# TELSEN 3435

*Five-valve, plus rectifier, two waveband superhet with moving-iron type of tuning indicator. Provision is made for a pickup and a high resistance external loudspeaker. The same model number is used for two table receivers (3435 M/V, 3435 M/H), a radiogram and an autoradiogram. Suitable for AC mains 200–250 v, 40–100 cycles. Marketed by Telsen Electric Co., Ltd., in 1934.*

AERIAL signals are fed *via* L1 (MW) and L2 (LW) to the tuning coils L3 (MW), L4 (LW) which are in the grid circuit of the variable-mu high-frequency pentode V1. This valve has AVC applied to it, but permanent bias is also derived from the cathode resistor R3 decoupled by C3.

An HF transformer in the anode circuit L5, L7 (MW), L6, L8 (LW) transfers the signals to the mixer grid of the frequency-changer V2.

In the anode circuit of V1 is a moving-iron type of tuning indicator which responds to the varying anode current, which in turn responds to the bias on the grid of the valve derived from the AVC line.

The oscillator section of V2 incorporates tuned anode circuits L11 (MW), L12 (LW) tuned by VC3 section of the ganged condenser, while feed-back is established through coils L9, L10 in the cathode circuit.

The pickup input is fed to the grid of the triode section of V2 for preliminary low frequency amplification. The signals are resistance capacity coupled by R11 and C13 to the volume control R20 and thence to the output valve. On radio C13 is shorted to chassis and the pickup circuit opened up.

## RESISTORS

| *R* | *Ohms* | *R* | *Ohms* |
|---|---|---|---|
| 1 | 1 meg | 14* | 5,000 |
| 2 | 25,000 | 15 | 300 |
| 3 | 300 | 16 | 100,000 |
| 4 | 10,000 | 17 | 200,000 |
| 5 | 1 meg | 18 | 500,000 |
| 6 | 25,000 | 19 | 1 meg |
| 7 | 5,000 | 20 | 500,000 |
| 8 | 2,000 | 21 | 800,000 |
| 9 | 50,000 | 22 | 200,000 |
| 10 | 500 | 23 | 150 |
| 11 | 50,000 | 24 | 150 |
| 12 | 1 meg | 25 | 500 |
| 13 | 25,000 | | |

* May be omitted in some chassis in which case V3 readings will be higher than those in valve table.

The intermediate frequency signals from V2 are coupled by the IF transformer L13, L14 to the grid of the variable-mu pentode V3.

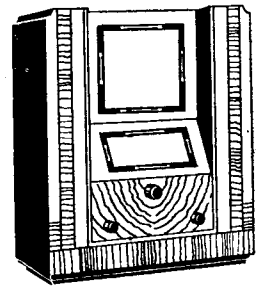
V3 is AVC controlled, but also has a minimum bias provided by the cathode resistor R15.

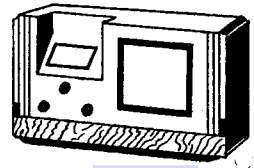
A second IF transformer L15, L16 passes on the signal to one of the diodes of the double diode V4. IF filtering is effected by R16, C18, the signal load being the volume control R20.

The diode of V4 for automatic volume control is fed from the anode of V3 *via* C20. The AVC load being R17, R18, R19, V1 and V2 have most AVC bias applied to them, while V3 derives less bias from the junction of R18, R19.

The LF signals from the volume control R20 are fed *via* C21 and R22 to the grid of the output pentode V5. Grid bias is derived from a tapping point on the cathode biasing resistances R24, R25, the full cathode bias being used for delay volts on the V4 cathode.

*Continued overleaf*





**These drawings will identify two receivers produced by Telsen back in 1934. The same chassis is housed in two cabinet versions, both distinguished by a tilted tuning dial. The vertical model is the 3435M/V and the horizontal the 3435M/H**

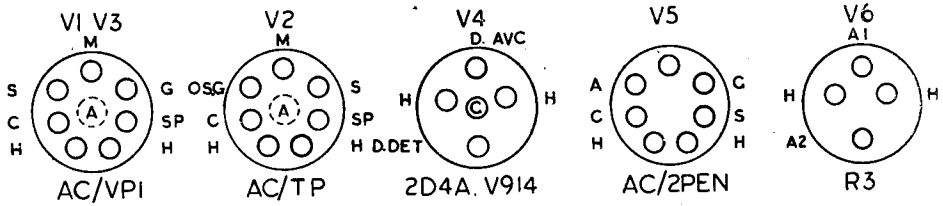
## CONDENSERS

| *C* | *Mfds* | *C* | *Mfds* |
|---|---|---|---|
| 1 | .1 | 12 | .0005 |
| 2 | .1 | 13 | .1 |
| 3 | .1 | 14 | .1 |
| 4 | .1 | 15* | .1 |
| 5 | .1 | 16 | .1 |
| 6 | .1 | 17 | .1 |
| 7 | .00085 | 18 | .0002 |
| 8 | .1 | 19 | 2 |
| 9 | .003 | 20 | .0001 |
| 10 | .0003 | 21 | .005 |
| 11† | .2 | 22 | .0002 |
| | | 23 | .001 |
| | | 24 | 8 |
| | | 25 | 8 |
| | | 26 | .005 |

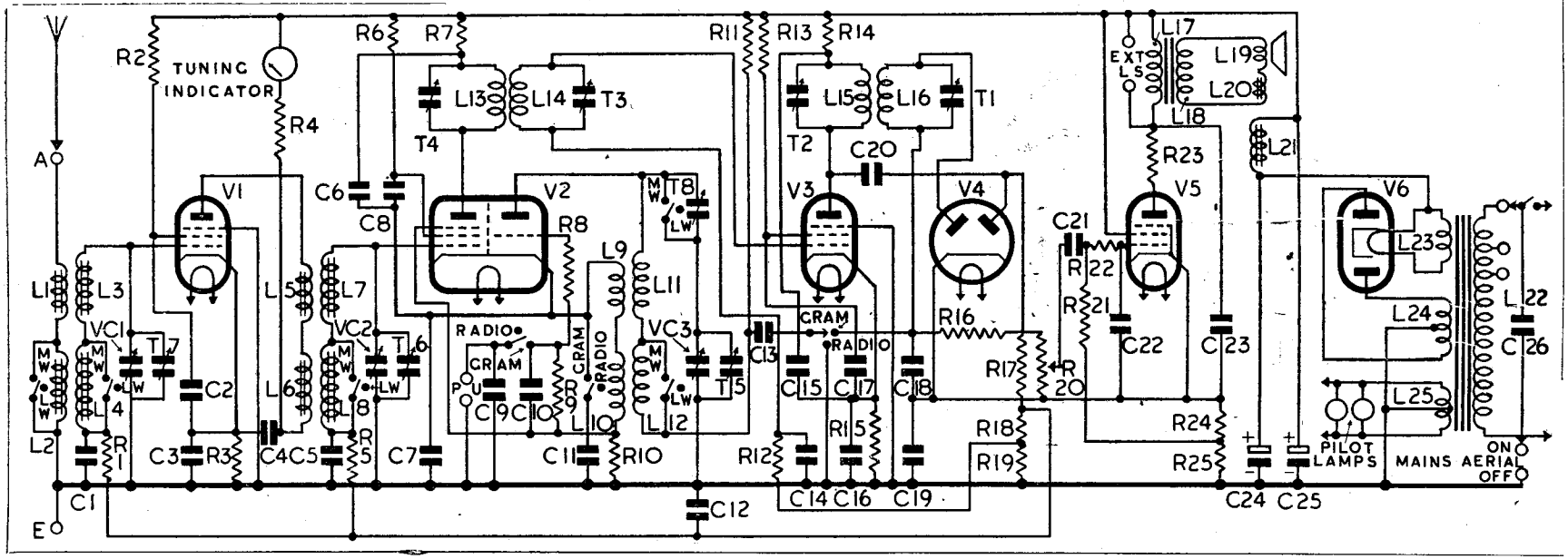
* May be omitted in some chassis.
† Two .1 mfd condensers in parallel.

## WINDINGS

| *L* | *Ohms* |
|---|---|
| 1 | 1.25 |
| 2 | 1.5 |
| 3 | 2.5 |
| 4 | 10.5 |
| 5 | 1.25 |
| 6 | 1.5 |
| 7 | 2.5 |
| 8 | 10.5 |
| 9 | 1.25 |
| 10 | 1.5 |
| 11 | 6 |
| 12 | 23 |
| 13 | 65 |
| 14 | 65 |
| 15 | 65 |
| 16 | 65 |
| 17 | 600 |
| 18 | .5 |
| 19 | 1.7 |
| 20 | .2 |
| 21 | 1,400 |
| 22 (total) | 25 |
| 23 | .1 |
| 24 (total) | 320 |
| 25 | .1 |
| Tuning Indicator | |




**Left, diagram identifying the pins of the valves as seen with the set inverted.**



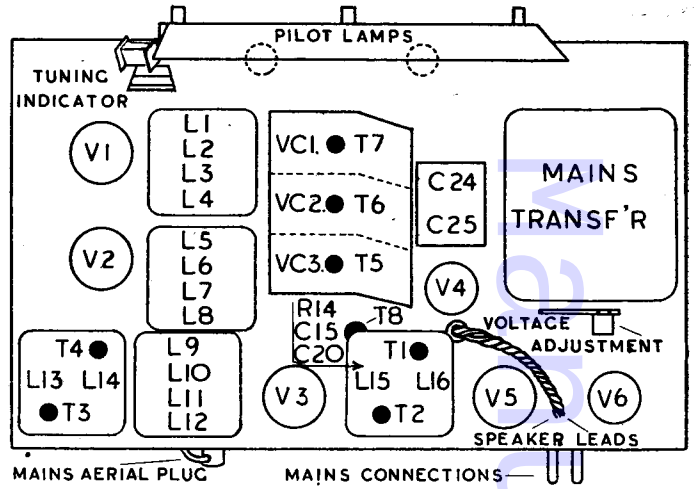

Features of the circuit are the use of a radio-frequency amplifier in front of the frequency-changer and of a double-diode directly feeding a high-slope output pentode.

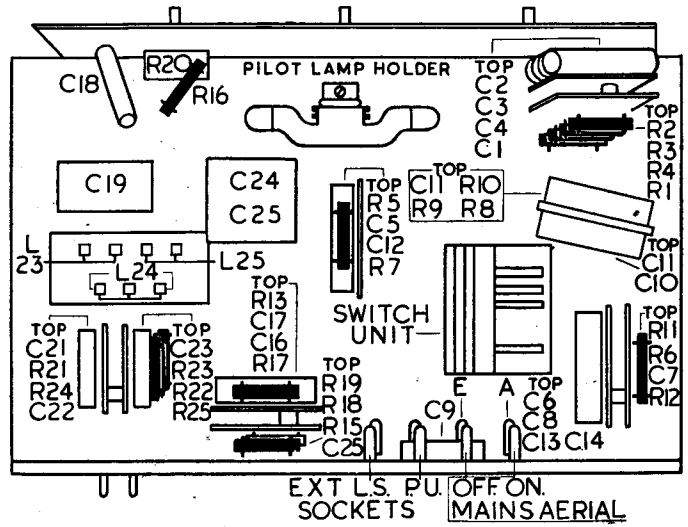
## TELSEN 3435—*Contd.*

V5 is coupled to the moving-coil energised loudspeaker by the output transformer L17, L18. A permanent degree of tone correction is effected by C23, and extra loudspeaker sockets for a high-resistance speaker are connected across L17.

The high and low tensio supply circuits follow the usual arrangement of a full-wave rectifier V6 with smoothing by the field winding L21, C24 and C25. A mains aerial device comprises C26, which may be connected to the aerial socket or to an "off" socket which earths the condenser, thus providing an HF filter for mains-borne interference.

If noise is troublesome, an improvement can sometimes be effected by reversing the mains plug.




### GANGING

**IF Circuits.**—Prevent the V2 oscillator section from working by connecting a .25 mfd condenser between oscillator anode and chassis.

Inject a 110 kc signal *via* a .0002 mfd condenser to the control grid of V2 with a .25 meg resistance between grid cap and chassis.

Adjust T1, T2, T3 and T4 for maximum output.

**MW Band.**—Check the tuner cursor by rotating gang condenser to maximum and seeing that the short vertical line on the cursor is level with the left-hand edge of the tuning indicator aperture.

Switch receiver to medium waves and tune to 200 m on the scale. Inject a signal of this wavelength *via* a suitable dummy aerial into the aerial and earth sockets, and adjust T5, T6 and T7 for maximum output.

Checkcalibration at 500 m.

**LW Band.**—Switch receiver to long waves and tune to 950 m on the scale. Inject a signal of this wavelength and adjust T8 for maximum output.

Inject a 2000 m signal, tune it in on the receiver, and re-adjust T8 for maximum output while rocking gang.

### VALVE READINGS

| V | Type | Electrode | Volts | Mas |
|---|---|---|---|---|
| 1 | AC/VP1(met) | Anode | 160 | 11 |
| | Mazda | Screen | 181 | 2.9 |
| 2 | AC/TP(met) | Anode | 228 | 6.2 |
| | Mazda | Osc anode | 102 | 2.3 |
| | | Screen | 178 | 2.9 |
| 3 | AC/VP1(met) | Anode | 209 | 9.5 |
| | Mazda | Screen | 184 | 2.7 |
| 4 | 2D4A(met) | Cathode | 25 | — |
| | Mullard or V914(Mazda) | | | |
| 5 | AC/2PEN | Anode | 230 | 32.5 |
| | Mazda | Screen | 257 | 6.4 |
| 6 | R3 | Anodes | 335AC each | |
| | Micromesh | | | |

Pilot lamps 6.2v, .3 amps MES.

Readings taken on 240v mains with no signal and volume control at maximum on 200m M-W.