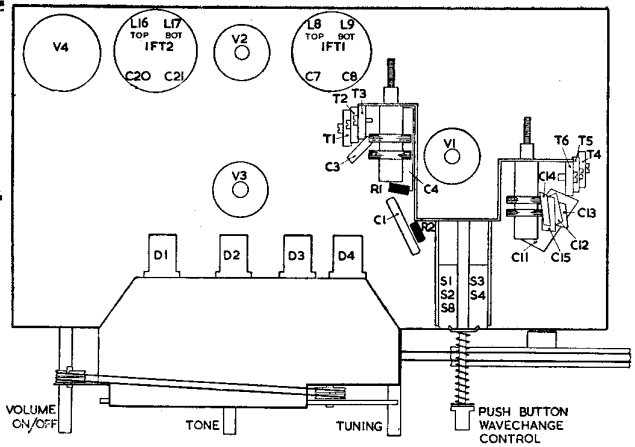
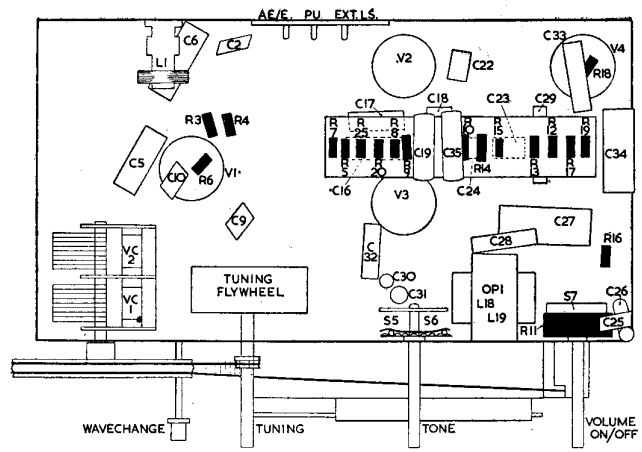
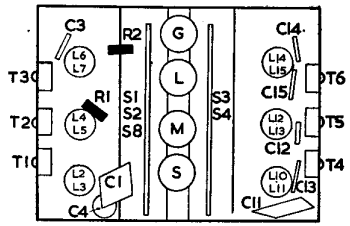
# COSSOR 474AC

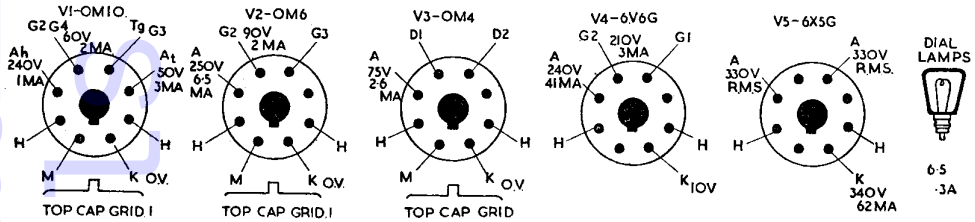


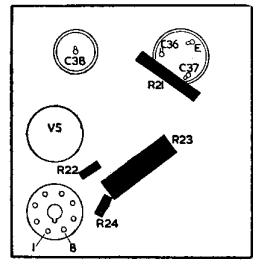




COIL PACK
(VIEWED FRONT OF CHASSIS)

*Five-valve three-waveband superhet with push-button wavechange switch. Sockets for high-impedance gramophone pickup and low-impedance extension loudspeaker. Designed to operate on 200-250V 40-100 c/s mains. Walnut veneer cabinet. Made by A. C. Cossor, Ltd., Highbury Grove, London, N5.*




## CAPACITORS

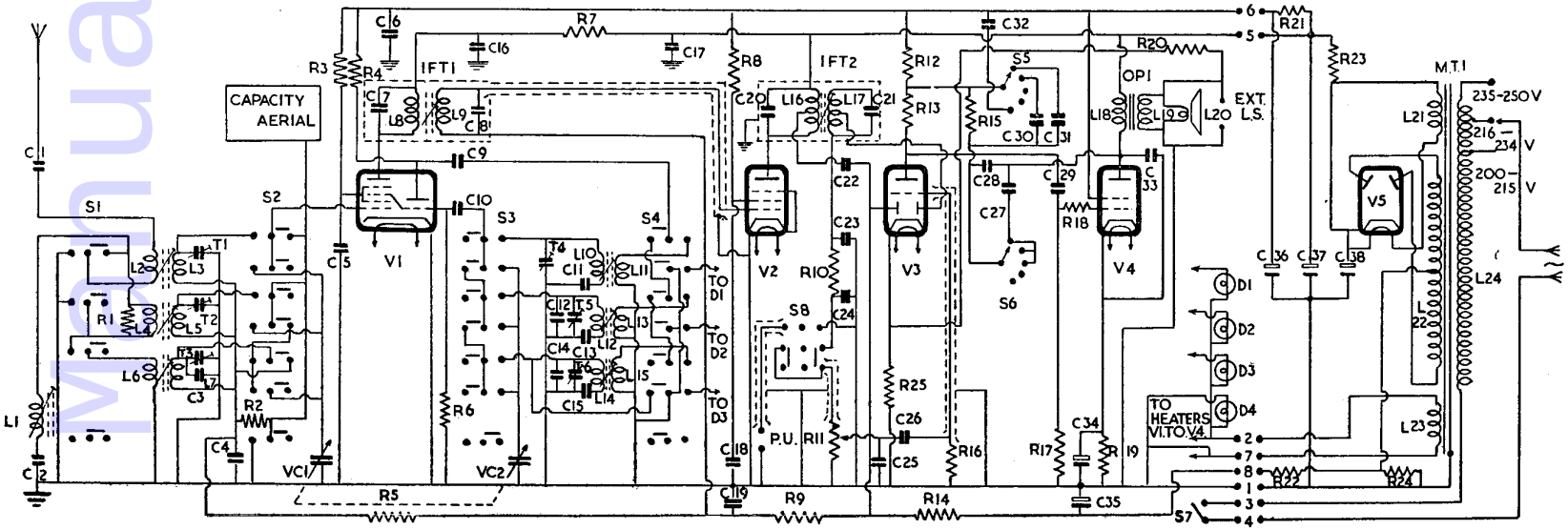
| C | | Capacity | Type |
|---|---|---|---|
| 1 | .. | 470pF | Silver Mica |
| 2 | .. | 100pF | Silver Mica |
| 3 | .. | 15pF | Silver Mica |
| 4 | .. | .1 | Tubular 500V |
| 5 | .. | .1 | Tubular 500V |
| 6 | .. | .1 | Tubular 500V |
| 7 | .. | 225pF | Silver Mica |
| 8 | .. | 225pF | Silver Mica |
| 9 | .. | 200pF | Mica |
| 10 | .. | 100pF | Mica |
| 11 | .. | 6750pF | Silver Mica |
| 12 | .. | 15 pF | Silver Mica |
| 13 | .. | 750pF | Silver Mica |
| 14 | .. | 68pF | Silver Mica |
| 15 | .. | 185pF | Silver Mica |
| 16 | .. | .1 | Tubular 500V |
| 17 | .. | .1 | Tubular 500V |
| 18 | .. | .1 | Tubular 500V |
| 19 | .. | .05 | Tubular 500V |
| 20 | .. | 60pF | Silver Mica |
| 21 | .. | 75pF | Silver Mica |
| 22 | .. | 47pF | Silver Mica |
| 23 | .. | 100pF | Mica |
| 24 | .. | 100pF | Mica |
| 25 | .. | 47pF | Silver Mica |
| 26 | .. | .01 | Tubular 500V |
| 27 | .. | .5 | Tubular 500V |
| 28 | .. | .01 | Tubular 500V |
| 29 | .. | .01 | Tubular 500V |
| 30 | .. | .002 | Tubular 500V |
| 31 | .. | .01 | Tubular 500V |
| 32 | .. | .01 | Tubular 500V |
| 33 | .. | .005 | Tubular 500V |
| 33 | .. | .01 | Tubular 500V (in some models) |
| 34 | .. | 25 | Electrolytic 25V |
| 35 | .. | 20 | Electrolytic 6V |
| 36 | .. | 16 | Electrolytic 450V |
| 37 | .. | 16 | Electrolytic 450V |
| 38 | .. | 8 | Electrolytic 450V |

## INDUCTORS

| L | | Ohms |
|---|---|---|
| 1 | .. | 7 |
| 2 | .. | .75 |
| 3 | .. | very low |
| 4 | .. | 15 |
| 5 | .. | 2 |
| 6 | .. | 68 |
| 7 | .. | 27 |
| 8 | .. | 3.75 |
| 9 | .. | 4 |
| 10 | .. | very low |
| 11 | .. | .75 |
| 12 | .. | 2.5 |
| 13 | .. | 2.25 |
| 14 | .. | 6.5 |
| 15 | .. | 3.25 |
| 16 | .. | 17.5 |
| 17 | .. | 16.5 |
| 18 | .. | 600 |
| 19 | .. | very low |
| 20 | .. | 2.5 |
| 21 | .. | very low |
| 22 | .. | 1300 |
| 22 | .. | very low |
| 24 | .. | 46 total |

## RESISTORS

| R | | Ohms | Watts |
|---|---|---|---|
| 1 | .. | 6.8K | .. ¼ |
| 2 | .. | 470K | .. ¼ |
| 3 | .. | 82K | .. ¼ |
| 4 | .. | 56K | .. ¼ |
| 5 | .. | 470K | .. ¼ |
| 6 | .. | 18K | .. ¼ |
| 7 | .. | 10K | .. ¼ |
| 8 | .. | 68K | .. ¼ |
| 9 | .. | 1M | .. ¼ |
| 10 | .. | 47K | .. ¼ |
| 11 | .. | 500K | Potr. with switch |
| 12 | .. | 22K | .. ¼ |
| 13 | .. | 39K | .. ¼ |
| 14 | .. | 1M | .. ¼ |
| 15 | .. | 82K | .. ¼ |
| 16 | .. | 4.7M | .. ¼ |
| 17 | .. | 470K | .. ¼ |
| 18 | .. | 1K | .. ¼ |
| 19 | .. | 220 | .. ¼ |
| 20 | .. | 220 | .. ¼ |
| 21 | .. | 3.9K | .. 1 |
| 22 | .. | 10K | .. 0 |
| 23 | .. | 1.5K | .. 1 |
| 24 | .. | 22 | .. ¼ |
| 25 | .. | 27 | .. ¼ |



## COSSOR 474AC

**AERIAL.** Signal from external aerial is fed through C1 to SW aerial coupling coil L2 and thence through SW switch of push-button unit S1 to MW coupling coil L4. When S1 is switched to SW, then bottom end of L2 (SW) is connected down to chassis and aerial signal is removed from L4 (MW). Similarly when S1 is switched to MW, then bottom end of L4 (MW) is connected down to chassis and SW section of S1 couples aerial signal, through L2, to L4.

When S1 is switched to LW position, aerial signal is connected through L2 and L4 to top of LW coil L6, the bottom end of which is permanently connected to chassis. R1 is MW aerial damping resistor. L1, C2 form an IF filter and is only in circuit on MW and LW ranges. L3 (SW) L5 (MW), L7 (LW) are the grid coils, and these are switched by S2 to tuning capacitor VC1 and to internal capacity aerial. T1 (SW), T2 (MW) and T3, C3 (LW) are trimmers.

AVC and a small standing bias are applied to G1 of V1 through the tuned coils and S2, and is decoupled by R5, C4. When S2 is switched to Gram. position, however, g1 is earthed. R2 is fitted to ensure that g1 is not left floating should all the push-buttons be located in the off position.

**Oscillator** is connected in a tuned grid parallel-fed HT circuit. L10 (SW), L12 (MW). L14 (LW) are the grid coils, and S3 switches them to tuning capacitor VC2 and, through C10, to oscillator grid (Tg) of V1.

T4 (SW). T5, C12 (MW), T6, C14 (LW) are trimmers, and C11, C13, C15 are padders. Automatic bias fer oscillator grid is developed on C10 with R6 as grid leak. L11 (SW), L13 (MW), L15 (LW) are the anode feedback coils, and S4 switches them, through C9, to oscillator anode of V1. When the LW button is in the off position, then the LW grid tuned coil L14 is shorted out by S4.

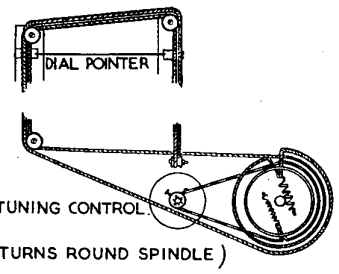
**IF amplifier** operates at 465 Kc/s. L9, C8, the secondary of IFT1, feeds signal, AVC and standing bias to grid of IF amplifier V2. R9, C19 decouple the AVC line to grid. L16, C20, the primary of IFT2, is in the anode circuit of V2, the HT for which is decoupled by capacitor C17.

**Signal rectifier.** L17, C21, the secondary o IFT2, feeds signal to one of diodes of V3. The diode is fed from a tapping approximately halfway down L17. R11, the volume control, is the diode load resistor, and R10, C23, C24 and C25 form an IF filter.

**Pickup.** Sockets are provided for connection of any high-impedance pickup. S8 switches pickup signal to volume control R11 and at the same time connects down to earth the radio signal.

**AVC.** C22 feeds signal from tapping on primary L16 of IFT2 to second diode of V3. R14 is diode load, and delay voltage for diode is obtained by connecting bottom end of R14 to R24, the automatic bias resistor in the negative HT lead to chassis. R22, C35 decouple the bias voltage. This delay voltage is also fed through R9, R5 to act as a standing bias for grids of V1, V2.

**AF amplifier.** C26 feeds signal from R11, the volume control, to grid of triode section of V3. Bias for grid is developed on C26 with R16 as leak. R25 in the cathode circuit introduces negative feedback voltages from secondary L19 of the output transformer OP1, through feed resistor R20. R12, R13 form a tapped anode load.




GANG CONDENSER FULLY MESHED

**Tone control** is obtained by varying the degree of negative feedback at different frequencies from anode of output valve V4 to the signal developed across the anode load of V3. S5, S6, together with C30, C31, C32, R15, C27, C28 are the tone control components.

**Output stage.** C29 feeds signal from anode V3 through stopper R18 to grid of tetrode V4. Screen voltage is obtained from R21 decoupled by C36. R21 also feeds screen and oscillator anode of V1, screen V2, and anode V3. C6 is RF bypass. Sockets are fitted on L19 to allow use of a 3-ohm extension speaker. Negative feedback from L19 is applied back to cathode of V3 through R20.

**High tension** is provided by an indirectly heated full-wave rectifier V5. L22, the HT secondary of MT1, the mains input transformer, provides its anode voltages and L21 its heater current. The heater voltage of V5 is 6.3V. Resistance-capacity smoothing is provided by R23, R21, C36, C37, C38. R24, in the negative HT lead to chassis provides bias voltage for AVC delay and grid of V1, V2. R22 is bias feed resistor, and C35 decoupling capacitor.

**Heaters of V1 to V4 and Dial Lamps** obtain their current from L23. L24, the primary of MT1, is tapped for input voltages of 200-215, 216-234 235-250 volts AC 40-100 cycles. S7, which is ganged to the volume control in the receiver chassis, is the ON/OFF switch.

### TRIMMING INSTRUCTIONS

| Apply signal as stated below | Tune Receiver to | Trim in Order stated for Max. Output |
|---|---|---|
| (1) 465 kc/s to g1 of V1, via .01 mF | — | Core of L17, L16, L9, L8 |
| (2) 465 kc/s to aerial socket, via dummy aerial | — | Core of L1 for minimum |
| (3) 18 Mc/s as above | 18 mc/s | T4, T1 |
| (4) 6 mc/s as above .. | 6 mc/s | Core L10, L3. Repeat (3) and (4) |
| (5) 1.4 mc/s as above | 214 metres | T5, T2 |
| (6) 575 kc/s as above.. | 522 metres | Core L12, L5. Repeat (5) and (6) |
| (7) 260 kc/s as above.. | 1153 metres | T6, T3 |
| (8) 160 kc/s as above.. | 1875 metres | Core L14, L7. Repeat (7) and (8) |

## "SILENT ELECTRIX" CLEANER—*from page 1*

porting spider (16) to allow suction unit assembly to be withdrawn from body.

(*g*) To dismantle suction unit, unwind the white adhesive bindings and remove end housing (19, Fig. 3). By undoing nut from end of armature shaft, the whole suction unit may now be taken to pieces.

(*h*) To remove armature from the motor, first take out carbon brushes, unscrew the four screws holding motor ring (24, Fig. 5) and remove this from motor frame (25, Fig. 4). Now carefully drive armature from bearing in motor frame, using soft metal drift.

To remove bearing from housing in the motor ring or motor frame, use drift of larger diameter than bore of bearing. This operation should only be carried out when bearing needs renewing. When reassembling, bearing, with its protecting greasecap, should be pressed home and housing staked to secure.

### SERVICING AND REPAIRS

For servicing a vacuum cleaner which fails to run when its mains lead is connected to the supply, the following tests should be carried out :—

(1) Test by voltmeter or lamp for voltage at plug.

(2) Dismantle cleaner and remove motor and switch, short circuit switch and test again.

(3) Test field coils on Avometer ; correct resistance is 8.7 ohms for 230-250V, 6.7 ohms for 200-220V, 1.8 ohms for 100-115V.

(4) Test armature by measuring resistance between adjacent segments on commutator with an Avometer. Correct resistance is 2.2 ohms for 230-250V, 1.8 ohms for 200-220V, .4 ohm for 100-115V.

Any fault in the electric circuit will be revealed by one of the above tests and can be corrected by replacement or repair of the faulty part. Before assembling the cleaner, the ball races should be packed with fresh grease, commutator cleaned and new carbon brushes fitted. Periodic inspection of carbon brushes is essential.

While the cleaner is under guarantee, faulty motors should be returned to the makers or to a service agent for overhaul.

Mechanical faults, such as breakage of skids or skid brackets, will be obvious on inspection, and can be repaired by replacement of broken part.

## EVERETT EDGCUMBE COMPREHENSIVE TEST SET

THE Everett Edgcumbe Comprehensive Test Kit comprises three units covering an extremely wide range of electrical AC and DC measurements and accommodated in a robust carrying case measuring 14 by 10½ by 6 inches and weighing 19 lb. The three units are Model A All-purpose Tester, the Vampire AC Test Set, and the Hum-Metrohm.

All-Purpose Tester Model A is fitted with 3¼ in. moving-coil meter. Range selection is by single wander plug, an arrangement adopted to eliminate errors due to switch contact resistance and to minimise the possibility of damage due to the meter being used on the wrong range. Change-over from DC to AC and to Low Resistance ranges is, however, effected by a robust self-cleaning low-contact resistance switch.

A copper-oxide rectifier and a transformer are switched in for AC ranges, the accuracy of which is maintained up to approximately 30 kc/s. Ranges covered are: DC, 100 mV to 1,000V in six ranges, 1mA to 10A in five ranges; AC, 5V to 1,000V in five ranges, 1mA to 10A in five ranges.

Two resistance ranges, from .5 to 50,000 ohms, are provided by use of self-contained 3V battery. An insulation range from 50,000 ohms to 10 meg ohms is available by using an external DC or AC supply. Finally, a capacity range on the instrument, calibrated from .02 to 16 mF, is provided for use with an external 4V 50 c/s supply.

On AC and DC voltage ranges (except AC 5V), the meter has a resistance of 1,000 ohms-per-volt. A special socket, marked "AC 1mA, 5,000 ohms, approx," is provided for when the higher internal resistance is preferable.

The Vampire AC Test Set consists of rectifier operated 3¼ in. moving-coil instrument in conjunction with a four-range current transformer and a phase-sensitive bridge network. It measures up to 250V and has current ranges of 0.2, 1, 5 and 20A. It will indicate wattage on single phase circuits of 50, 250, 1,250 and 5,000W where the input voltage is between 180 and 260V.

Current and watts ranges are selected by wander plug. Change-over from voltage to amps or watts is effected by robust rotary switch. The instrument can be used on three-phase balanced-load circuits where the system neutral is available, but in these cases the meter indication must be trebled.

For currents above 20A a "Dwarf Omni-range" transformer is available.

With voltage, current and wattage readings indicated on the same instrument, power factor can be calculated. Moreover, voltage, current and wattage readings are taken without any change of external connections to the instrument.

The Hum-Metrohm combines a low-resistance ohmmeter covering 0.1 to 20 ohms with a 0.1 to 25 megohm insulation tester. It is powered by two standard 4.5V batteries. By the use of an interrupter, a step-up transformer, rectifier and associated smoothing circuit 500V DC is generated for the high-resistance range.

Ranges are brought into operation only when the appropriate press button is depressed, thus conserving the life of the batteries. The meter is fitted with a very clear scale and a knife-edge pointer. Due to the low ripple content of the 500V supply, the insulation of condensers can reliably be checked.

All the three instruments were used in a variety of electrical and radio tests and were found to be accurate and easy to manipulate. Manufactured by Everett Edgcumbe and Co., Ltd., Colindale Works, London, NW9, the Comprehensive Test Kit is listed at £47 10s. complete in polished oak carrying case.

The instruments are also marketed as separate units. The Vampire and All-Purpose Tester are each housed in polished oak cases 7 by 5½ by 3 ins. and weighing 7 lb. Prices are: Vampire AC Tester, £18 17s. 6d.; All-Purpose Tester, £14 15s.; Hum-Metrohm, £13 17s. 6d.