Philco Radio Service Bulletin No. 26

Published by the Philco Radio & Television Corporation of Great Britain Ltd., Perivale, Greenford, Middlesex

Model 1280.

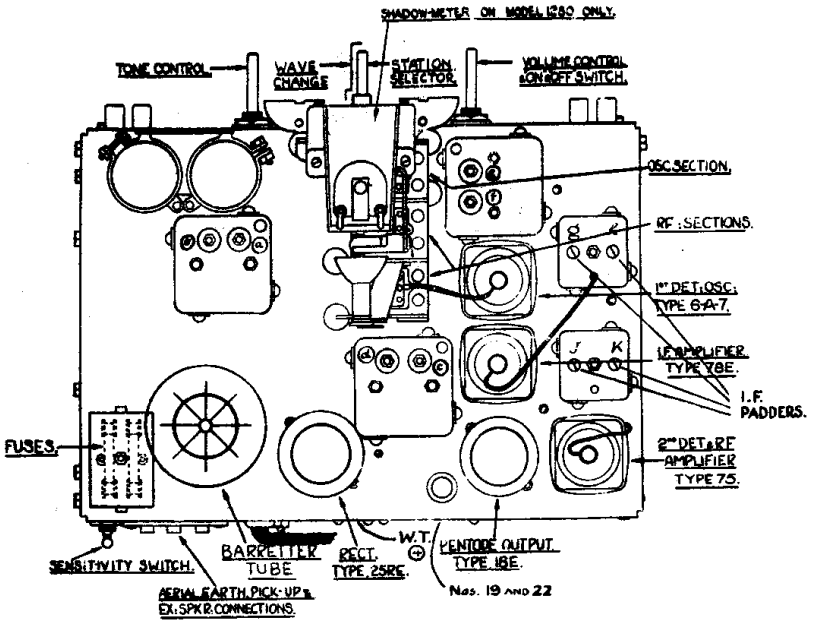
The Model 1280 is a five valve, dual-wave Superheterodyne Receiver, designed for operation on the Broadcast and Long wave-bands. The Long wavelength coverage is from 150-350 kc. (2000-858 metres), and the Medium wavelength from 540-1510 kc. (560-198 metres).

The circuit is so arranged that connection may be made to either A.C. or D.C. mains without discrimination or adjustment. The circuit is independent of mains periodicity and has the unusual feature of being suitable for any voltage from 195-270 volts without alteration.

The receiver employs the 25RE rectifying valve with its low internal resistance. The anodes are paralleled, and the valve is used as a half wave rectifier on A.C., and as a resistance on D.C.

The local oscillatory signal is generated in a 6A7 pentagrid valve, where also the signal from the aerial is detected, and the resultant beat frequency of 460 kc. is amplified and passed to a type 78E valve for further amplification, ultimately being rectified at the diode elements of the type 75 duo-diode-triode.

The resultant A.F. signal passes through the volume control to the grid of the high amplification triode section of the 75 valve, and thence to the type 18E Pentode valve, which has an output of 3 watts.



The D.C. voltage developed across the diode load resistance is filtered free of the A.F. signal and fed back to the signal input grids of the 6A7 and 78E valves, thus giving full Automatic Volume Control.

A complete and fully filtered self-biasing system is incorporated to remove the possibility of mains hum and mains "mush."

A Local-distance switch is fitted, which by reducing sensitivity gives an improved signal-to-noise ratio in unfavourable localities.

Additional terminals are provided for extra speaker, the terminal impedance being 2 ohms. Terminal sockets are also provided for the connection of a pick-up, which should be suitably loaded by means of a shunt resistor to operate into the internal impedance of 330,000 ohms.

The Tone control has three positions which provide for Normal, Bass compensation on low volume, and treble cut-off.

Philco high efficiency valves are used. 1 6A7 as Detector oscillator; 1 75 as 2nd Detector and 1st I.F. amplifier; 1 78E as I.F. amplifier; 1 18E as output amplifier; 1 25RE as rectifier; 1 301 as Barreter.

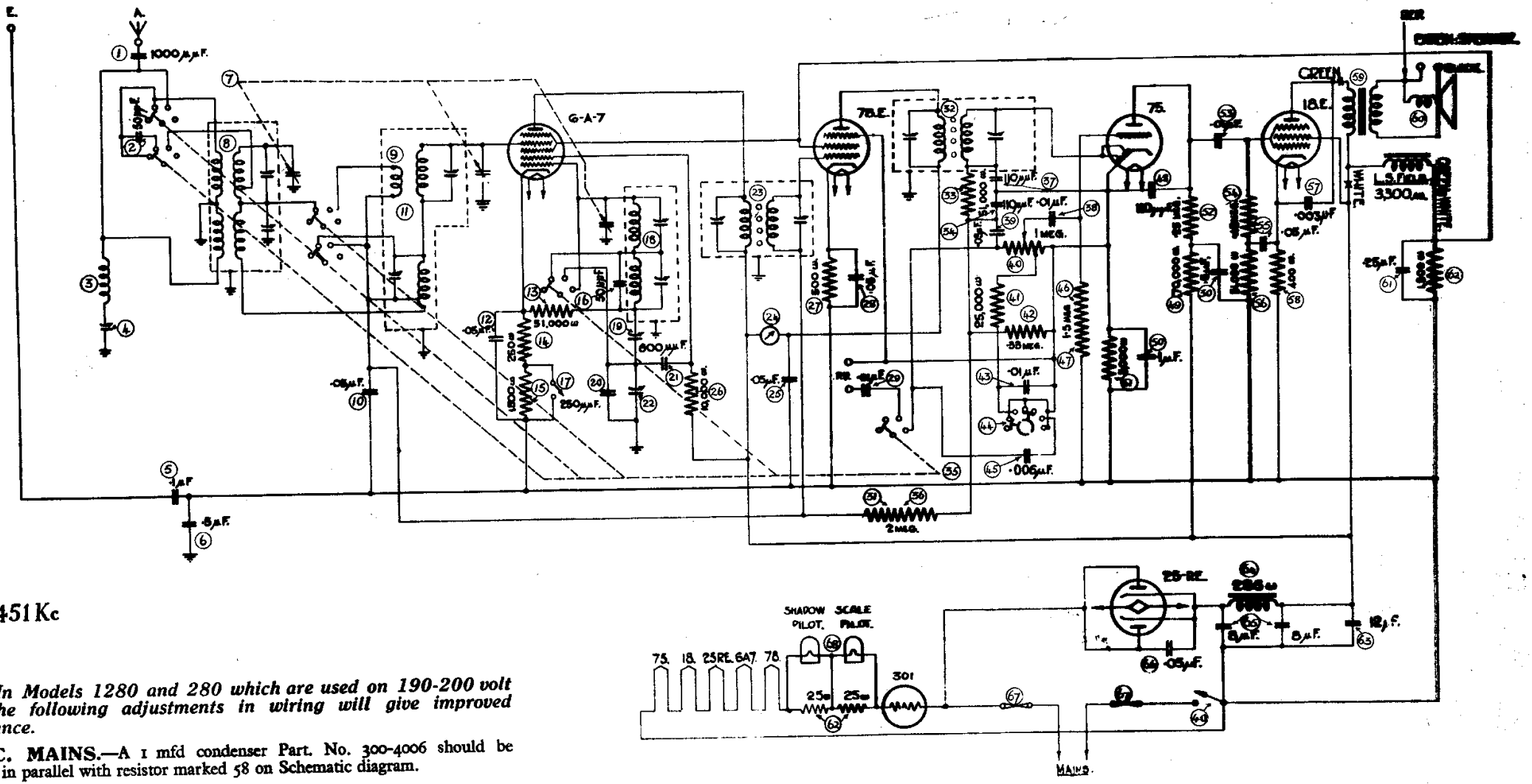
TABLE 1.

A.C. LINE—240 volts, 50 cycles. D.C. LINE—240 volts.

Valve socket voltage readings as taken with 048A Set Tester, using 200 volt range. Volume control at maximum, no aerial connected.

Valve	Anode/Cathode		Suppr. Grid/Cathode		Screen/Cathode		Cont. Grid/Cathode	
	AC	DC	AC	DC	AC	DC	AC	DC
6A7	195 165*	185	—	—	63	60	6.5† 1.5	†6 1.5
78E	175	165	—½	—½	62.5	58	2.0	2.0
75	75	75	—	—			½	½
18E	175	165	—	—	185	170	½	½

* Anode Grid to Cathode. † With local-distance "up" (off) position.
These voltages are taken with the local-distance switch in "down" (on) position.
75 Diode to Cathode (no sig.) ½ volt.



I.F is 451 Kc

In Models 1280 and 280 which are used on 190-200 volt mains the following adjustments in wiring will give improved performance.

ON A.C. MAINS.—A 1 mfd condenser Part. No. 300-4006 should be connected in parallel with resistor marked 58 on Schematic diagram.

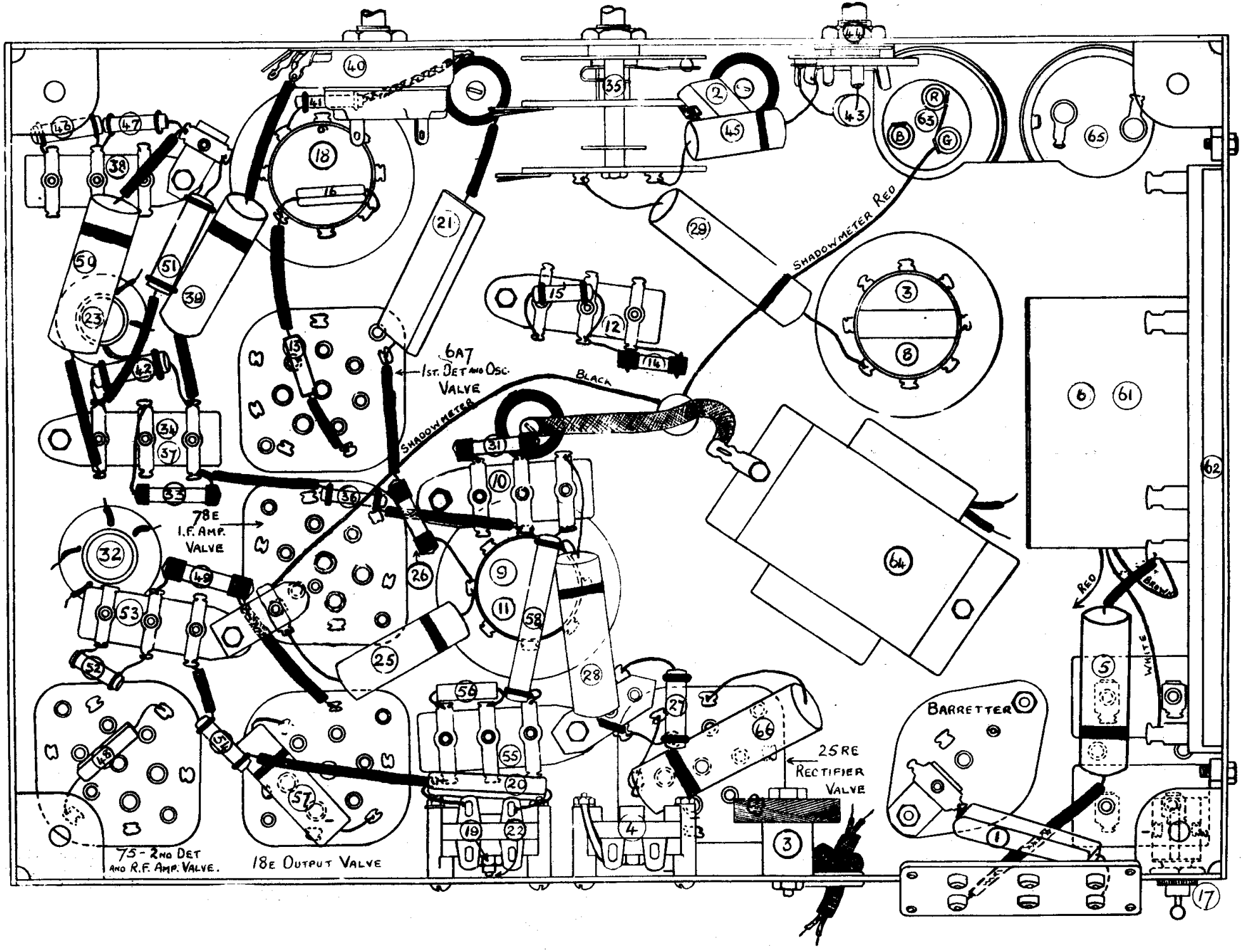
Remove the wire joining white tag on condenser 65 to green tag on condenser 63. Join with a wire the red and white tags on condenser 65. Remove black lead of choke 64 from the white tag on condenser 65 and connect to the green tag on 63.

ON D.C. MAINS.—Connect 1 mfd condenser in parallel with 58 as for A.C. mains.

Remove white speaker lead from auxiliary grid of 18E valve and join this lead to the tied cathode tags of the 25RE rectifier valve. Remove the wire joining white tag on condenser 65 to green tag on condenser 63. Join with a wire the red and white tags on condenser 65. Remove black lead of choke 64 from the white tag on condenser 65 and connect to the green tag of 63.

CIRCUIT SCHEMATIC. — MODEL 1280.

NOTE. NUMBERS 31 AND 36, AND 46 AND 47 MAY BE MADE UP FROM PAIRS OF SERIES CONNECTED RESISTORS AS IN PARTS LIST, OR MAY COMPRISE SINGLE RESISTORS OF THE TOTAL VALUES INDICATED [2 MEGOHM · ·25 WATT – PART No. 33-1025; 1·5 MEGOHM · ·25 WATT – PART No. 33-1086]


6A7
1ST. DET AND OSC.
VALVE
78E
I.F. AMP.
VALVE
75 - 2ND DET
AND R.F. AMP. VALVE.
18E OUTPUT VALVE
25RE
RECTIFIER
VALVE
BARRETTER
SHADOW METER RED
BLACK
SHADOWMETER
RED
WHITE

ADJUSTMENT OF MODEL 1280

Before leaving the Factory all receivers are accurately adjusted, and no further adjustment should be attempted without instruction in the correct adjustment of the compensating condensers. This should only be carried out with the aid of an accurately calibrated Signal Generator, and for this purpose the PHILCO ALL-PURPOSE SET TESTER MODEL 042A is recommended.

Connect the Output Meter across the primary of the Output Transformer. Set the wave-change switch to Medium waveband (middle position), and turn Gang Condenser to the H.F. (1500 kc.) position.

The Intermediate Frequency Padders (*g, h, j, k*) should first be adjusted, by feeding in a 451 kc. signal from the Signal Generator to the grid cap of the 6A7 valve. Adjust the Signal Generator attenuator to give a half scale reading on the Output Meter. Pad the I.F. Padders for a maximum reading on the Output Meter.

Transfer the Signal Generator lead to the Aerial socket, and pad Wave Trap (No. 4, page 3) for minimum reading.

Feed in a 1400 kc. signal, and set the Tuning Dial at 1400 kc. The Compensating Condenser situate in the top of the coil cans, numbers *b, d,* and *f,* should be padded to obtain a maximum signal. First adjusting "*f*" for the *first signal heard* as the adjustment is screwed down from minimum (fully unscrewed), then following with "*b*" and "*d*"

Feed in and tune in a 600 kc. signal, roll gang and pad number 22 (screw) until satisfied no further gain can be obtained.

Throw wave-change switch to Long Waves (anti-clockwise) and feed in and tune in a 290 kc. signal. Adjust padders numbers *a, c,* and *e* for maximum output, in the same manner respectively as for *b, d,* and *f.*

Feed in and tune in a 160 kc. signal, roll gang and pad number 19 (nut) until satisfied no further gain can be obtained.

Recheck at 290 kcs. and 160 kcs., and check calibration at 160 kcs.

PARTS LIST — MODEL 1280

1.	Mica Condenser (1,000 mmf.) (green, white)	30-1007
2.	Mica Condenser (50 mmf.) (blue, white) ...	300-1003
3.	Wave Trap Inductance	38-6851
4.	Single Padding Condenser (35 mmf.)	31-6051
5.	Tubular Condenser (.1 mf.)	30-4122
6.	Tubular Condenser (.5 mf.), part of Filter Block (brown)	30-4329
7.	Gang Condenser Assembly (less Dial, etc.) ...	31-1567
8.	Aerial Transformer (1st Aerial)	32-1722
9.	Part of 11.	
10.	Moulded Condenser (.05 mf.)	3615 SU
11.	2nd Aerial Transformer	32-1723
12.	Moulded Condenser (.05 mf.)	3615 SU
13.	Resistor (51,000 ohms) (green, brown, orange)	6098
14.	Resistor (250 ohms) (red, green, brown) ...	330-1000
15.	Resistor (1,500 ohms) (brown, green, red) ...	7951
16.	Mica Condenser (50 mmf.) (blue, white) ...	300-1003
17.	Local-Distance Switch	420-1000
18.	Oscillator Transformer	32-1724
19.	Padding Condenser (double), Long Wave—150 kc. (nut)	31-6033
20.	Mica Condenser (250 mmf.) (yellow)	30-1032
21.	Mica Condenser (800 mmf.) (green, orange)	5878
22.	Padding Condenser (Double), Broadcast—600 kc. (screw)	31-6033
23.	1st I.F. Transformer	32-1705
24.	Shadow Meter	450-2001
25.	Tubular Condenser (.05 mfd.)	30-4020
26.	Resistance (10,000 ohms) (brown, black, orange)	4412
27.	Resistance (500 ohms) (green, black, red) ...	330-1002
28.	Tubular Condenser (.05 mfd.)	30-4020
29.	Tubular Condenser (.01 mfd.)	30-4169
30.	Condenser (.5 mfd.) (brown, red) part of Filter Block	30-4329
31.	Resistance (1 meg.) (brown, black, green) ...	33-1096
32.	2nd I.F. Transformer	32-1706
33.	Resistance (51,000 ohms) (green, brown, orange)	6098
34.	Moulded Condenser (100 mmfd.) (Double) ...	8035DU
35.	Wave Change Switch	420-1011 or 42-1115
36.	Resistance (1 meg.)	33-1096
37.	Condenser (blue, yellow)	8035DU
38.	Condenser (.01 mfd.) (Moulded)...	3903 SU
39.	Tubular Condenser (03 mfd.)	30-4025
40.	Volume Control	33-5107
41.	Resistance (25,000 w.)	33-1013
42.	Resistance (330,000 w.)	33-1200
43.	Tubular Condenser (.01 mfd.)	30-4124
44.	Tone Control Switch	420-1002 or 42-1117
45.	Tubular Condenser (.006 mfd.)	30-4125
46.	Resistance (1 meg.)	33-1096
47.	Resistance (490,000 w.)	6097
48.	Mica Condenser (110 mmfd.) (blue, yellow)...	30-1031
49.	Resistance (70,000 w.)...	5385
50.	Tubular Condenser (.1 mfd.)	30-4122
51.	Resistance (5,000 w.)	5310
52.	Resistance (240,000 w.)	4410
53.	Moulded Condenser	3903 SU
54.	Resistance (490,000 w.)	6097
55.	Moulded Condenser (.05 mfd.)	3615 SU
56.	Resistance (51,000 w.)	6098
57.	Tubular Condenser (3,000 mmf.)	30-4042
58.	Resistance (400 w.)	330-1001
59.	Output Transformer	320-7002
60.	Voice Coil and Cone	360-3002
	Complete Speaker with Output Transformer	360-1004
61.	Tubular Condenser (.25 mfd.), part of Filter Block Condenser (brown, white)	30-4329
62.	Resistance (1,800 w. x 25 w. x 25 w.), Candohm B.C. Resistor	33-3210
63.	Electrolytic (12 mfd.)...	30-2030
64.	L.F. Choke	320-7004
65.	Electrolytic (8 x 8 mfd.)	30-2028
66.	Tubular Condenser (.05 mfd.)	30-4012
67.	Fuses (1 ampere)	380-5019
68.	Pilot Lamp Bulbs	34-2068
	6-prong Valve Socket	27-6036
	7-prong Valve Socket	27-6037
	Valve Shield	28-2726
	Valve Shield Base	28-2725
	Grid Clip	28-2214
	Coil Shield Assembly	38-6894
	Barretter Socket	380-5002
	Bezel Plate	290-1018
	Bezel Glass	270-5020
	Tuning Knob and Spring Assembly	270-4013
	Knob and Spring Assembly (W/C, Vol. and Tone Controls)	270-4011
	Knob Springs	280-5262

Philco Radio Service Bulletin No. 31.

Published by the Philco Radio & Television Corporation of Great Britain Ltd., Perivale, Greenford, Middlesex

Model 280.

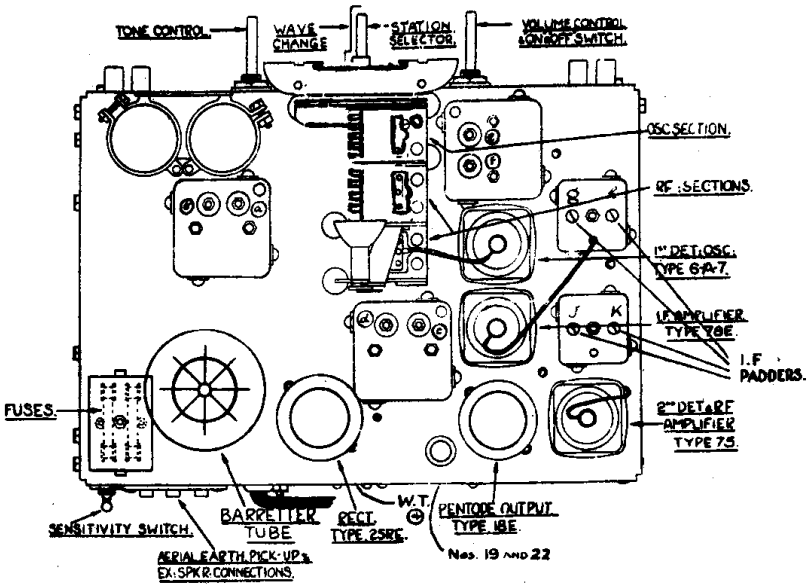
The Model 280 is a five valve, dual-wave Superheterodyne Receiver, designed for operation on the Broadcast and Long wavebands. The Long wavelength coverage is from 150-350 kc. (2000-858 metres), and the Medium wavelength from 540-1510 kc. (560-198 metres).

The circuit is so arranged that connection may be made to either A.C. or D.C. mains without discrimination or adjustment. The circuit is independent of mains periodicity and has the unusual feature of being suitable for any voltage from 195-270 volts without alteration.

The receiver employs the 25RE rectifying valve with its low internal resistance. The anodes are paralleled, and the valve is used as a half wave rectifier on A.C., and as a resistance on D.C.

The local oscillatory signal is generated in a 6A7 pentagrid valve, where also the signal from the aerial is detected, and the resultant beat frequency of 451 kc. is amplified and passed to a type 78E valve for further amplification, ultimately being rectified at the diode elements of the type 75 duo-diode-triode.

The resultant A.F. signal passes through the volume control to the grid of the high amplification triode section of the 75 valve, and thence to the type 18E Pentode valve, which has an output of 3 watts.



The D.C. voltage developed across the diode load resistance is filtered free of the A.F. signal and fed back to the signal input grids of the 6A7 and 78E valves, thus giving full Automatic Volume Control.

A complete and fully filtered self-biasing system is incorporated to remove the possibility of mains hum and mains "mush."

A Local-distance switch is fitted, which by reducing sensitivity gives an improved signal-to-noise ratio in unfavourable localities.

Additional terminals are provided for extra speaker, the terminal impedance being 2 ohms. Terminal sockets are also provided for the connection of a pick-up, which should be suitably loaded by means of a shunt resistor to operate into the internal impedance of 330,000 ohms.

The Tone control has three positions which provide for Normal, Bass compensation on low volume, and treble cut-off.

Philco high efficiency valves are used. 1 6A7 as Detector oscillator; 1 75 as 2nd Detector and 1st I.F. amplifier; 1 78E as I.F. amplifier; 1 18E as output amplifier; 1 25RE as rectifier; 1 301 as Barreter.

The intermediate frequency is 451 kc.

TABLE 1.

A.C. LINE—240 volts, 50 cycles. D.C. LINE—240 volts.

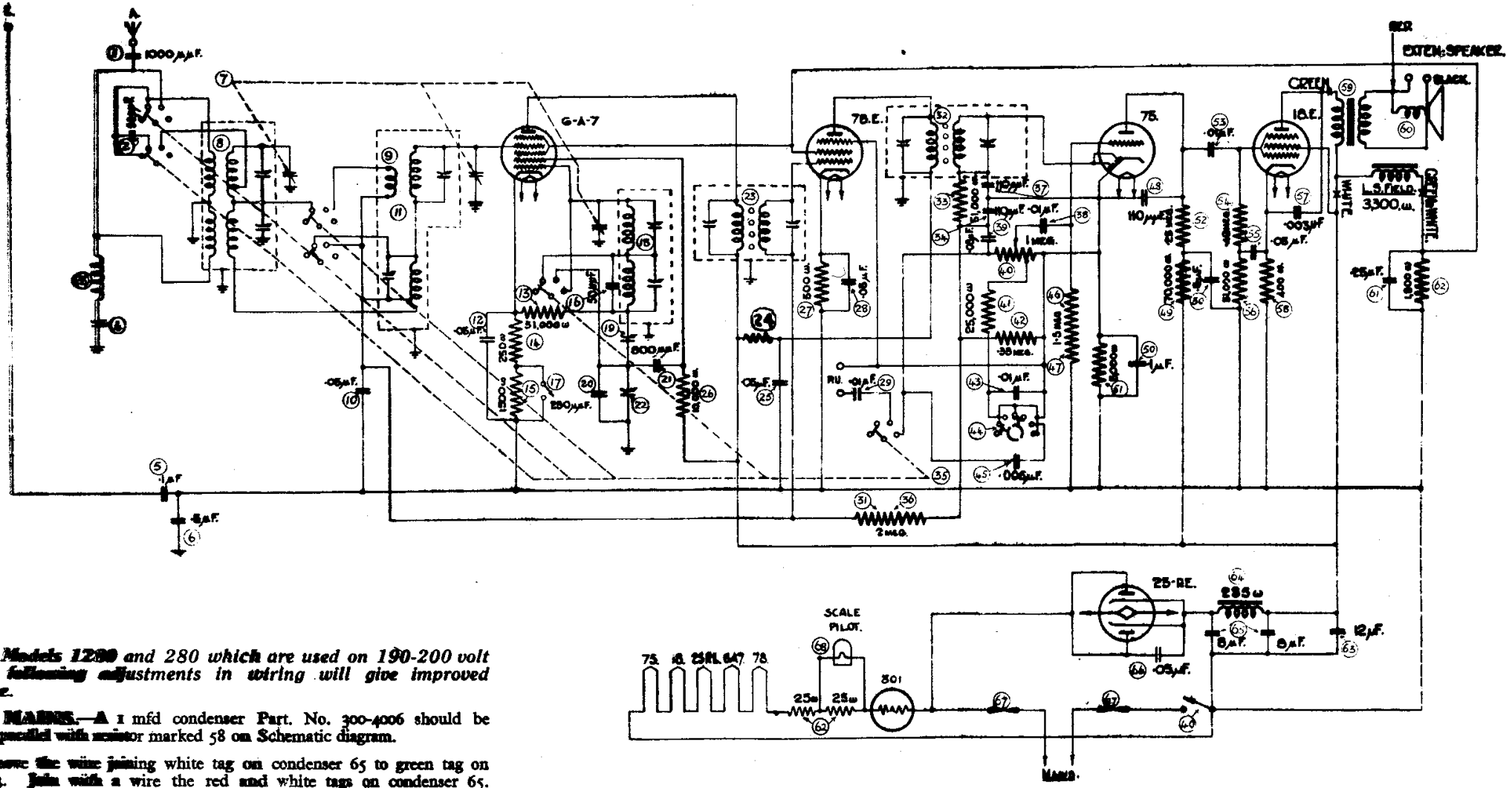
Valve socket voltage readings as taken with 048A Set Tester, using 200 volt range. Volume control at maximum, no aerial connected.

Valve	Anode/Cathode		Suppr. Grid/Cathode		Screen/Cathode		Cont. Grid/Cathode	
	AC	DC	AC	DC	AC	DC	AC	DC
6A7	195 165*	185	—	—	63	60	6.5† 1.5	†6 1.5
78E	175	165	—½	—½	62.5	58	2.0	2.0
75	75	75	—	—			½	½
18E	175	165	—	—	185	170	½	½

* Anode Grid to Cathode. † With local-distance "up" (off) position.

These voltages are taken with the local-distance switch in "down" (on) position.

75 Diode to Cathode (no sig.) ½ volt.



In Models 1280 and 280 which are used on 190-200 volt mains the following adjustments in wiring will give improved performance.

ON A.C. MAINS.—A 1 mfd condenser Part. No. 300-4006 should be connected in parallel with resistor marked 58 on Schematic diagram.

Remove the wire joining white tag on condenser 65 to green tag on condenser 63. Join with a wire the red and white tags on condenser 65. Remove black lead of choke 64 from the white tag on condenser 65 and connect to the green tag on 63.

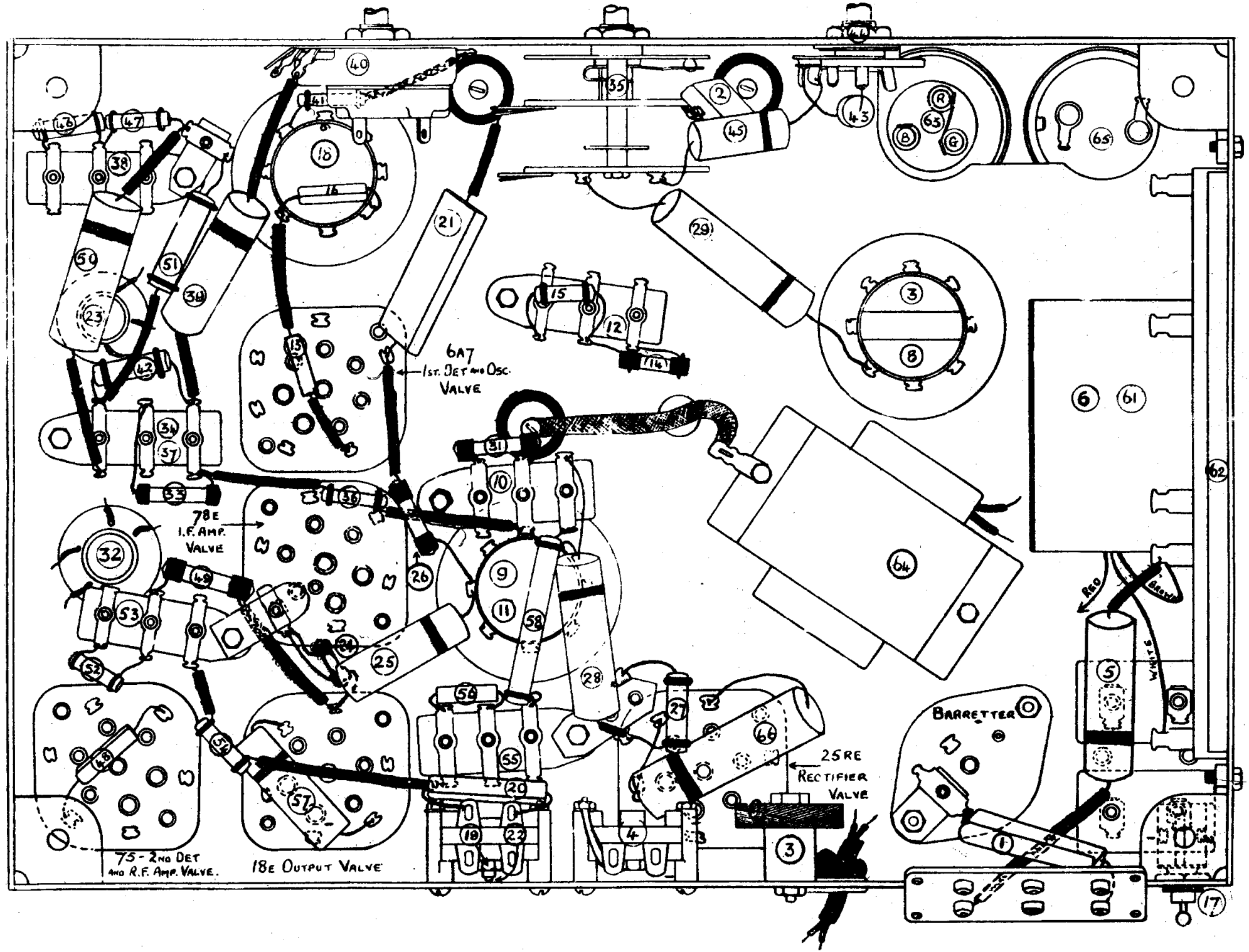
ON D.C. MAINS.—Connect 1 mfd condenser in parallel with 58 as for A.C. mains.

Remove white speaker lead from auxiliary grid of 18E valve and join this lead to the tinil cathode tags of the 25RE rectifier valve. Remove the wire joining white tag on condenser 65 to green tag on condenser 63. Join with a wire the red and white tags on condenser 65. Remove black lead of choke 64 from the white tag on condenser 65 and connect to the green tag of 63.

CIRCUIT SCHEMATIC. — MODEL 280.

I.F. 451 K.C.

NOTE. NUMBERS 31 AND 36, AND 46 AND 47 MAY BE MADE UP FROM PAIRS OF SERIES CONNECTED RESISTORS AS IN PARTS LIST, OR MAY COMPRISE SINGLE RESISTORS OF THE TOTAL VALUES INDICATED [2 MEGOHM - ·25 WATT = PART No. 33-1025; 1·5 MEGOHM - ·25 WATT - PART No. 33-1088]


6A7
1st. Det and Osc.
Valve
78
I.F. Amp.
Valve
75 - 2nd Det
and R.F. Amp. Valve.
18 Output Valve
25RE
Rectifier
Valve
Barretter
Red
Black
White

ADJUSTMENT OF MODEL 280

Before leaving the Factory all receivers are accurately adjusted, and no further adjustment should be attempted without instruction in the correct adjustment of the compensating condensers. This should only be carried out with the aid of an accurately calibrated Signal Generator, and for this purpose the PHILCO ALL-PURPOSE SET TESTER MODEL 048A is recommended.

Connect the Output Meter across the primary of the Output Transformer. Set the wave change switch to Medium waveband (middle position), and turn Gang Condenser to the H.F. (1500 kc.) position.

The Intermediate Frequency Padders (g, h, j, k) should first be adjusted, by feeding in a 451 kc. signal from the Signal Generator to the grid cap of the 6A7 valve. Adjust the Signal Generator attenuator to give a half scale reading on the Output Meter. Pad the I.F. Padders for a maximim reading on the Output Meter.

Transfer the Signal Generator lead to the Aerial socket, and pad Wave Trap (No. 4, page 3) for minimum reading.

Feed in a 1400 kc. signal, and set the Tuning Dial at 1400 kc. The Compensating Condenser situate in the top of the coil cans, numbers *b*, *d*, and *f*, should be padded to obtain a maximum signal. First adjusting "*f*" for the *first signal heard* as the adjustment is screwed down from minimum (fully unscrewed), then following with "*b*" and "*d*."

Feed in, and tune in a 600 kc. signal, roll gang and pad number 22 (screw) until satisfied no further gain can be obtained.

Throw wave change switch to Long Waves (anti-clockwise) and feed in and tune in a 290 kc. signal. Adjust padders numbers *a*, *c*, and *e* for maximum output, in the same manner respectively as for *b*, *d*, and *f*.

Feed in and tune in a 160 kc. signal, roll gang and pad number 19 (nut) until satisfied no further gain can be obtained.

Recheck at 290 kcs. and 160 kcs., and check calibration at 160 kcs.

PARTS LIST — MODEL 280

1.	Mica Condenser (1,000 mmf.) (green, white)	30-1007
2.	Mica Condenser (50 mmf.) (blue, white)	300-1003
3.	Wave Trap Inductance	38-6851
4.	Single Padding Condenser (35 mmf.)	31-6051
5.	Tubular Condenser (.1 mf.)	30-4122
6.	Tubular Condenser (.5 mf.), part of Filter Block (brown)	30-4329
7.	Gang Condenser Assembly (less Dial, etc.)	31-1567
8.	Aerial Transformer (1st Aerial)	32-1722
9.	Part of 11.	
10.	Moulded Condenser (.05 mf.)	3615 SU
11.	2nd Aerial Transformer	32-1723
12.	Moulded Condenser (.05 mf.)	3615 SU
13.	Resistor (51,000 ohms) (green, brown, orange)	6098
14.	Resistor (250 ohms) (red, green, brown)	330-1000
15.	Resistor (1,500 ohms) (brown, green, red)	7951
16.	Mica Condenser (50 mmf.) (blue, white)	300-1003
17.	Local-Distance Switch	420-1000
18.	Oscillator Transformer	32-1724
19.	Padding Condenser (double), Long Wave—150 kc. (nut)	31-6033
20.	Mica Condenser (250 mmf.) (yellow)	30-1032
21.	Mica Condenser (800 mmf.) (green, orange)	5878
22.	Padding Condenser (Double), Broadcast—600 kc. (screw)	31-6033
23.	1st I.F Transformer	32-1705
24.	Resistance (10,000 ohms) (brown, black, orange)	4412
25.	Tubular Condenser (.05 mfd.)	30-4020
26.	Resistance (10,000 ohms) (brown, black, orange)	4412
27.	Resistance (500 ohms) (green, black, red)	330-1002
28.	Tubular Condenser (.05 mfd.)	30-4020
29.	Tubular Condenser (.01 mfd.)	30-4169
30.	Condenser (.5 mfd.) (brown, red) part of Filter Block	30-4329
31.	Resistance (1 meg.) (brown, black, green)	33-1096
32.	2nd I.F. Transformer	32-1706
33.	Resistance (51,000 ohms) (green, brown, orange)	6098
34.	Moulded Condenser (100 mmfd.) (Double)	8035DU
35.	Wave Change Switch	420-1031 or 42-1115
36.	Resistance (1 meg.)	33-1096
37.	Condenser (blue, yellow)	8035DU
38.	Condenser (.01 mfd.) (Moulded)	3903 SU
39.	Tubular Condenser (03 mfd.)	30-4025
40.	Volume Control	33-5107
41.	Resistance (25,000 w.)	33-1013
42.	Resistance (330,000 w.)	33-1200
43.	Tubular Condenser (.01 mfd.)	30-4124
44.	Tone Control Switch	42-1117
45.	Tubular Condenser (.006 mfd.)	30-4125
46.	Resistance (1 meg.)	33-1096
47.	Resistance (490,000 w.)	6097
48.	Mica Condenser (110 mmfd.) (blue, yellow)	30-1031
49.	Resistance (70,000 w.)	5385
50.	Tubular Condenser (.1 mfd.)	30-4122
51.	Resistance (5,000 w.)	5310
52.	Resistance (240,000 w.)	4410
53.	Moulded Condenser	3903 SU
54.	Resistance (490,000 w.)	6097
55.	Moulded Condenser (.05 mfd.)	3615 SU
56.	Resistance (51,000 w.)	6098
57.	Tubular Condenser (3,000 mmf.)	30-4042
58.	Resistance (400 w.)	330-1001
59.	Output Transformer	320-7002
60.	Voice Coil and Cone	360-3002
	Complete Speaker with Output Transformer	360-1004
61.	Tubular Condenser (.25 mfd.), part of Filter Block Condenser (brown, white)	30-4329
62.	Resistance (1,800 w. x 25 w. x 25 w.), Candohm B.C. Resistor	33-3210
63.	Electrolytic (12 mfd.)	30-2030
64.	L F. Choke	320-7004
65.	Electrolytic (8 x 8 mfd.)	30-2028
66.	Tubular Condenser (.05 mfd.)	30-4012
67.	Fuses (1 ampere)	380-5003
68.	Pilot Lamp Bulbs	34-2068
	6-prong Valve Socket	27-6036
	7-prong Valve Socket	27-6037
	Valve Shield	28-2726
	Valve Shield Base	28-2725
	Grid Clip	28-2214
	Coil Shield Assembly	38-6894
	Barretter Socket	380-5002
	Bezel Plate	270-4009
	Tuning Knob and Spring Assembly	270-4013
	Knob and Spring Assembly (W C, Vol. and Tone Controls)	270-4011
	Knob Springs	280-5262

Philco Radio Service Bulletin No. 33

Published by the Philco Radio & Television Corporation of Great Britain, Ltd., Perivale, Greenford, Middlesex

Models 1280, 280 and 1280 Radiograms (Run 4)

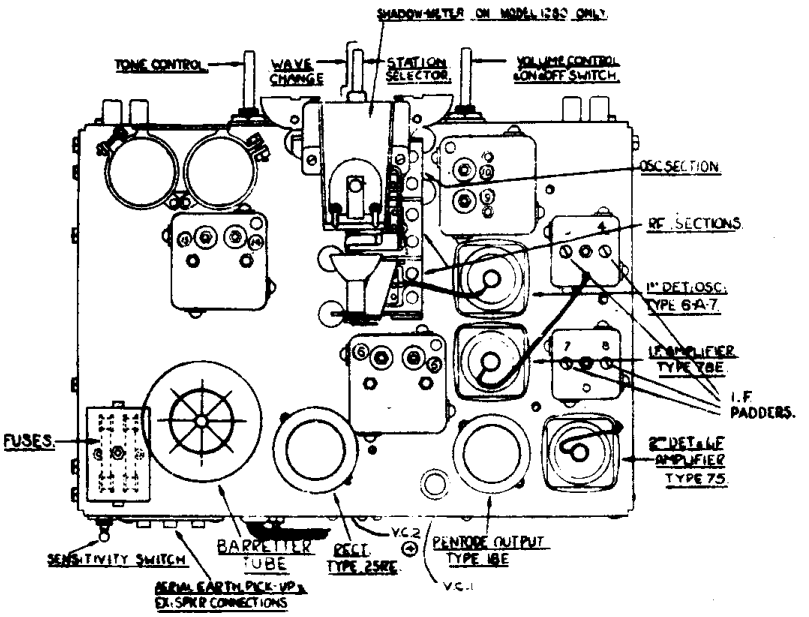
The Models 1280 and 280 are five valve, dual-wave Superheterodyne Receivers, designed for operation on the Broadcast and Long wavebands. The Long wavelength coverage is from 150-350 kc. (2,000-858 metres), and the Medium wavelength from 540-1,510 kc. (560-198 metres).

The circuits are so arranged that connection may be made to either A.C. or D.C. mains without discrimination or adjustment. The circuit is independent of mains periodicity and has the unusual feature of being suitable for any voltage from 195-270 volts without alteration.

The receivers employ the 25RE rectifying valve with its low internal resistance. The anodes are paralleled, and the valve is used as a half wave rectifier on A.C., and as a resistance on D.C.

The local oscillatory signal is generated in a 6A7 pentagrid valve, where also the signal from the aerial is detected, and the resultant beat frequency of 451 kc. is amplified and passed to a type 78E valve for further amplification, ultimately being rectified at the diode elements of the type 75 duo-diode-triode.

The resultant A.F. signal passes through the volume control to the grid of the high amplification triode section of the 75 valve, and thence to the type 18E Pentode valve, which has an output of 3 watts.



The D.C. voltage developed across the diode load resistance is filtered free of the A.F. signal and fed back to the signal input grids of the 6A7 and 78E valves, thus giving full Automatic Volume Control.

A complete and fully filtered self-biasing system is incorporated to remove the possibility of mains hum and mains "mush."

A Local-distance switch is fitted, which by reducing sensitivity gives an improved signal-to-noise ratio in unfavourable localities.

On Models 280 and 1280 additional terminals are provided for extra speaker, the terminal impedance being 2 ohms. Pickup terminals are also provided. The tone control has three positions which provide for Normal, Bass compensation on low volume, and Treble cut-off.

In the Radiograms additional terminals are provided for extra speaker, the terminal impedance being 2 ohms, and these with A. and E. sockets are brought out to the back of the cabinet.

The Tone control is continuously variable to provide for Normal, Bass Compensation on low volume, and Treble cut-off.

Model 1280 Radiogram is provided with a universal AC/DC motor.

Model 1280x Radiogram is provided with an A.C. (only) motor AND MUST ONLY BE USED ON A.C. MAINS.

The Barretter valve is mounted on the base of the cabinet, connection being made by means of a lead with plug attached which is inserted into the Barretter socket on the chassis.

Philco high efficiency valves are used. 1 6A7 as Detector oscillator; 1 75 as 2nd Detector and 1st I.F. amplifier; 1 78E as I.F. amplifier; 1 18E as output amplifier; 1 25RE as rectifier; 1 301 as Barreter.

TABLE 1.

A.C. LINE—240 volts, 50 cycles. D.C. LINE—240 volts.

Valve socket voltage readings as taken with 099 Set Tester, using 200 volt range. Volume control at maximum, no aerial connected.

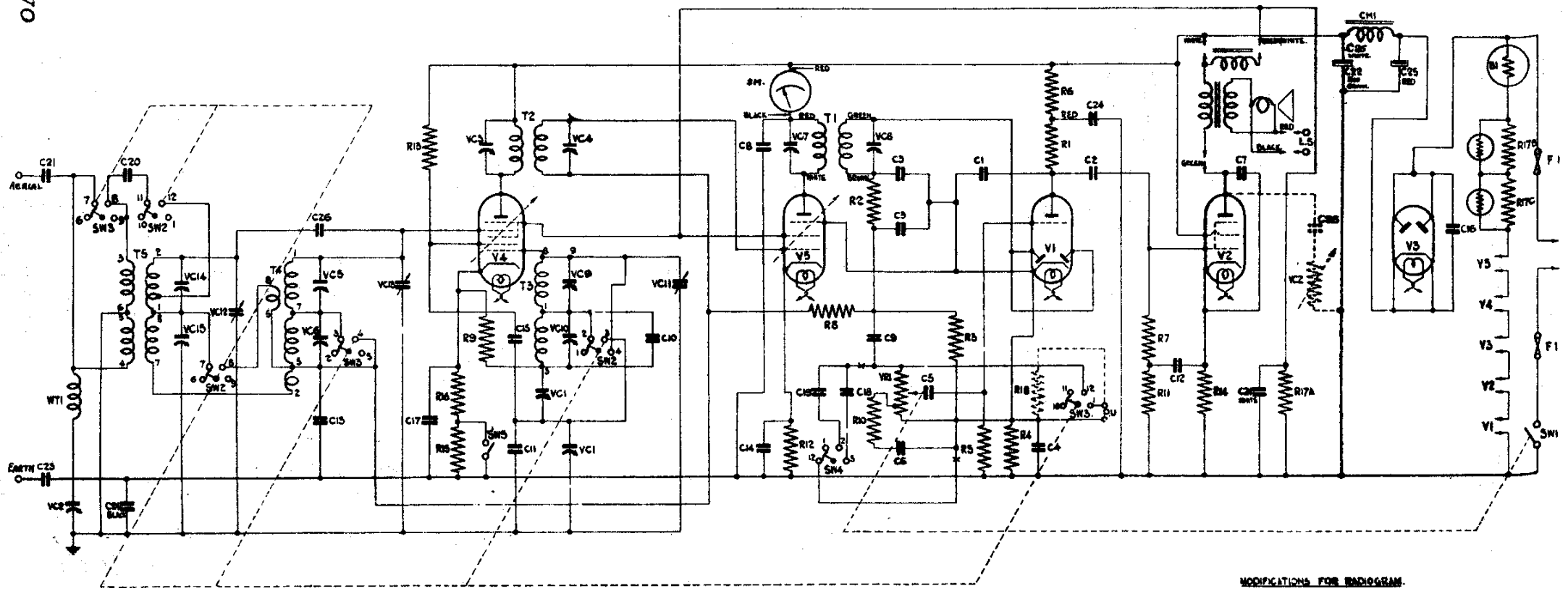
Valve	Anode/Cathode		Suppr. Grid/Cathode		Screen/Cathode		Cont. Grid/Cathode	
	AC	DC	AC	DC	AC	DC	AC	DC
6A7	195 165*	185	—	—	63	60	6.5† 1.5	†6 1.5
78E	175	165	—½	—½	62.5	58	2.0	2.0
75	75	75	—	—			½	½
18E	175	165	—	—	185	170	½	½

* Anode Grid to Cathode.

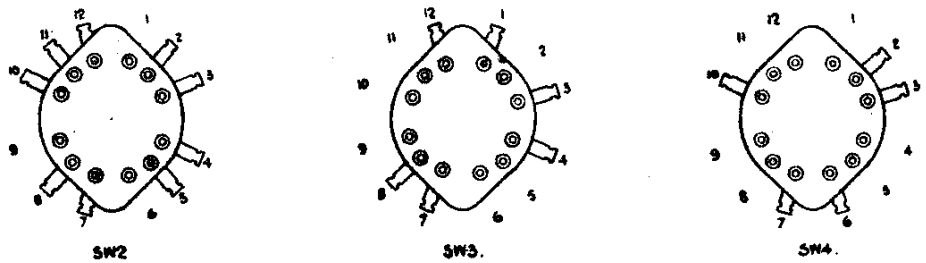
† With local-distance "up" (off) position.

These voltages are taken with the local-distance switch in "down" (on) position.

75 Diode to Cathode (no sig.) ½ volt.



MODIFICATIONS FOR RADIOGRAM.
(1) DOTTED CIRCUITS ADDED.
(2) TONE CONTROL CIRCUIT BETWEEN POINTS MARKED X REMOVED.



VIEWS OF SWITCHES FROM FRONT.
CHASSIS BEING UPSIDE DOWN.

ADJUSTMENT OF MODELS 1280, 280 and 1280 RADIOGRAMS.

Before leaving the Factory all receivers are accurately adjusted, and no further adjustment should be attempted without instruction in the correct adjustment of the compensating condensers. This should only be carried out with the aid of an accurately calibrated Signal Generator, and for this purpose the PHILCO ALL-PURPOSE SET TESTER MODEL 099 is recommended.

Connect the Output Meter across the primary of the Output Transformer. Set the wave change switch to Medium waveband (middle position), and turn Gang Condenser to the H.F. (1,500 kc.) position.

The Intermediate Frequency Padders (VCs. 3, 4, 7 and 8) should first be adjusted, by feeding in a 451 kc. signal from the Signal Generator to the grid cap of the 6A7 valve. Adjust the Signal Generator attenuator to give a half scale reading on the Output Meter. Pad the I.F. Padders for a maximum reading on the Output Meter.

Transfer the Signal Generator lead to the Aerial socket, and pad Wave Trap (VC. 2) for minimum reading.

Feed in a 1,400 kc. signal, and set the Tuning Dial at 1,400 kc. The Compensating Condenser situate in the top of the coil cans, numbers VCs. 15, 6 and 9, should be padded to obtain a maximum signal. First adjusting VC. 9 for the *first signal heard* as the adjustment is screwed down from minimum (fully unscrewed), then following with VCs. 15 and 6

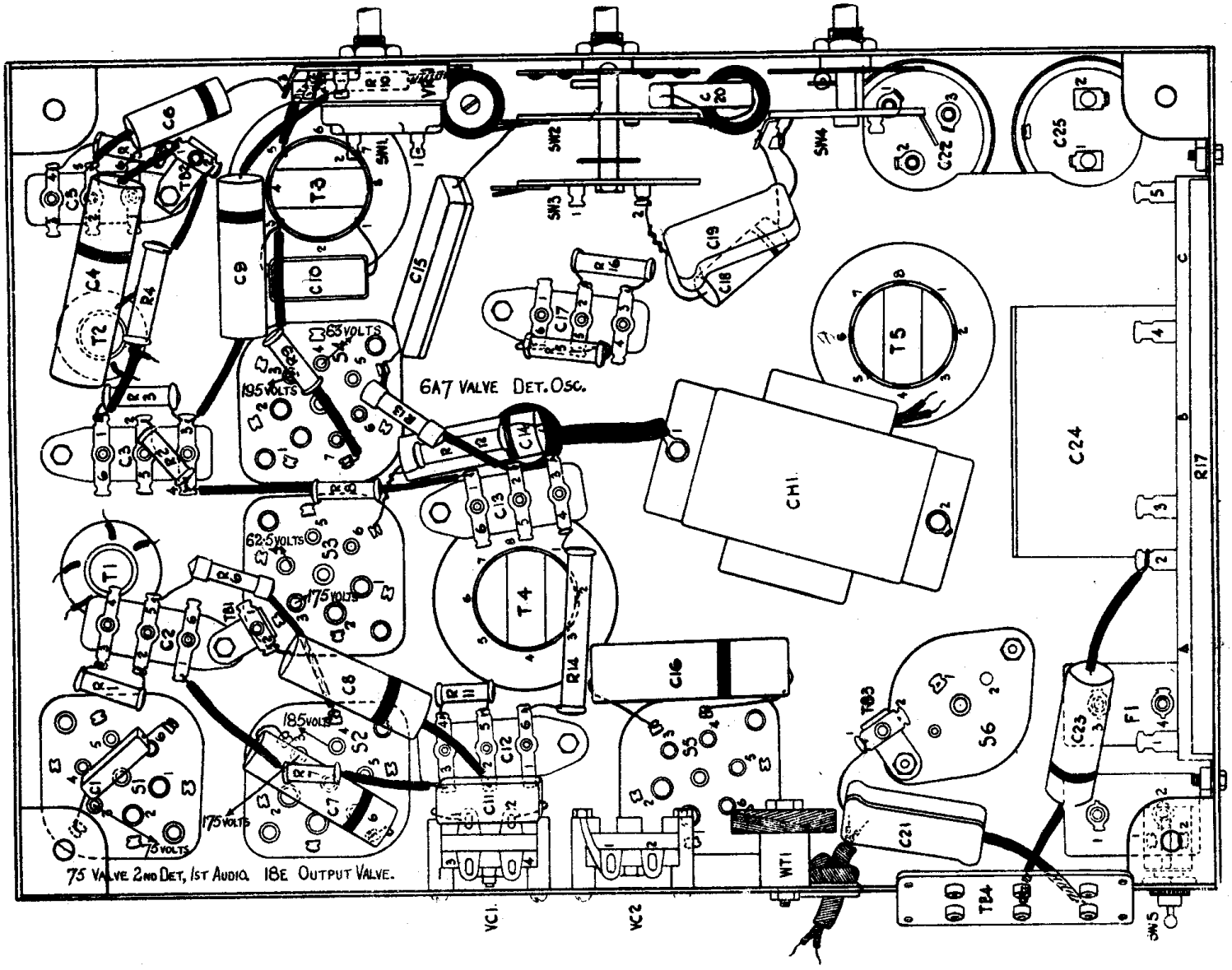
Feed in, and tune in a 600 kc. signal, roll gang and pad VC. 1 (screw) until satisfied no further gain can be obtained. Check 1,400 kc.

Throw wave change switch to Long Waves (anti-clockwise) and feed in and tune in a 290 kc. signal. Adjust padders VCs. 14, 5 and 10 for maximum output, in the same manner respectively as for VCs. 15, 6 and 9.

Feed in and tune in a 160 kc. signal, roll gang and pad VC. 1 (nut) until satisfied no further gain can be obtained.

Recheck at 290 kcs. and 160 kcs., and check calibration at 160 kcs.

The VC. numbers in this Procedure refer to those shown on the top chassis lay-out diagram on page 1.



VOLTAGES MARKED ARE FOR A.C WORKING.

PARTS LIST FOR MODELS 280 and 1280.

MOULDED CONDENSERS.

C2.	.01uf	3903 SU
C3.	.00011uf	8035 DU
C5.	.01uf	3903 SU
C12.	.05uf	3615 SU
C13.	.05uf	3615 SU
C17.	.05uf	3615 SU

TUBULAR CONDENSERS.

C4.	.1uf	30-4122
C6.	.01uf	30-4124
C7.	.0003uf	30-4042
C8.	.05uf (not used in Model 280)	30-4020
C9.	.03uf	30-4025
C14.	.05uf	30-4020
C16.	.05uf	30-4012
C18.	.006uf	30-4125
C23.	.1uf	30-4122

MICA CONDENSERS.

C1.	110uuf	300-1012
C10.	50uuf	300-1003
C11.	250uuf	300-1014
C15.	800uuf	300-1005
C19.	2,500uuf	300-1008
C20.	50uuf	300-1003
C21.	1,000uuf	300-1016

RESISTORS.

R1.	240,000 w, ½ watt, Red, yellow, yellow...	4410
R2.	51,000 w, ½ watt, Green, brown orange	6098
R3.	330,000 w, ½ watt, Orange, orange, yellow	33-1200
R4.	5,000 w, ½ watt, Green, black, red ...	5310
R5.	1.5 meg, ½ watt, Brown, green, green	33-1188
R6.	70,000 w, ½ watt, Purple, black, orange	5385
R7.	490,000 w, ½ watt, Yellow, white, yellow	6097
R8.	2 meg, ½ watt, Red, black, green ...	33-1025
R9.	51,000 w, ½ watt, Green, brown, orange	6098
R10.	25,000 w, ½ watt, Red, green, orange...	4516
R11.	51,000 w, ½ watt, Green, brown, orange	6098
R12.	500 w, ½ watt, Green, black, brown	330-1002
R13.	10,000 w, ½ watt, Brown, black, orange	4412
R14.	400 w, 1 watt, Yellow, black, brown	330-1001
R15.	1,500 w, ½ watt, Brown, green, red ...	7951
R16.	250 w, ½ watt, Red, green, brown...	330-1000
R17.	CANDOHM, B.C. RESISTOR—1,800 w. x 25 w. x 25 w	33-3210
R18.	10,000 w, ½ watt Brown, black, orange	33-1000

MISCELLANEOUS PARTS.

C24.	Filter Block, .5uf x .25uf x .5uf ...	30-4329
C22.	Electrolytic Condenser—12uf (joined)	30-2030
C25.	Electrolytic Condenser—8 x 8uf ...	30-2028
	Gang Condenser	31-1567
CH1.	Choke	320-7004
VR1. SW1.	Volume Control and Switch	33-5107
SW2 & 3.	Wavechange Switch	420-1001
SW4.	Tone Control Switch...	42-1117
WT1.	Wave Trap Inductance	38-6851
VC1.	Double Padding Condenser—375 and 250uuf	31-6033
VC2.	Single Padding Condenser—35uuf ...	31-6051
PT1.	Fuses	380-5019
SW5.	Sensitivity Switch	420-1000
T2.	1st IF.. Transformer	32-1705
T1.	2nd I.F. Transformer...	32-1706
TB4.	Aerial-Earth-Speaker Panel	270-7033
T5.	Aerial Input Transformer	32-1722
T4.	2nd Aerial Transformer	32-1723
T3.	Oscillator Transformer	32-1724
	Dial Scale	270-5012
	Pilot Lamp Bulb	34-2068
S6.	Barretter Valve Socket	380-5002
S1.	75 Valve Socket	27-6036
S2.	18E Valve Socket	27-6036
S3.	78E Valve Socket	27-6036
S4.	6A7 Valve Socket	27-6037
S5.	25RE Valve Socket	27-6036
	Valve Shield	28-2726
SM.	Shadowmeter (not on Model 280) ...	450-2001
	Complete Speaker	360-1004

ADDITIONAL PARTS FOR MODELS 1280 RADIOGRAMS.

VR2.	Variable Resistor for Tone Control ...	330-5001
C26.	.015uf Condenser	3793 SU

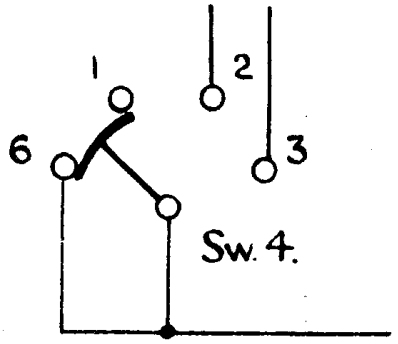
	Barretter Adaptor	380-5011
	Barretter Socket	270-4019
	Universal Motor, Turntable and Pickup Complete	350-2001
	A.C. Motor Complete	350-2002

PLEASE ATTACH THIS SHEET TO
RADIO SERVICE BULLETIN No.33.

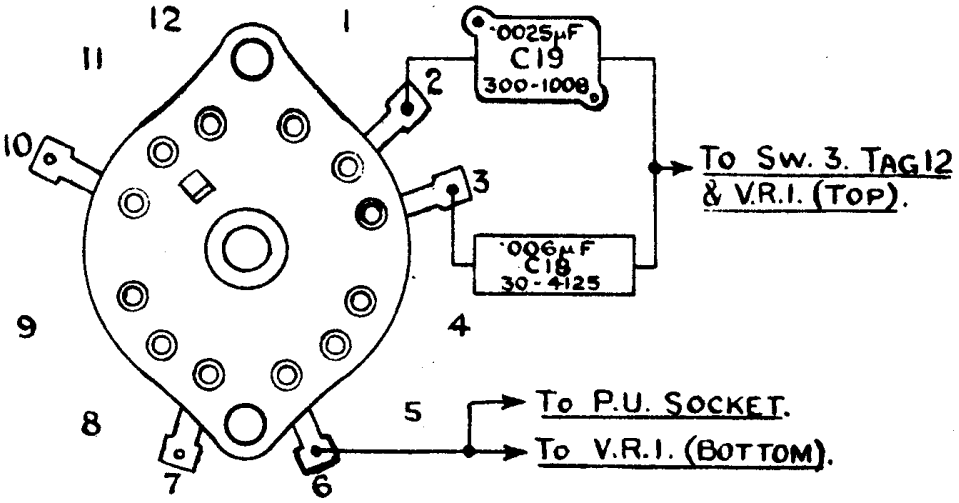
— MODELS 280 & 1280. —

WIRING OF ALTERNATIVE TONE CONTROL SWITCHES.

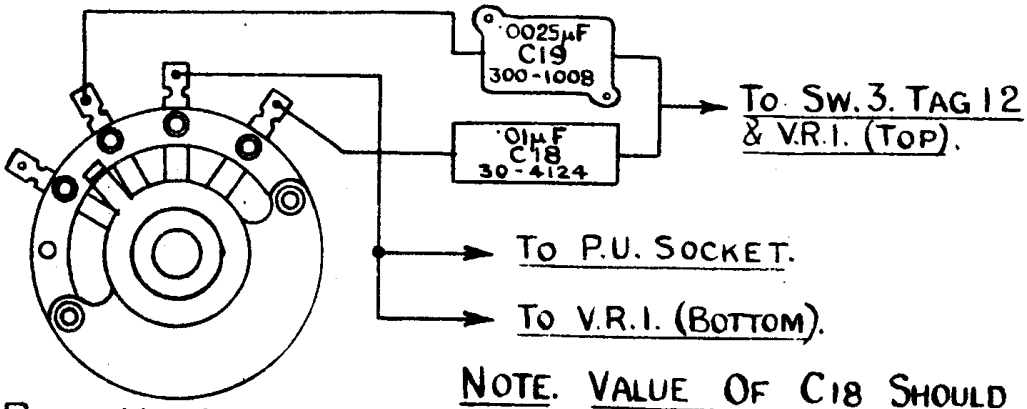
REFER TO RADIO SERVICE BULLETIN No. 33.



CIRCUIT DIAGRAM. CORRECT TAG NUMBER & WIRING OF SW. 4. AS ABOVE.
PARTS LIST. CORRECT PART No. OF SW.4. TO READ :-
420-1006 OR 42-1117.

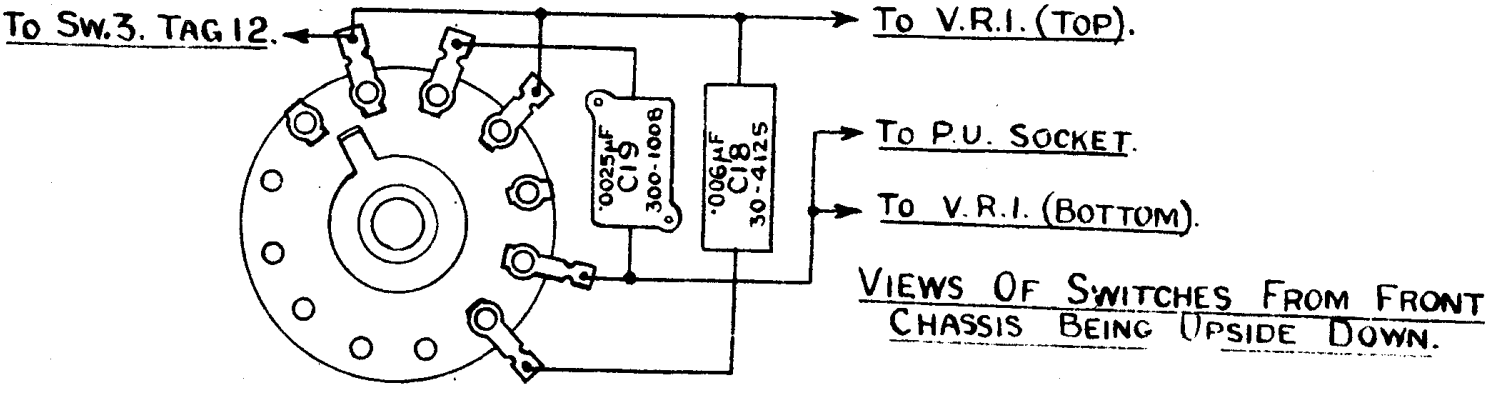


Sw.4. PART No. 420-1006.



Sw. 4. PART No. 42-1117.

NOTE. VALUE OF C18 SHOULD BE INCREASED WITH THIS ARRANGEMENT.



VIEWS OF SWITCHES FROM FRONT CHASSIS BEING UPSIDE DOWN.

Sw. 4. PART No. 420-1002.