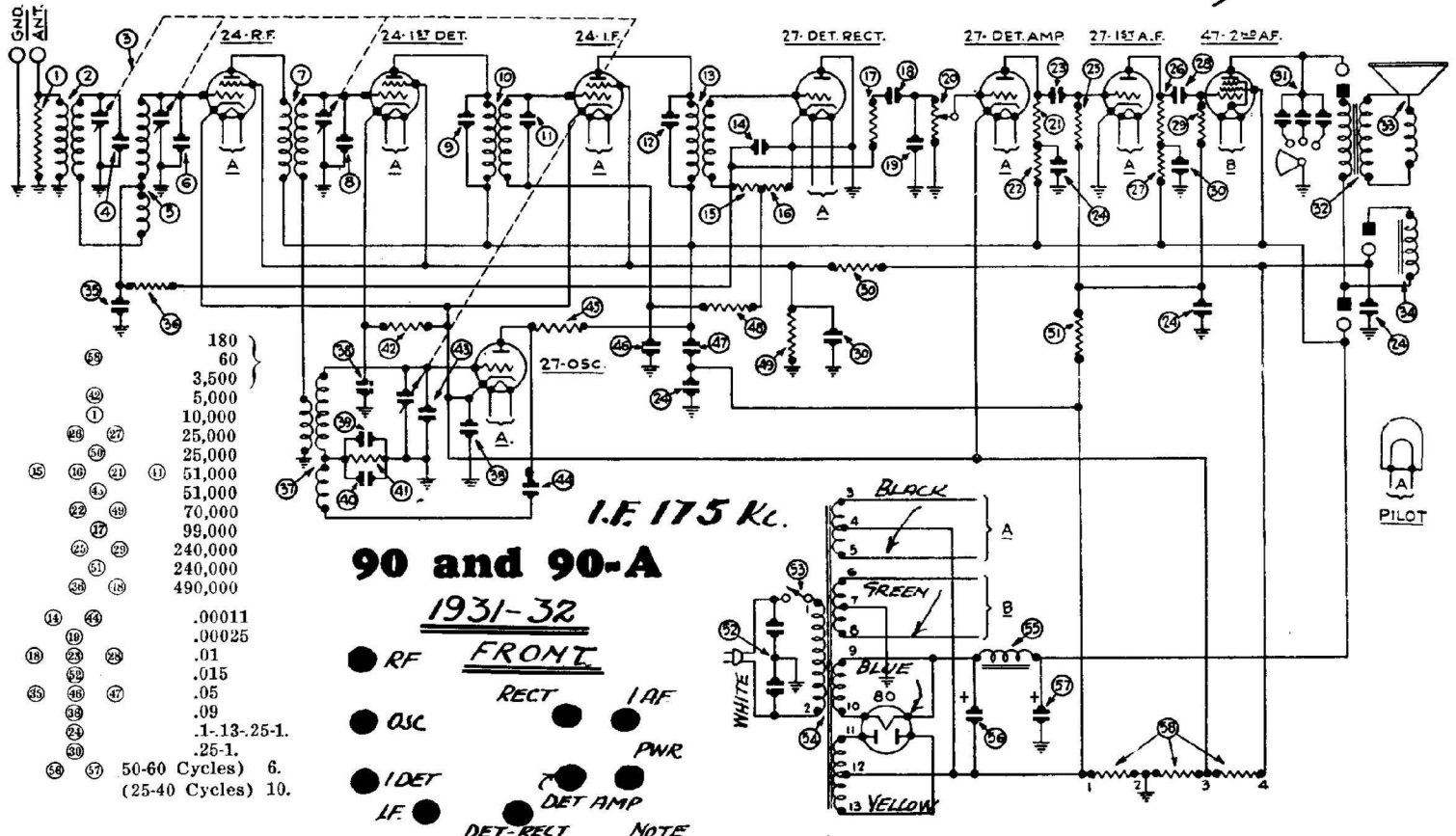
1931-32

Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
1st R. F.	250	85	3.	19.5	3.
1st Det.	250	87	5.5	21.5	.5
Osc.	85	...	2.	19.5	2.5
1st I. F.	250	87	3.	19.5	3.
2nd Det.	105	75	6.	22.	.1
Audio	245	255	1.	...	...

Circuit	Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
R. F.	255	60	.25	20	2.4
Osc.	65	...	.6	20	3.6
1st Det.	250	64	6.0	24	.25
I. F.	270	76	.25	18	.4
Det. Rect.	0	...	0	17	0
Det. Amp.	140	...	.4	18	2.0
1st A. F.	45	...	.4	20	1.8
Output	220*	240*	1.0*	...	32.*

All readings taken with antenna disconnected and ground on. Volume Control on full.
 *These readings must be taken from the underside of the chassis using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

90-90a 175 Kc.



- | | |
|------|---------|
| (15) | 180 |
| (16) | 60 |
| (17) | 3,500 |
| (18) | 5,000 |
| (19) | 10,000 |
| (20) | 25,000 |
| (21) | 25,000 |
| (22) | 51,000 |
| (23) | 51,000 |
| (24) | 70,000 |
| (25) | 99,000 |
| (26) | 240,000 |
| (27) | 240,000 |
| (28) | 490,000 |
- | | |
|------|--------------------|
| (14) | .00011 |
| (16) | .00025 |
| (18) | .01 |
| (19) | .015 |
| (20) | .05 |
| (21) | .09 |
| (22) | .1-13-25-1. |
| (23) | .25-1. |
| (24) | 50-60 Cycles) 6. |
| (25) | (25-40 Cycles) 10. |

90 and 90-A

1931-32

I.F. 175 Kc.

- RF FRONT
- OSC
- 1DET RECT
- 1AF
- PWR
- 2DET AMP
- DET-RECT

NOTE
 MODEL 90 WITH 2-47'S IN OUTPUT
 HAS 260 Kc I.F.

REPLACEMENT PARTS—MODELS 70 AND 70-A

(Service Bulletin No. 57)

Page 4 of 9

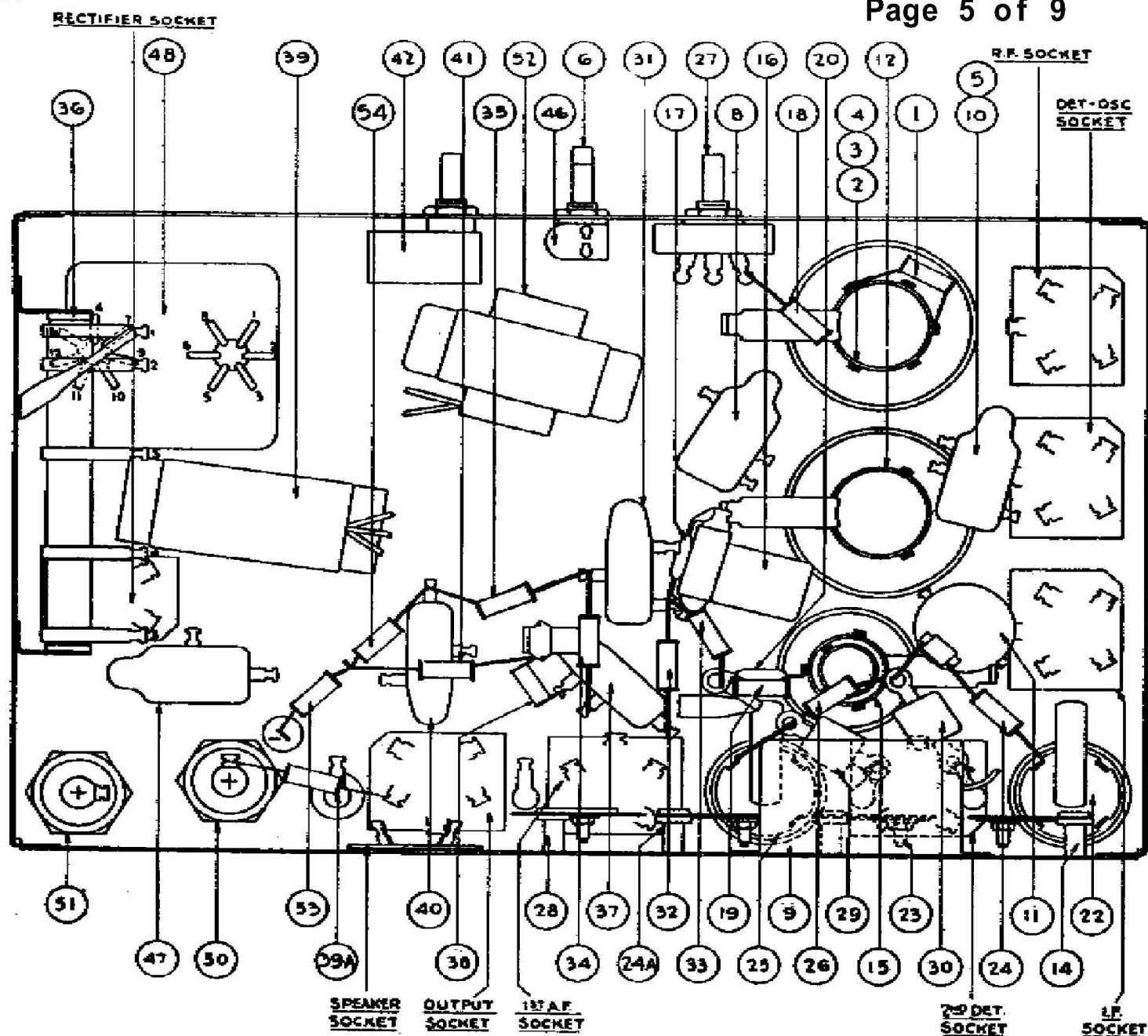
No. on Figs. 3 and 4	Description	Part No.	No. on Figs. 3 and 4	Description	Part No.
①	Volume Control	5039	④	Condenser (Electrolytic) (50-60 cycles)	4916
②	First R. F. Transformer	03082		Condenser (Electrolytic) (25-40 cycles)	5142
③	Tuning Condenser (25-40 cycles)	03077	⑥	Filter Choke	4951
	Tuning Condenser (50-60 cycles)	03076	⑤	Condenser (Electrolytic) (50-60 cycles)	4916
④	Compensating Condenser (Part of Gang Assembly)			Condenser (Electrolytic) (25-40 cycles)	5142
⑤	Bypass Condenser—.09 M. F. Double	4989-C	②	Pilot Lamp	3463
⑥	First Detector Transformer	03083	③	Power Transformer—50-60 cycles	5117
⑦	Compensating Condenser (Part of Gang Assembly)			Power Transformer—25-40 cycles	5118
⑧	Oscillator Coil	03084	⑩	Switch	4095
⑨	Fixed Condenser—.00041 M. F.	5120	⑪	Bypass Condenser—.015 M. F. (Double)	3793-H
⑫	Compensating Condenser	03120	⑭	Tone Control	03140
⑬	Resistor—50,000 Ohms	4237		Mica (Compensating Condenser)	3473
⑭	Bypass Condenser—.09 M. F. Double	4989-C		Insulating Washer (Compensating Condenser)	3500
⑮	Compensating Condenser (Part of Gang Assembly)			Rubber Washer (Chassis Mtg.)	5189
⑯	Resistor—5,000 Ohms	3526		Grommet (R. F. Transformer Shield)	3747
⑰	Condenser—.00011 M. F.	4519		Rubber Washer (Tuning Condenser Mtg.)	3914
⑱	Resistor—13,000 Ohms	3766		Rubber Washer (Tuning Condenser Mtg.)	3915
⑲	Condenser—.00011 M. F. } Compensating Condenser }	3772-C		Rubber Washer (Tuning Condenser Mtg.)	3916
⑳	First I. F. Transformer	03091		Spring Switch Knobs	4147
㉑	Compensating Condenser }			Grid Clip	4897
㉒	Fixed Condenser—.00011 }	03051		Five Prong Socket	4956
㉓	Second I. F. Transformer	03092		Speaker Socket	4957
㉔	Bypass Condenser—.05 M. F.	3615-L		Knobs (Dial)	03063
㉕	Compensating Condenser }			Tube Socket (Rectifier Tube)	5026
㉖	Condenser—.00005 }	03061		Steel Washer (Chassis Mtg.)	5058
㉗	Bypass Condenser—.5	3583		Knob (Switch, Tone, Volume) (Baby Grand)	4290-A
㉘	Resistor—50,000 Ohms	4237		Volume Control Insulator	4092
㉙	Condenser—.0005	3910		Volume Control Insulator	4286
㉚	Condenser—.00025	3082		Knob—Tone, Volume (Highboy)	03064
㉛	Detector R. F. Choke	03086		Nut—Volume, Tone, Switch	W-434
㉜	Resistor—250 Ohms and Condenser—.09 M. F.	4989 E		Complete Drive Bracket	03011
㉝	Resistor—250,000 Ohms	4410		Dial Disc Assembly	03031
㉞	Resistor—100,000 Ohms	4411		Fahnestock Clip	L-1126
㉟	Condenser—.01 M. F.	3903-J		Knob Spring - Tone, Volume, Dial for Lowboy and Highboy	5262
㊱	Resistor—250,000 Ohms	4410		Knob Spring - Tone, Volume for Baby Grand	5173
㊲	Condenser—.25 M. F.	4264		Knob Spring - Dial - Baby Grand	5262
㊳	Output Transformer	2873			
㊴	Voice Coil and Cone	02996			
㊵	Speaker Field assembled with Pot and Frame	02966			
㊶	B. C. Resistor	5125			

Courtesy of nuow.com

Several changes in wiring and part numbers have been made in model 70.

The filter choke, part 4951 has been changed to part 4819, the same

choke as used in the model 21. On the 50-60 cycle models, a .09 mfd. condenser, part 4989-J, is connected across the filter choke, part 4819. On the 25 cycle models, this condenser should be .18 mfd., part 4989-H, ungrounded. The two 240,000 ohm resistors, part 4410, Nos. 32 and 35 Service Bulletin No. 57 and Nos. 25 and 29, Service Bulletin No. 85, should be of the Continental Carbon type. This is the resistor without the metal ends.



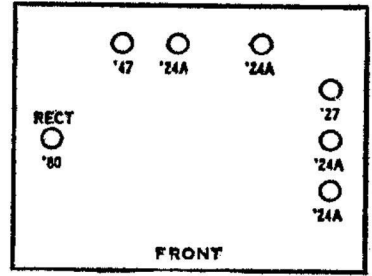
MODELS 70 AND 70-A

Above Serial B-22000

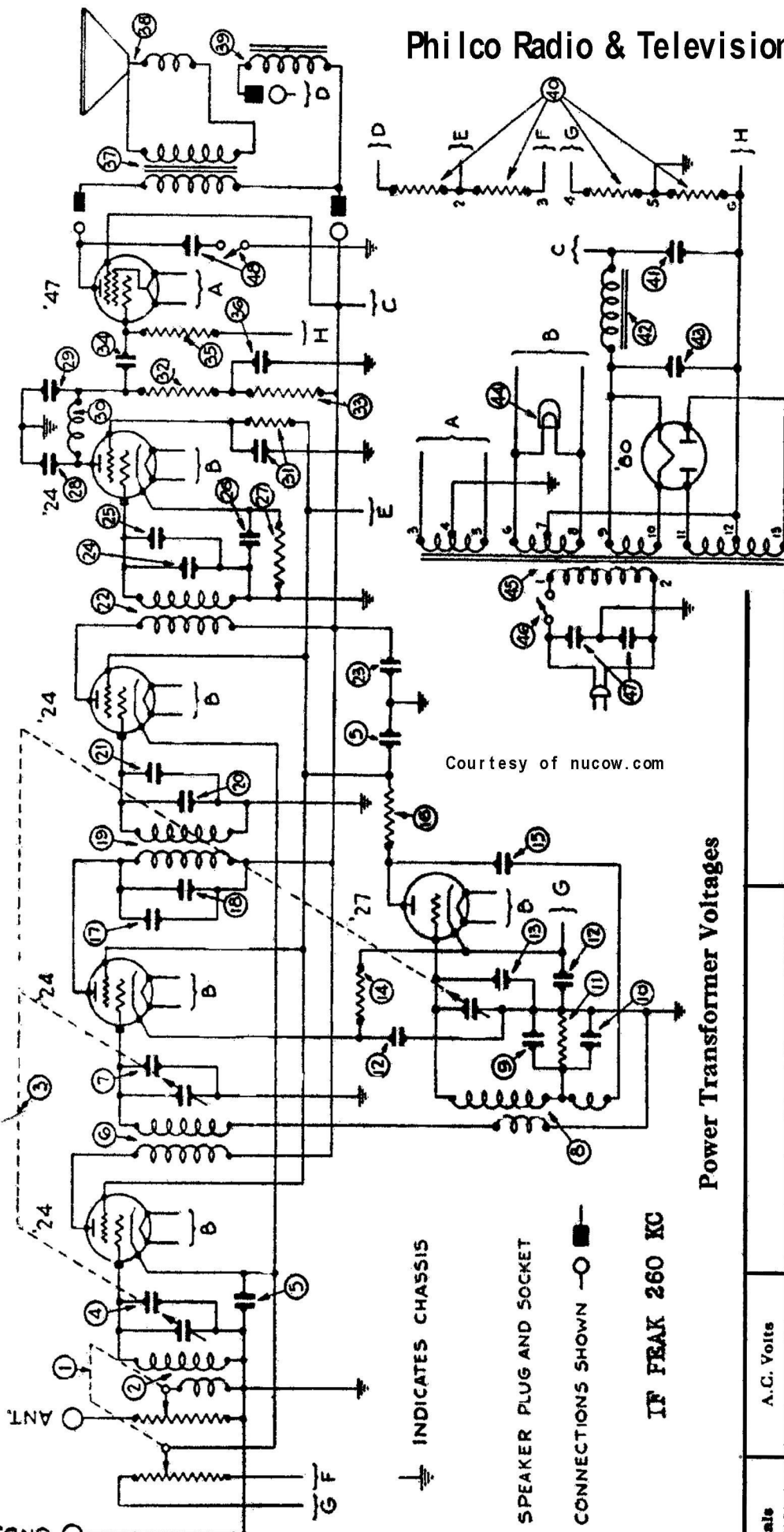
Courtesy of nucow.com

Part Numbers on Service Reports

It is highly important that the complete part number including the letter, of defective parts be specified on all of your service reports. Many parts have a letter after the part number as listed in the service bulletins. Other parts—namely, power transformers, audio transformers, filter chokes, field coils, electrolytic condensers, and volume controls are listed in the service bulletins without a letter, but actually have this letter stamped on the part itself after the part number.



MODEL 570 Grandfathers Clock
 contains the same radio
 equipment as Model 70,70-a
 Voltage schematic B-22,000



Courtesy of nucow.com

Power Transformer Voltages

Terminals	A.C. Volts	Primary of 47	Filament of 24	Filament of 80	Plates of 80	Center Tap of 3-5	Center Tap of 6-8	Center Tap of 11-13
1-2	105 to 125	Black (Small Gauge)	Dark Green	Black (Heavy Gauge)	Light Blue	Yellow	Black, Green Tracer	Black, Yellow Tracer
3-5	2.5						Yellow, Green Tracer	
6-8	2.5							
9-10	5.							
11-13	700.							
4								
7								
12								

Tube Socket Readings Taken with AC Set Tester AC Line—115 volts

Type	Tube	Circuit					Plate Volts	Screen Grid Volts	Control Grid Volts	Cathode Volts	Plate Milli-amperes
		Filament	Plate	Screen Grid	Control Grid	Cathode					
24	1st R. F.	2.25	250	85	3.	19.5	3.	19.5	3.	3.	
24	1st Det.	2.25	250	87	5.5	21.5	5.5	21.5	5.5	.5	
27	Osc.	2.25	85	87	2.	19.5	2.	19.5	19.5	2.5	
24	1st I. F.	2.25	250	75	3.	19.5	3.	19.5	19.5	3.	
24	2nd Det.	2.25	105	255	6.	22.	6.	22.	22.	.1	
47	Audio	2.25	245		1.		1.				
50	Rectifier	4.7								40/plate	

Note—Volume Control Off; Station Selector turned to Low Frequency End.

If electrolysis occurs on the insulation of the wire between the filter choke and the electrolytic condenser, unsolder the wire and cover with spaghetti.

IF PEAK 260 KC

INDICATES CHASSIS

SPEAKER PLUG AND SOCKET

CONNECTIONS SHOWN

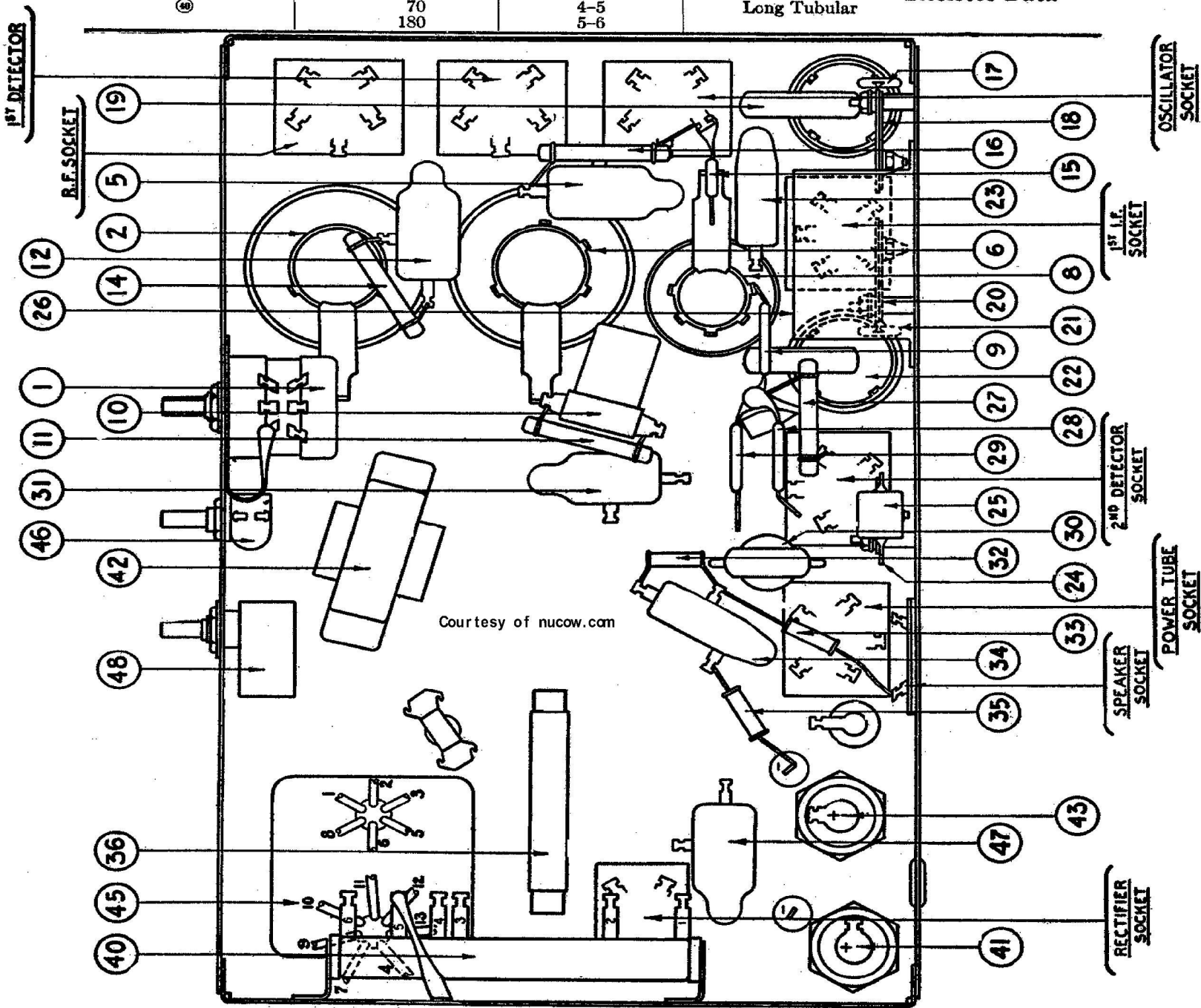
No. on Figs. 3 and 4	Capacity MFD	Color
19	.09	Yellow Orange
21	.00041	Blue, Golden Yellow
22	.09	Light Blue, White
23	.00011	Green
24	.05	Yellow
25	.00005	
26	.5	
27	.0005	
28	.00025	
29	.09 and 250 Ohm Resistor	
30	.01	
31	.25	
32	(25 to 40 cycles) 10.	
33	(50 to 60 cycles) 6.	

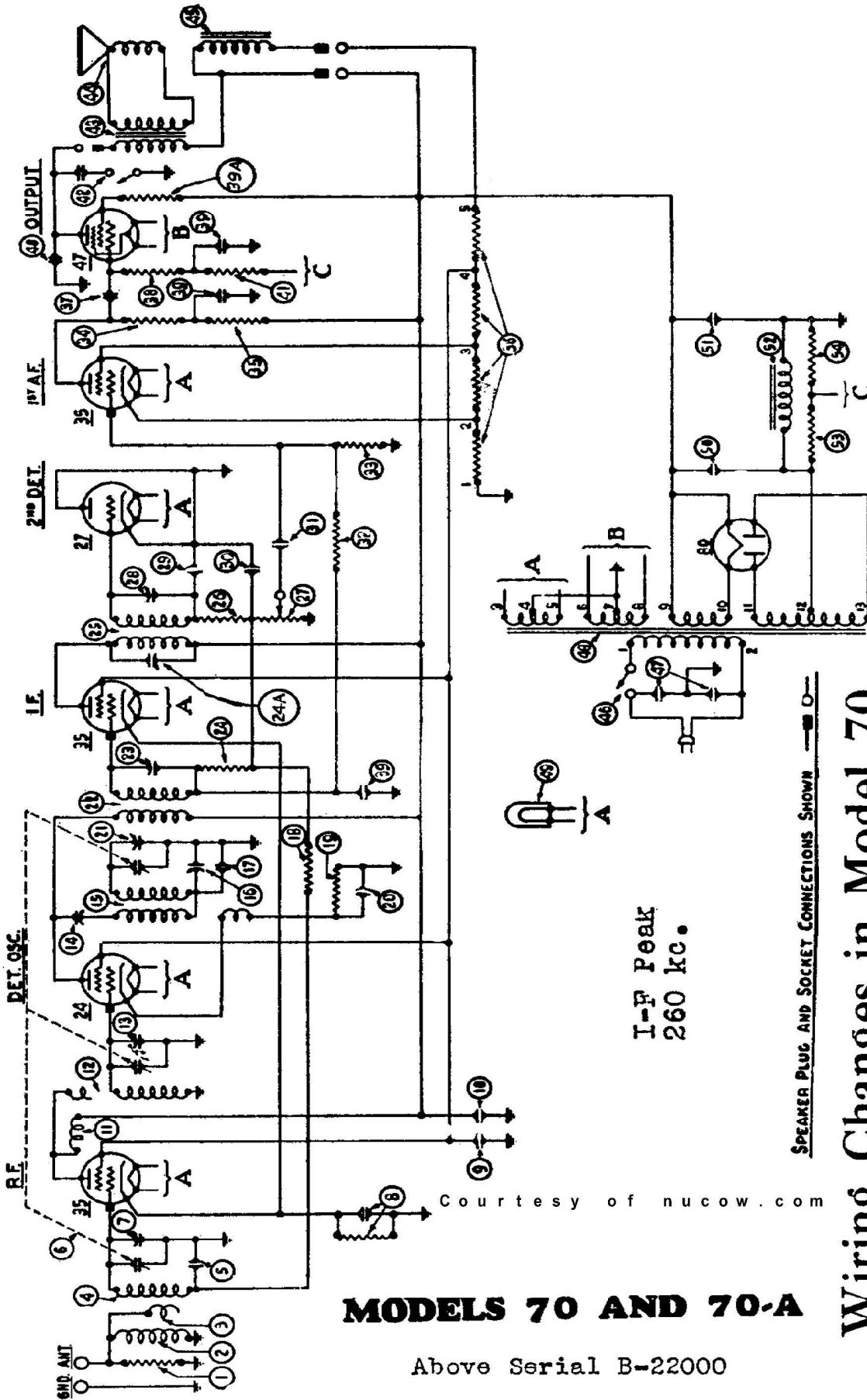
Condenser Data

No. on Figs. 3 and 4	Resistance	Terminal	Body	Color Tip	Dot
11	50,000		Green	Brown	Orange
13	5,000		Green	Black	Red
14	13,000		Brown	Orange	Orange
15	250,000		Red	Yellow	Yellow
16	100,000		White	White	Orange
27	1,060	1-2			
32	2,300	2-3			
33	70	4-5			
35	180	5-6			

Resistor Data

Long Tubular





MODELS 70 AND 70-A

Above Serial B-22000

Wiring Changes in Model 70

(Above Serial No. B-22,000)

The filter condenser ⑥ Fig. 1 and 2, Service Bulletin No. 57B, part No. 04194 has been changed to part No. 04559. The 1.5 Mfd. section of 04194, connected in the plate filter circuit of the first A.F. tube, is changed to .75 Mfd.; the .05 Mfd. section, connected between resistor ⑥ and ground, is removed from the 04194 block, and is connected externally as an .05 Mfd. condenser, part 3615L. The new condenser part 04559 still contains the .25 Mfd. section which is wired in the same manner as in 04194. The 25,000 ohm resistor ⑩, part 4516, is changed to 51,000 ohms, part 4518.

Model 70 Receivers are for operation on 100-130 volt, 50-60 cycle AC lines
Model 70A Receivers are for operation on 100-130 volt, 25-60 cycle AC lines

Table 1—Tube Socket Readings Taken with A.C. Set Tester—AC Line—115 volts

Tube		Filament Volts	Plate Volts	Control Grid Volts	Screen Grid Volts	Cathode Volts	Plate Milli-amperes
Type	Circuit						
35	R. F.	2.25	250	5	70	6	4.3
24	OSC & 1st Det.	2.25	250	8	12	8	.5
35	I. F.	2.25	250	20	70	0	1.7
27	Rectifier Detector	2.25		0	0	0	0
35	Audio Amplifier	2.25	50	0	60	0	1.0
47	Output	2.25	240*	4*	255*		28*
80	Rectifier	4.70	260/plate				

*These readings must be taken from the underside of the chassis, using test prods and leads unless the set checker is specially equipped for testing pentode tubes.

Table 2—Power Transformer Voltages

Terminals	A.C. Volts	Circuit	Color
1-2	105 to 125	Primary	White
3-5	2.5	Filament of 24 and 35's	Black
6-8	2.5	Filament of 47	Dark Green
9-10	5.	Filament of 80	Blue
11-13	700	Plates of 80	Yellow
4		Center Tap of 3-5	Black, Yellow Tracer
7		Center Tap of 6-8	Black, Green Tracer
12		Center Tap of 11-13	Yellow, Green Tracer

Courtesy of nucow.com

Table 3—Condenser Data

Nos. on Figs. 1 and 2	Capacity (mfd.)	Container
29	.00011	Blue and Yellow
29	.00041	Yellow and Orange
27	.0007	White and Yellow
28	.003	Orange and White
21	.01	Black Bakelite
27	.015 (Double)	Black Bakelite
47	.05	Black Bakelite
8	.05, .25, 1.5	Metal
18	.09 & 200 Ohms	Black Bakelite
8	.5	Metal
9	6	Electrolytic
80	10	Electrolytic
81	14	Electrolytic
80		(50-60 cycles)
81		(25-40 cycles)
80		(25-40 cycles)

Table 4—Resistor Data

Nos. on Figs. 1 and 2	Power (watts)	Resistance (ohms)	Color		
			Body	Tip	Dot
26		26			
	Terminals	850			
	{ 1-2	1650			
	{ 2-3	1060			
	{ 3-4	1,000	Long Tubular		
	{ 4-5	2,900			
2	.5	10,000	Brown	Black	Red
30A	.5	25,000	Red	White	Red
1	.5	51,000	Brown	Black	Orange
19	.5	70,000	Red	Green	Orange
2	.5	99,000	Green	Brown	Orange
24	.5	330,000	Violet	Black	Orange
13	.5	490,000	White	White	Orange
15	.5	1,000,000	Red	Yellow	Yellow
14	.5	2,000,000	Yellow	White	Yellow
34	.5	4,000,000	Brown	Black	Green
35	.5		Red	Black	Green
36	.5		Yellow	Black	Green

Models 70 and 70-A Receivers

(Above Serial No. B-22,000)