

### EKCO MODEL S.H.25 SUPERHET (Cont.)

Remove the six screws holding the flange of the chassis to the cabinet and slide the chassis out. Take care not to lose the rubber stops on the front of the support for the tuning spindle.

**General Notes.**--In the event of second channel interference being experienced, the small pre-set condenser between the L.F. filter and the grid of V1 can be adjusted.

Tune to the station with which the local interferes, and adjust by means of an insulated screwdriver through the hole in the screening plate on the bottom of the cabinet.

C7 and C8 are on the panel between R3 and the baseplate.

**Replacing Chassis.**--First place the mains switch inside the chassis.

The best method of getting the chassis into position with the distance piece behind the speaker aperture seems to be by hanging the distance piece by the two top screws and sliding the chassis in carefully, so that the screws slip through the holes on the baffle.

Replace the nuts and the remaining two bolts. Replace the rubber distance pieces and the escatcheon round the tuning dial.

Replace the six screws holding the chassis underneath, the control knobs, and the mains switch.

### Weston Selective Analyser

In the March SERVICE ENGINEER details were published of the measuring instruments and oscillators I have used. Since writing the reports I have examined a Selective Analyser made by the Weston Electrical Instrument Co., Ltd., of Kingston By-pass, Surbiton, Surrey.

The instrument measures 8½ in. by 5½ in. by 3¼ in. deep (excluding knobs). Finish and construction are up to the excellent Weston standard. The basis of the multiple meter is a 1,000 ohm-per-volt (1 ma. max.) movement, with an easily readable scale. It is contained in a smart case, complete with leads, adaptors and instruction book.

#### Over Twenty Ranges

The voltage ranges are:--D.C.: 5, 10, 50, 250, 500 and 1,000. A.C.: 5, 10, 50, 250, 500 and 1,000. Current ranges:--D.C.: 2.5, 10, 25, 100 and 500 m.a. Resistance ranges:--1,000, 10,000, 100,000 and 500,000, with internal battery. The minimum division on the 1,000 ohm range is 1 ohm on logarithmic scale, and the zero line is adjustable to very fine limits.

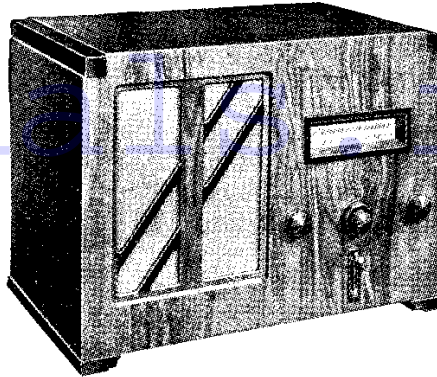
In addition to these ranges the meter is equipped so that with the aid of adaptors, socket, cable, and set plug, all types of valve (4-, 5-, 7- and 9-pin) can be tested, and, by arranging short leads from sockets on the adaptor to the meter, every circuit can be broken and current and voltage readings taken.

Curves are supplied which enable the capacities of condensers of .0002 to 6 mfd. to be checked.

The ranges are chosen by means of a selector switch and jack plugs, and a button is pressed to actually obtain the readings.

For use as an output meter a series condenser is incorporated. The price, complete with carrying case, is 15 gns. W. MACH.

A cement suitable for mending celluloid accumulator cases and many other purposes can be made by dissolving scrap celluloid in amyl acetate or acetone. If acetone is used the cement dries very quickly. A half-and-half mixture of amyl acetate and acetone gives good results. The solvent should be proportioned to the celluloid so that the cement is treacly. When using, remember that the preparation is highly inflammable.



Made by A. C. Cossor Ltd., the model 435 is a three-valve plus rectifier receiver for A.C. mains operation.

**Circuit.**--The H.F. valve, M.V.S.G. (V1), is preceded by a single tuned circuit incorporating a special coil in which the long-wave

### COSSOR'S

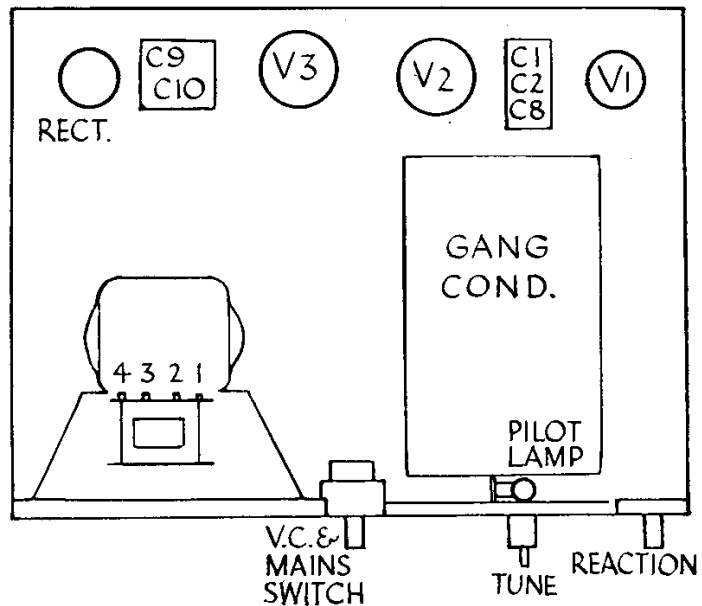
section is centre tapped and is situated between two equal sections of the medium-wave winding. The variable- $\mu$  characteristic is used to control volume in the conventional manner.

Coupling to the next valve is by tuned anode coil, similar in design to the aerial coil, and the centre tapping is used for the anode connection. The detector valve, M.S.Pen. (V2), operates as a power grid type with reaction. Resistance capacity coupling is employed to the output valve.

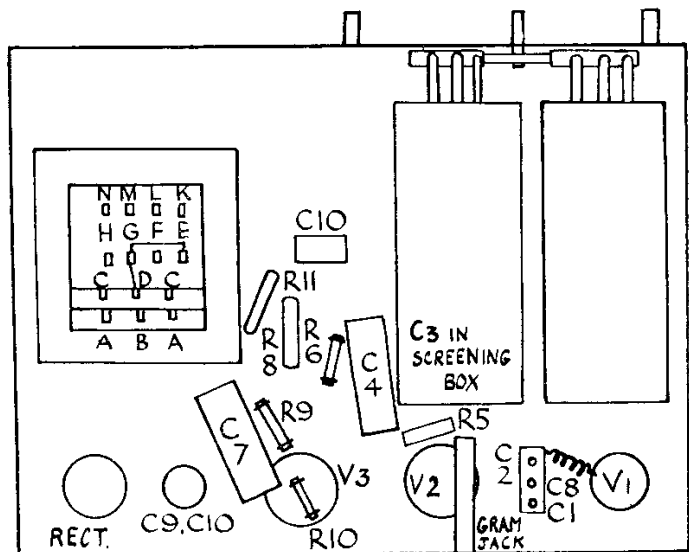
This, an output pentode, M.P. Pen. (V3), has a grid stabilising resistance in the grid circuit and an additional resistance directly in the anode lead.

Mains equipment consists of a transformer with screened primary, a full-wave rectifier, 442 BU, and the speaker field is in the H.T.+ lead, with the necessary smoothing condensers.

**Quick Tests.**--Between terminals on out (Continued on opposite page.)

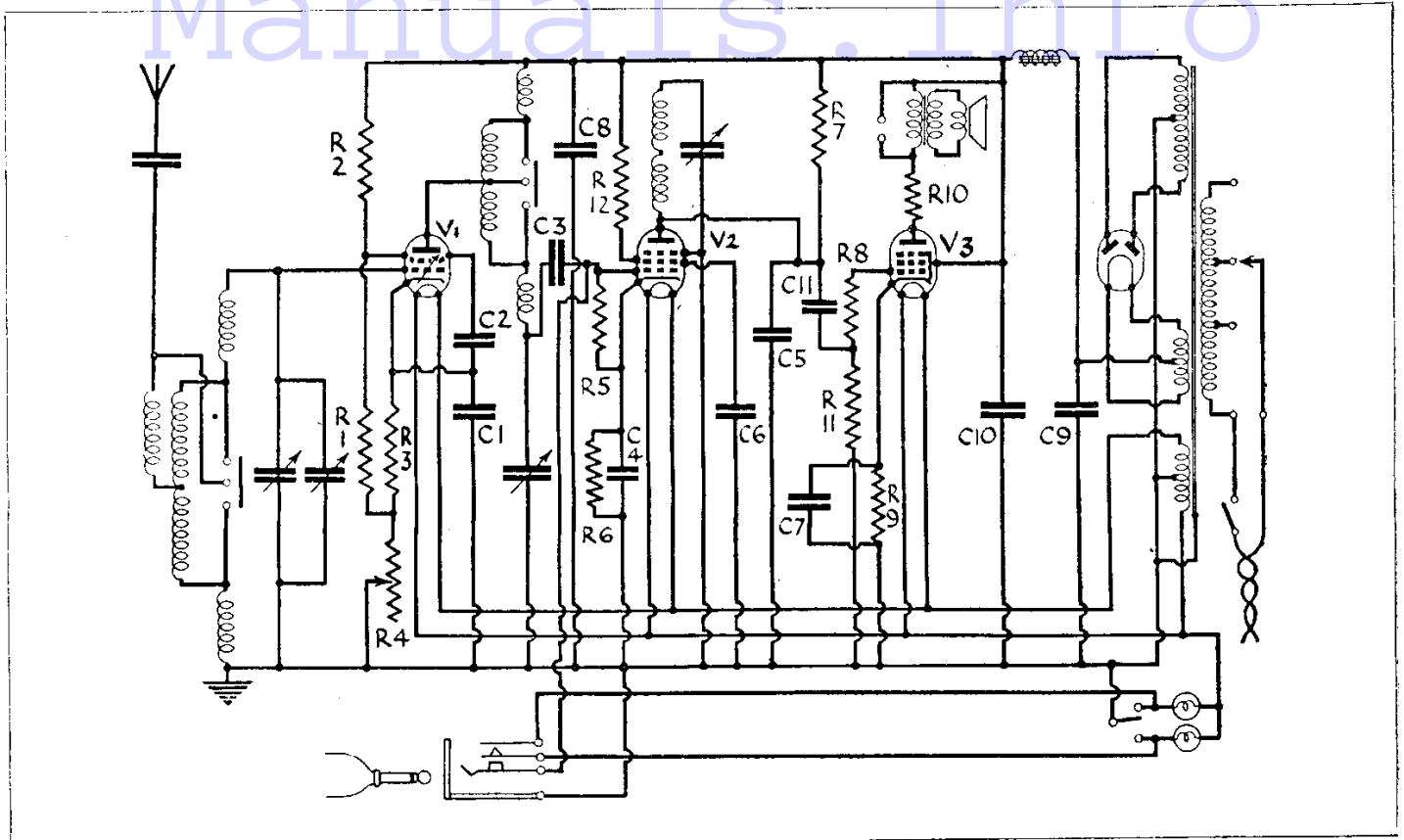


On the top of the 435 chassis the block condenser C9 and C10 can easily be mistaken for an L.F. transformer.



The interior of the chassis, as this diagram shows, is simple and accessible.

# 435 "STRAIGHT" MAINS THREE



Aerial and tuned anode coils of rather novel design and the use of an H.F. pentode as the detector are points of interest in the Cassor 435 receiver.

(Continued from previous page.)  
put transformer and chassis (counting from the inside) :-

- (1) H.T. + unsmoothed 300 volts.
- (2) V3 anode 182 volts.
- (3) and (4) H.T. + smoothed 200 volts.

L.S. field (1) and (4), output transformer primary (2) and (3).

**Removing Chassis.**—Undo screws on wave-change switch escutcheon (screws are holding front of chassis), unscrew knob and undo the control knobs (grub screw). Remove three screws underneath and slide chassis out complete with speaker.

**General Notes.**—The aerial series condenser shown in the circuit diagram is inside the aerial coil container and the H.F. coupling condenser C3 is in the H.F. coil container.

The main, H.T. + smoothed, lead (pink and white) from the speaker field is anchored to the extra speaker terminal from which a lead is connected to C8, the middle terminal on the small block condenser.

Connections to the seven-pin valve holders are (looking from underneath and counting clockwise from the two filament pins) :-

M.S. Pen.—cathode, auxiliary grid, screen\*, anode, metal coating\*. \* Earthed.

M.P. Pen.—cathode, anode, blank, grid, auxiliary grid.

## VALVE READINGS

(V.C. Maximum.)

Valve.	* Type.	Electrode.	Volts.	M.A.
V1	MVSG	... anode ...	200	4.5
		... screen ...	82	
V2	MS Pen	... *anode ...	85	2.25
		... aux. grid ...	30	
V3	MP Pen	... anode ...	185	24
		... aux. grid ...	200	4

\* The inclusion of meter leads may cause H.F. instability; the volume control may be retarded for this valve.

## RESISTANCES

R.	Purpose.	Ohms.
1	Lower part of V1 screen ptr. ...	25,000
2	Upper part of V1 screen ptr. ...	40,000
3	Fixed bias of V1 cathode (inside screen) ...	100
4	Volume control ...	12,000
5	V2 grid leak ...	.5 meg.
6	V2 cathode ...	1,000
7	V2 anode coupling ...	100,000
8	V3 grid stabiliser ...	100,000
9	V3 cathode ...	350
10	V3 anode stabiliser ...	100
11	V3 grid leak ...	.5 meg.
12	V2 aux. grid (inside screen) ...	.5 meg.

Switch contacts are of the wiping type and if these have to be cleaned turn to the long wave (downward) position, and clean with a very thin piece of emery cloth. The contact makers on the spindle can be cleaned from the side by a piece of cloth over the end of a screwdriver.

The middle contacts, operated by the knob on the inside of the lever, control the pilot lamps. Care must be taken to see that these are not damaged.

The connections to the mains transformer are (see lay-out diagram) :-

- A rectifier filament.
- C set. filament.
- E screen.
- F and H rectifier anodes.
- B centre tap (H.T. + unsmoothed).
- D centre tap to chassis earth.
- G centre tap to chassis earth.
- K mains O: L 200 volt. tap; M 220 volt tap; N 240 volt tap.

**Replacing Chassis.**—Before replacing the chassis see that the two small wire springs supported by the reaction condenser and the volume control are in position so that they

## CONDENSERS

C.	Purpose.	Mfd.
1	V1 cathode ...	.1
2	V1 screen ...	.1
3	H.F. coupling V1 to V2 ...	.000025
4	V2 cathode ...	50 el.
5	V2 anode by pass (inside screen) ...	.0003
6	V2 aux. grid (inside screen) ...	.1
7	V3 cathode ...	50 el.
8	H.F. by-pass from H.T. lead ...	.1
9	H.T. smoothing ...	2
10	H.T. smoothing ...	6
11	L.F. coupling V2, V3 ...	.006

act as buffer stops for the carriage of the pilot lamps.

Lay chassis inside cabinet and fix the switch escutcheon and screws. Replace three screws underneath and control knobs.

## WATCH FOR THESE REVIEWS

Receiver which will be fully dealt with in the June issue of SERVICE ENGINEER include the following :-

- G.E.C.—Eight-valve mains set.
- Philips—834 D.C. receiver.
- McMichael—A.C. mains superhet.
- Aerodyne—Raven battery set.
- Lissen—Skyscraper Seven.
- C.A.C.—Austin Super.
- Ace Radio—Universal receiver.

Suggestions as to receivers which might be described and ideas for the improvement of the articles are carefully considered, and should be sent to THE BROADCASTER, 29, Bedford Street, Strand, London, W.C.2. Phone number, Temple Bar 2468.