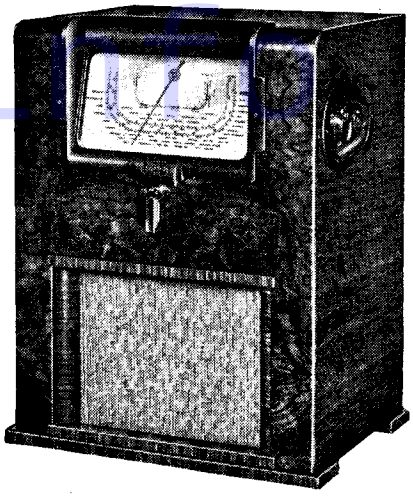
# COSSOR 485 BATTERY THREE BAND



**The model 485 by A. C. Cossor, Ltd., is a four-valve battery superhet with Q.P.P. output and a short-wave band.**

**CIRCUIT.**—The aerial input is through a series aerial condenser to a set of transformer coils on all wave-bands by *via* an additional aerial coupling condenser on the short band. V1, a pentagrid frequency changer, converts the signal to the I.F., and the output passes by an iron-cored transformer, tuned to 465 kc., to amplifier V2, an H.F. pentode.

The I.F. transformer is of the type in which trimming is effected by adjusting the iron cores.

The output of the I.F. amplifier passes by another transformer to the demodulating diode of V3, a double-diode triode. The other diode provides A.V.C. for V1 and V2. A manual volume control is included in the coupling arrangements to the grid of the triode section of V3.

V3 is resistance capacity connected to the inter-valve coupling transformer feeding the grids of V4, a twin-pentode operating in a Q.P.P. arrangement. Fixed modification of the tone is obtained by a condenser and resistance in series between the two anodes of V4.

Battery equipment consists of a Cossor E370 2-volt 70-amp. hour accumulator, a Cossor 933 9-volt grid bias battery, and a Cossor 2120 120-volt double capacity H.T. battery.

**Chassis Removal.**—Remove back of cabinet (four bolts) and the wave-change switch (grub screw) from front of cabinet. The volume, tuning and on-off controls are removed by slackening the grub screws that connect the extension rods to the components and withdrawing the shafts through the holes in the cabinet.

Disconnect the leads to the speaker panel and uncleat them from the cabinet. When replacing the leads connect: red to centre terminal and blues to the two end terminals. Remove the screw (nearest the top back of cabinet) securing the metal bar, push bar forward and then remove.

**Special Notes.**—Sockets at the rear of the chassis provide for an extension speaker. This should be of the permanent-magnet type with an impedance of 24,000 ohms.

The connections are arranged across the primary of the output transformer.

A fuse, consisting of a bulb rated at 3.5 volts .15 amp., with M.E.S. base, fits into a holder at the rear of the chassis.

C7, C8, C15 and C16 are inside the I.F. transformers.

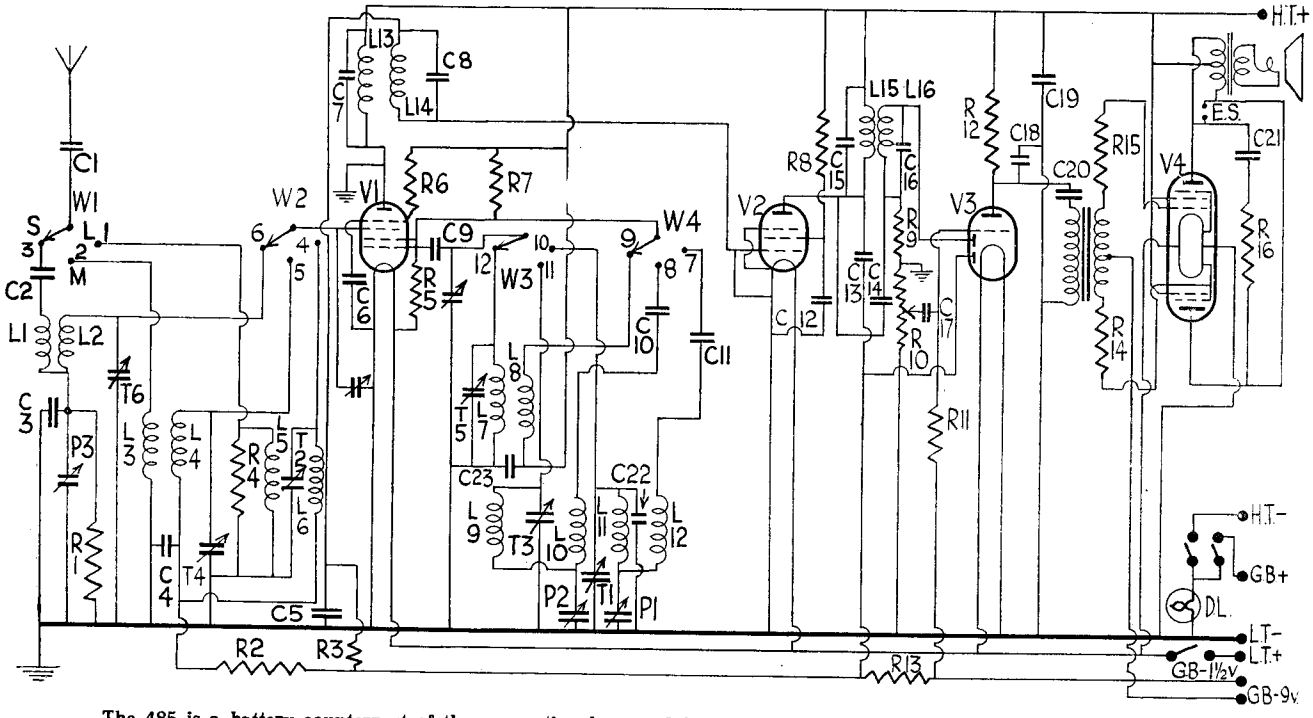
## VALVE READINGS

*No signal, Volume maximum: M.W. min. cap. New Batteries.*

| V. | Type. | Electrode. | Volts. | Ma. |
|---|---|---|---|---|
| | *All Cossor* | Anode .. | 122 | .2 |
| 1 | 210 P.G. (7) | Screen .. | 30 | .9 |
| | | Osc.anode | 75 | 1.2 |
| 2 | 210 VPT (7) | Anode .. | 122 | 2.5 |
| | | Screen .. | 83 | .9 |
| 3 | 210DDT (5) | Anode .. | 47 | .4 |
| 4 | 240 Q.P. (7) | Anode .. | 120 | 2.5 |
| | | Anode .. | 120 | 1.5 |
| | | Screen .. | 122 | .7 |

## WINDINGS

| Winding. | Ohms. | Winding. | Ohms. |
|---|---|---|---|
| L1 .. | .36 | L10 .. | .45 |
| L2 .. | .05 | L11 .. | 9 |
| L3 .. | 6.6 | L12 .. | 3.5 |
| L4 .. | 1.2 | L13 .. | 3 |
| L5+R4 | 46 | L14 .. | 3 |
| L6 .. | 15.7 | L15 .. | 5 |
| L7 .. | .07 | L16 .. | 5 |
| L8 .. | .8 | L.F. trans. prim. | 940 |
| L9 .. | 1.07 | L.F. trans. sec. | 940+1,250 |
| | | Output trans.prim. | 610+640 |




**The 485 is a battery counterpart of the conventional type of four-valve mains superhet. The frequency changer is preceded by transformer aerial coils**

# Circuit Alignment Notes

**I.F. Circuits.**—Connect an output meter across the primary of the speaker transformer. Switch the set to the M.W. band and fully interleave the vanes of the gang. Turn volume control to maximum.

Connect a service oscillator between the top grid cap of V1 and chassis. Short out the oscillator section of the gang.

Tune service oscillator to 465 kc. and adjust the iron cores of I.F.T.2 and then I.F.T.1 for maximum response, using a non-metallic trimming tool and reducing the input as the circuits come into line to render the A.V.C. inoperative.

**Signal Circuits.**—Connect the oscillator to the aerial and earth terminals *via* a dummy aerial, and only feed sufficient input to obtain definite peaks in the output meter.

**Long Waves.**—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T1 and then T2 for maximum.

Tune set and oscillator to 1,875 metres (160 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

**Medium Waves.**—Tune set and oscillator to 214 metres (1,400 kc.) and adjust first T3 and then T4 for maximum.

Tune set and oscillator to 522 metres (575 kc.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

**Short Waves.**—Tune set and oscillator to 21.4 metres (14 mc.) and adjust T5 and then T6 for maximum.

Tune set and oscillator to 42.9 metres (7 mc.) and adjust P3 for maximum while working the gang.

Repeat until no improvement results.

## CONDENSERS

| C. | Purpose. | Mfds. |
|---|---|---|
| 1 | Series aerial | .0005 |
| 2 | S.W. aerial coupling | .00005 |
| 3 | S.W. aerial fixed padder | .00175 |
| 4 | V1 A.V.C. decoupling | .05 |
| 5 | V2 A.V.C. decoupling | .01 |
| 6 | V1 screen decoupling | .1 |
| 7 | I.F. T 1 prim. fixed trimmer | .00015 |
| 8 | I.F.T.1 sec. fixed trimmer | .00016 |
| 9 | Oscillator grid | .0002 |
| 10 | M.W. osc. anode coupling | .003 |
| 11 | L.W. osc. anode coupling | .003 |
| 12 | V2 screen decoupling | .1 |
| 13 | A.V.C. diode coupling | .00005 |
| 14 | H.F. bypass | .00005 |
| 15 | I.F.T.2 prim. fixed trimmer | .00005 |
| 16 | I.F.T. 2 sec. fixed trimmer | .00007 |
| 17 | L.F. coupling | .01 |
| 18 | H.F. bypass | .0002 |
| 19 | H.T. reservoir | 2 |
| 20 | L.F. coupling | .1 |
| 21 | Tone modifier | .001 |
| 22 | L.W. oscillator fixed trimmer | .00005 |
| 23 | S.W. oscillator anode decoupling | .01 |

## TRICKY SPEAKER FAULT

A BATTERY superhet came in suffering from intermittent distortion. The Q.P.P. output valve was changed without result. The windings of the output transformer were then suspected, but resistance measurements proved them O.K.

Another speaker was then tried, and results were good. The next step was to measure the speech coil resistance of the speaker in the set.

At first this gave the correct value of 2 ohms, but it was found that on moving the cone the resistance swung up to 50 ohms. The actual fault was a dry joint at the junction of the heavy braided lead and the speech coil.—HAROLD RICHARDS, Truro.

## RESISTANCES

| R. | Purpose. | Ohms. |
|---|---|---|
| 1 | V1 S.W. grid return | 10,000 |
| 2 | V. A.V.C. decoupling | 3 meg. |
| 3 | V2 A.V.C. decoupling | 3 meg. |
| 4 | L.W. aerial shunt | 50,000 |
| 5 | Oscillator grid leak | 100,000 |
| 6 | V1 screen decoupling | 100,000 |
| 7 | Oscillator anode load | 25,000 |
| 8 | V2 screen decoupling | 100,000 |
| 9 | H.F. stopper | 100,000 |
| 10 | V.C. and demod. diode load | 500,000 |
| 11 | V3 grid leak | 2 meg. |
| 12 | V3 anode load | 100,000 |
| 13 | A.V.C. diode load | 2 meg. |
| 14 | V4 grid stopper | 100,000 |
| 15 | V4 grid stopper | 100,000 |
| 16 | Tone modifier | 10,000 |

# Cossor 485 on Test

MODEL 485.—Standard model for battery operation requiring a Cossor E370 2-volt 70-a.h. accumulator, a Cossor 933 9-volt bias battery and a Cossor 2120 120-volt H.T. battery. Price £11 8s. 3d.

DESCRIPTION.—Four-valve, three-band, battery-operated table superhet.

FEATURES.—Full-vision scale calibrated in station names and metres and also in megacycles on the short band. Controls for wave-change on front of cabinet with on-off switch, tuning and volume at side of cabinet. Speaker located beneath chassis. Sockets for extension speaker. Fuse at back of chassis.

LOADING.—H.T., 10.2 ma.; L.T., .65 amp.

### Sensitivity and Selectivity

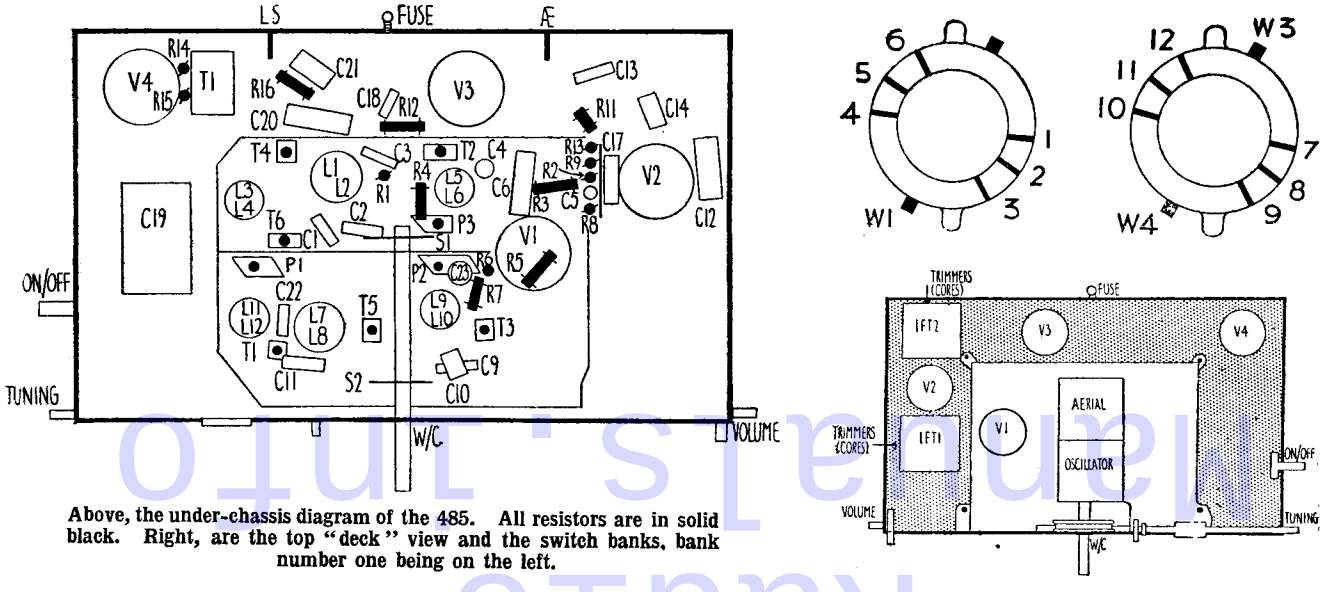
SHORT WAVES (19-57.5 metres).—Very good gain and selectivity. Easy handling and no noticeable drift.

MEDIUM WAVES (190-575 metres).—Representative performance with well-maintained gain, local stations spread on adjacent channels only. A few noticeable whistles.

LONG WAVES (800-2,300 metres).—Very good gain and representative selectivity. All main stations easily received. Overlap on Deutschlandsender. Fairly quiet background.

### Acoustic Output

Ample volume for an ordinary room. Tone is well balanced and there is a reasonable amount of crispness and good medium and low-note radiation. Colouration is very slight and the musical reproduction is pleasing.




**Above, the under-chassis diagram of the 485. All resistors are in solid black. Right, are the top "deck" view and the switch banks, bank number one being on the left.**