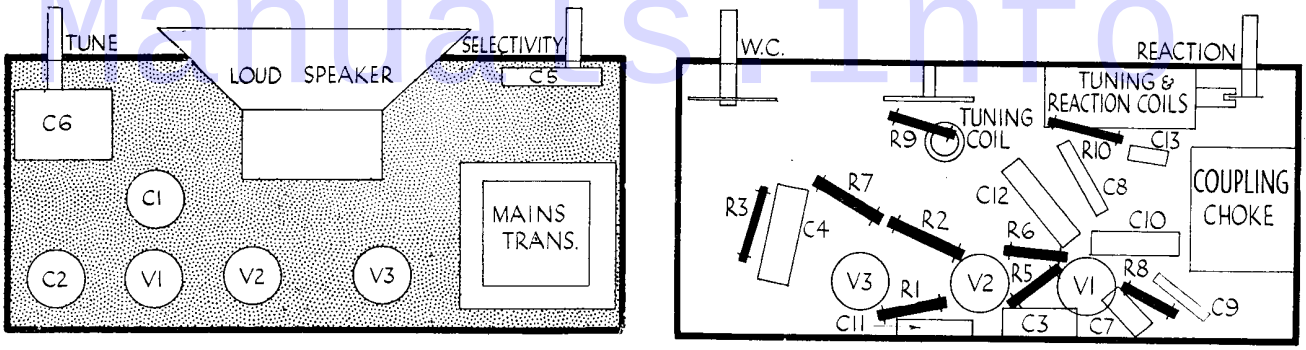
CHASSIS LAYOUTS OF PHILIPS MODEL 940A RECEIVER



These diagrams show (left) the arrangement of parts on the top of the Philips chassis, and (right) the "below-deck" design.

TELSEN SIX-VALVE SUPERHET

CIRCUIT.—The H.F. valve (V1) is preceded by a tuned secondary aerial transformer, which is iron cored. Bias is controlled from the full A.V.C. line and is limited by a cathode resistance. Coupling to the next valve is by a second iron-cored H.F. transformer, and tuning indication is effected by a meter in series with the anode lead.

The combined detector-oscillator valve (V2), is an H.F. pentode-triode and uses cathode injection. The coupling includes a harmonic stopper (R7) in the grid circuit of the oscillator section.

This valve is also capable of superimposing the output from a gramophone pick-up on the I.F.

Coupling to the next valve is by band-pass I.F. transformer, and bias is by A.V.C. and cathode resistance.

The I.F. valve, A.C./VP1 met. (V3), is biased from a point of lower A.V.C. potential and by cathode resistance. It is followed by a second I.F. transformer.

A V914 (V4) high-voltage double-diode without a triode element is the detector. The A.V.C. diode is fed through a condenser from the anode of V3, and potentials

(*Continued on next page.*)

QUICK TESTS

If an H.F. signal is applied; the visual tuning indicator shows if the H.F. stages are working.

Voltages between the following terminals on the output transformer and chassis (no signal) are:—

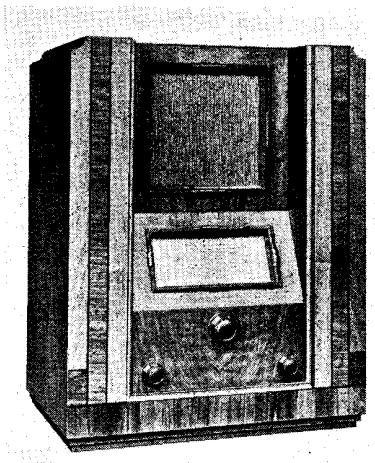
Left (1) grey with yellow-red tracer, H.T. smoothed, 395 volts.
(2) Yellow, output valve anode, 250 volts.
(3) Red, H.T. smoothed, 270 volts.

VALVE READINGS

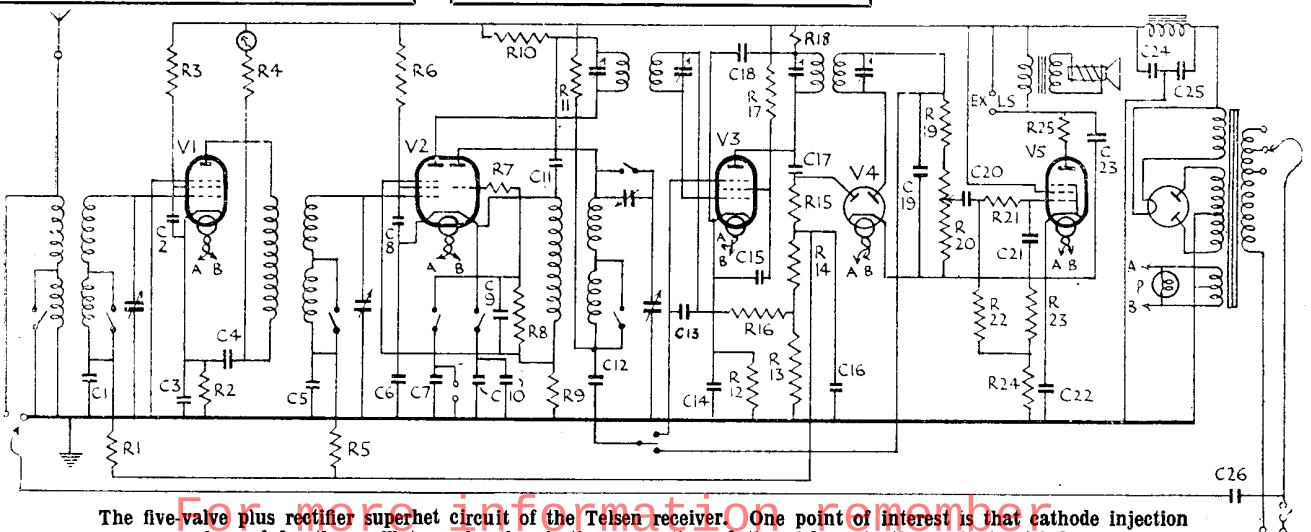
No signal.

V.	Type.	Electrode.	Volts.	M/a.
1	AC/VP1met. (7)	anode ...	160	.6
		aux.grid	200	
2	AC TP met. (9)	anode ...	220	*
		aux. grid	205	*
		osc.anode	105	*
3	AC/VP1 met.(7)	anode ...	270	1.1
		aux. grid	200	
4	V914 (5) ...	—	—	—
5	A.C. 2 Pen. ...	anode ...	250	42
		aux. grid	270	10

* The inclusion of meter leads causes erroneous readings.

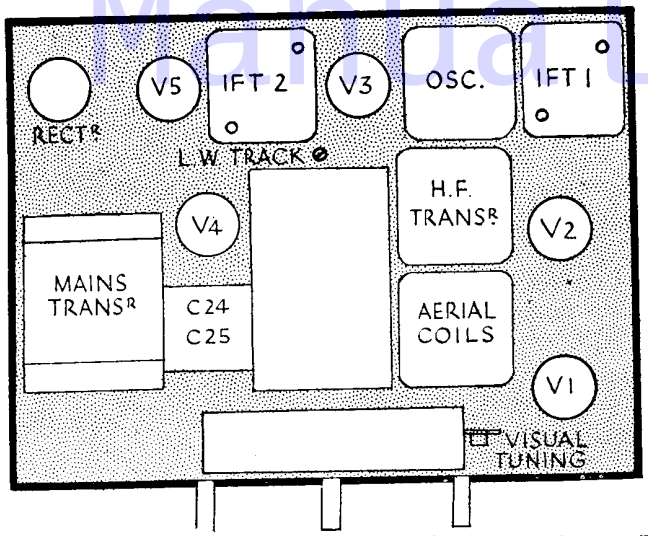


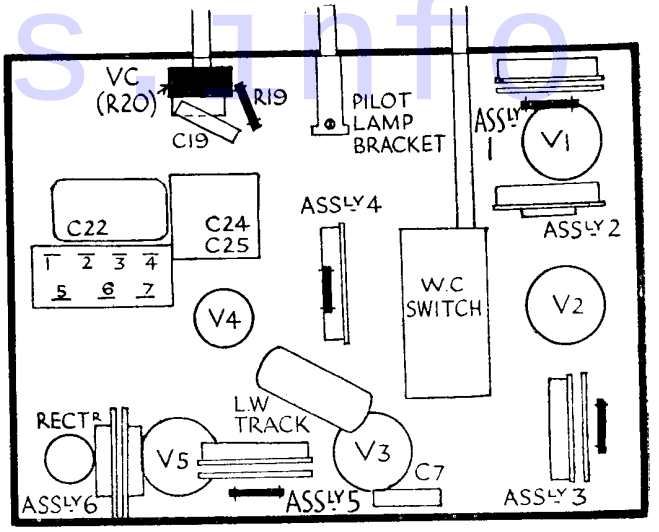
This set was introduced by Telsen for the 1934-5 season. These service notes will be found all the more valuable as the original manufacturing company is no longer in existence.



The five-valve plus rectifier superhet circuit of the Telsen receiver. One point of interest is that cathode injection is used for the oscillator. Another is the connection of the pick-up to the oscillator triode.

TELSEN SIX-VALVE SUPERHET (Continued)





Above are the two chassis diagrams for the Telsen receiver. Below are detail diagrams showing the components contained in the assemblies indicated on the under-chassis diagram.

are obtained from a load potentiometer consisting of R13, R14 and R15.

The L.F. diode anode is coupled to the output valve by a potentiometer volume control which forms the load, a condenser and a grid leak.

The output pentode (V5) has an H.F. stopper in the grid circuit. A tone compensating condenser is connected between grid and cathode, as well as a condenser between anode and cathode. Bias is obtained from a potentiometer (R23 and R24) in the cathode lead, the grid return being taken to the tapping. The full voltage drop across R23 and R24 is the delay bias on the A.V.C. diode.

Mains equipment consists of transformer, full-wave rectifier, and the L.S. field in the positive H.T. lead for smoothing with two 8-mfd. condensers.

Special Notes.—The pilot lamps can be removed by undoing the screw seen through the aperture in the bottom of the cabinet and lifting the bracket out complete.

Removing Chassis.—Remove knobs (grub screw), four long screws from underneath cabinet, and slide chassis out.

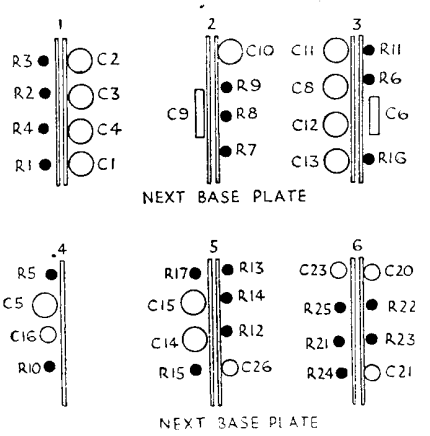
General Notes.—The fact that the screen of the sleeving to V3 anode touches the metal coating of the valve does not mean that the cathode bias resistance is short-circuited. The metal coating is actually earthed.

The resistance and condenser R.18 and C18, decoupling V.3 anode, may not be found in all models.

Mains transformer terminals (see diagram) are as follows :—

1 and 2, rectifier heater,
3 and 4, set heaters.
5 and 7, rectifier anodes,
6, C.T. to chassis.

The only difficulty in recognising the components is likely to occur in connection with the arrangement of the condenser and resistance assemblies. The wiring is not always as straightforward as it appears to be.



ALIGNMENT NOTES

I.F. Circuits. — Connect modulated oscillator to grid cap of V2 through a .0002 mfd. condenser and connect the grid to chassis through a quarter megohm resistor. Connect anode of oscillator section to chassis through a .25 mfd. "swamp" condenser.

Inject at 110 kc. and adjust I.F. transformers for maximum keeping signal below A.V.C. level.

Remove the grid leak and "swamp" condenser and replace grid lead.

Medium-wave Band.—Connect modulated oscillator to aerial and earth of receiver and tune it and set to 200 metres.

Adjust three trimmers on gang condenser, starting with the oscillator (rear section) for maximum.

Tune oscillator and receiver to 500 metres and readjust trimmers for maximum.

Long-wave Band.—Tune oscillator and set to 950 metres and trim long-wave padding condenser for maximum. Repeat at 2,000 metres.

CONDENSERS

C.	Purpose.	Mfd.
1	Decoupling A.V.C. to V1	.1
2	V1 aux. grid by-pass	.1
3	V1 cathode by-pass	.1
4	V1 anode decoupling	.1
5	Decoupling A.V.C. to V2 ...	.1
6	V2 cathode by-pass	.00085
7	Across P.U. leads	.003
8	V2 aux. grid by-pass	.1
9	V2 osc. grid	.0003
10	V2 cathode	.1 + .1
11	V2 anode decoupling	.1
12	V2 osc, anode decoupling ...	.1
13	V3 grid decoupling	.1
14	V3 cathode by-pass	.1
15	V3 aux. grid by-pass	.1
16	H.F. decoupling of A.V.C. ...	.0005
17	I.F. feed to A.V.C. diode ...	.0001
18	V3 anode decoupling	.1
19	H.F. by-pass from diode ...	.0002
20	L.F. coupling V4 to V5 ...	.005
21	Tone compensating V5 grid ...	.0002
22	V5 cathode by-pass	2
23	Tone compensating V5 anode	.001
24	H.T. smoothing	8 el.
25	H.T. smoothing	8 el.
26	Mains aerial	.005

RESISTANCES

R.	Purpose.	Ohms.
1	Decoupling V1 grid from A.V.C. line	1 meg.
2	V1 cathode bias	300
3	Voltage dropping to V1 aux. grid	25,000
4	Decoupling V1 anode ...	10,000
5	Decoupling V2 grid from A.V.C. line	1 meg.
6	Voltage dropping to V2 aux. grid	25,000
7	Harmonic suppressor, V2 osc. grid	2,000
8	V2 osc. grid leak	50,000
9	V2 cathode bias	500
10	Decoupling V2 anode ...	5,000
11	Decoupling V2 osc. anode ...	50,000
12	V3 cathode bias	300
13	Part of A.V.C. bias ptr. ...	1 meg.
14	Part of A.V.C. bias ptr. ...	.5 meg.
15	Part of A.V.C. bias ptr. ...	.2 meg.
16	Decoupling A.V.C. to V3 ...	1 meg.
17	Voltage dropping to V3 aux. grid	25,000
18	Decoupling V3 anode ...	5,000
19	H.F. stopper and part of diode load	100,000
20	Diode load and V.C. ptr. ...	.5 meg.
21	H.F. stopper V5 grid	200,000
22	V5 grid leak	.8 meg.
23	V5 cathode bias ptr.	150
24	V5 cathode bias ptr.	500
25	V5 anode stabiliser	150