COSSOR 484
(AND 438 CONSOLE)

AN unusual type of circuit is employed in the Cossor 484 3-valve (plus rectifier) 3-band A.C. superhet. There is no I.F. amplifying valve, but variable reaction can be applied to the I.F. transformer. Different intermediate frequencies are used on S.W., and on M.W. and L.W.

The set is for mains of 200-250 V, 40-100 C/S, and has a short-wave range of 16-53 metres. There is provision for an extension speaker.

An identical chassis is fitted in the 438 console receiver but this *Service Sheet* was prepared on a 484.

CIRCUIT DESCRIPTION

Aerial input via series condenser **C1** and coupling coils **L1** (S.W.), **L2** (M.W.) and **L3** (L.W.) to single tuned circuits **L4, C24** (S.W.), **L5, C24** (M.W.) and **L6, C24** (L.W.), which precede first valve (**V1, Cossor metallised 41STH**), a triode-hexode operating as frequency changer with internal coupling. Oscillator grid coils **L7** (S.W.), **L8** (M.W.) and **L9** (L.W.) are tuned by **C25**; parallel trimming by **C26** (S.W.), **C27** (M.W.) and **C10, C28** (L.W.); series tracking by **C29** (S.W.), **C30** (M.W.) and **C31** (L.W.). Anode reaction by coils **L10** (S.W.), **L11** (M.W.) and **L12** (L.W.). Gain control of hexode section by variable resistance **R5** in cathode circuit, which also forms part of S.G. potentiometer **R2, R3, R5.**

No valve amplification other than that afforded by **V1** is employed in the intermediate frequency stage. A single tuned-primary tuned-secondary transformer **C5, L13, L15, C9** of special design behaves as a normal transformer on M.W. and L.W., with adjustable iron-dust cores for trimming. On S.W., however, **S13** and **S16** open so that **C5** and **C9** are no longer in circuit; **S14** closes so that **L13** and **L15** are coupled by **C7**; **C32,** via **S15**, becomes the trimmer and the intermediate frequency is changed.

Intermediate frequencies :—

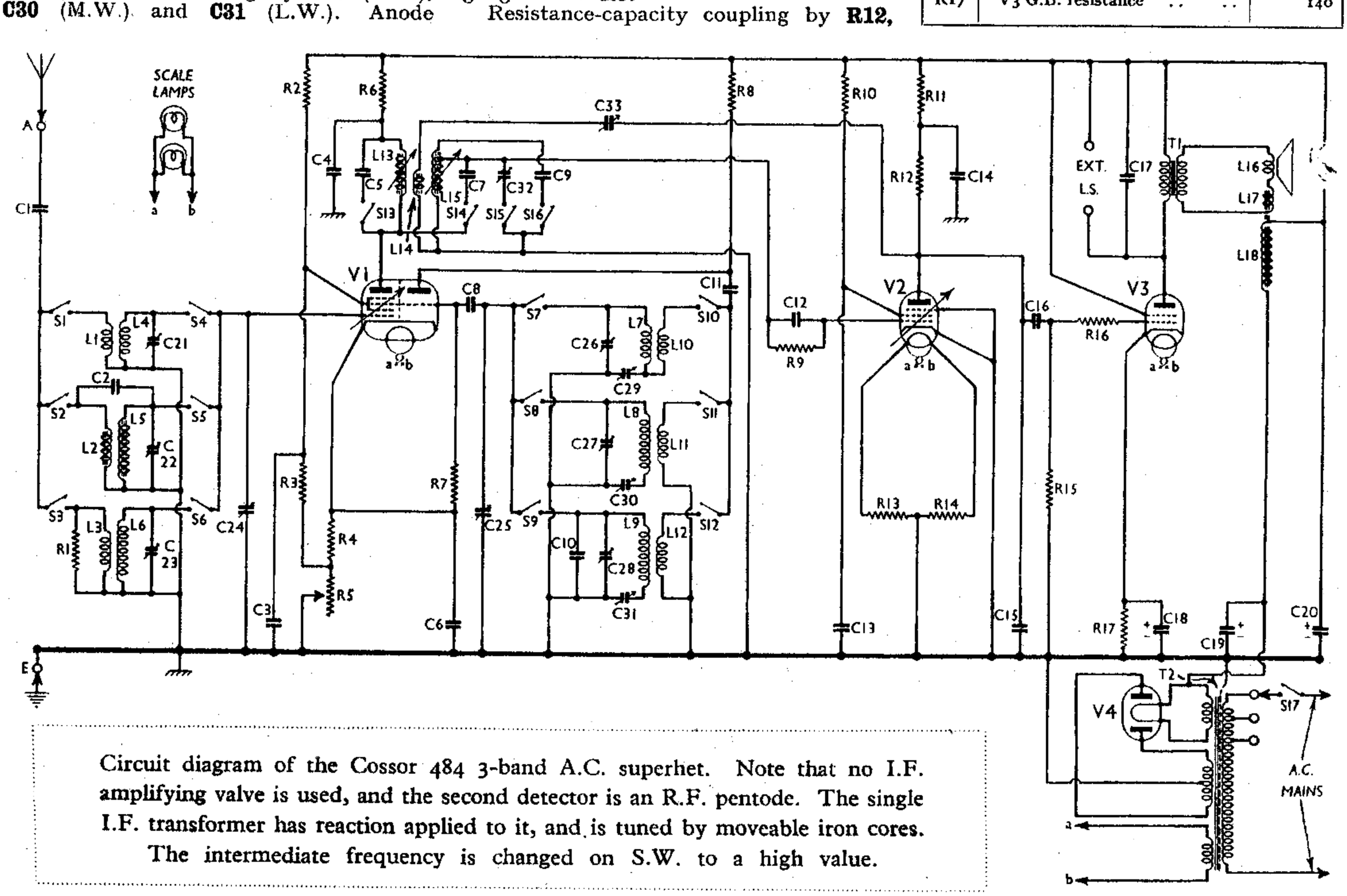
S.W., 1,363 KC/S; M.W., 465 KC/S. I.F. transformer output is fed to second detector valve (**V2, Cossor metallised MSPenB**), an R.F. pentode operating on grid leak system with **R9** and **C12.** Reaction is applied from anode by coil **L14** in I.F. transformer assembly and is controlled by variable condenser **C33,** ganged with **R5.**

Resistance-capacity coupling by **R12, C16** and **R15** between **V2** and tetrode or pentode output valve (**V3, Cossor 42OT or 42MP/Pen**). Provision for connection of high impedance external speaker across primary of internal speaker input transformer **T1.**

H.T. current is supplied by full-wave rectifying valve (**V4, Cossor 442BU**). Smoothing by speaker field **L18** and dry electrolytic condensers **C19, C20.**

COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	L.W. aerial circuit damping	50,000
R2	V1 S.G. H.T. feed pot.	20,000
R3	V1 S.G. H.T. feed pot.	30,000
R4	V1 hexode fixed G.B.	250
R5	V1 hex. gain control, ganged C33	10,000
R6	V1 hex. anode decoupling	5,000
R7	V1 osc. C.G. resistance	50,000
R8	V1 osc. anode H.T. feed	25,000
R9	V2 grid leak	3,000,000
R10	V2 S.G. H.T. feed	1,000,000
R11	V2 anode decoupling	100,000
R12	V2 anode load	100,000
R13	V2 heater potentiometer	15
R14	V2 heater potentiometer	15
R15	V3 C.G. resistance	500,000
R16	V3 C.G. I.F. stopper	100,000
R17	V3 G.B. resistance	140



Circuit diagram of the Cossor 484 3-band A.C. superhet. Note that no I.F. amplifying valve is used, and the second detector is an R.F. pentode. The single I.F. transformer has reaction applied to it, and is tuned by moveable iron cores.

The intermediate frequency is changed on S.W. to a high value.

COSSOR 484—*Continued*

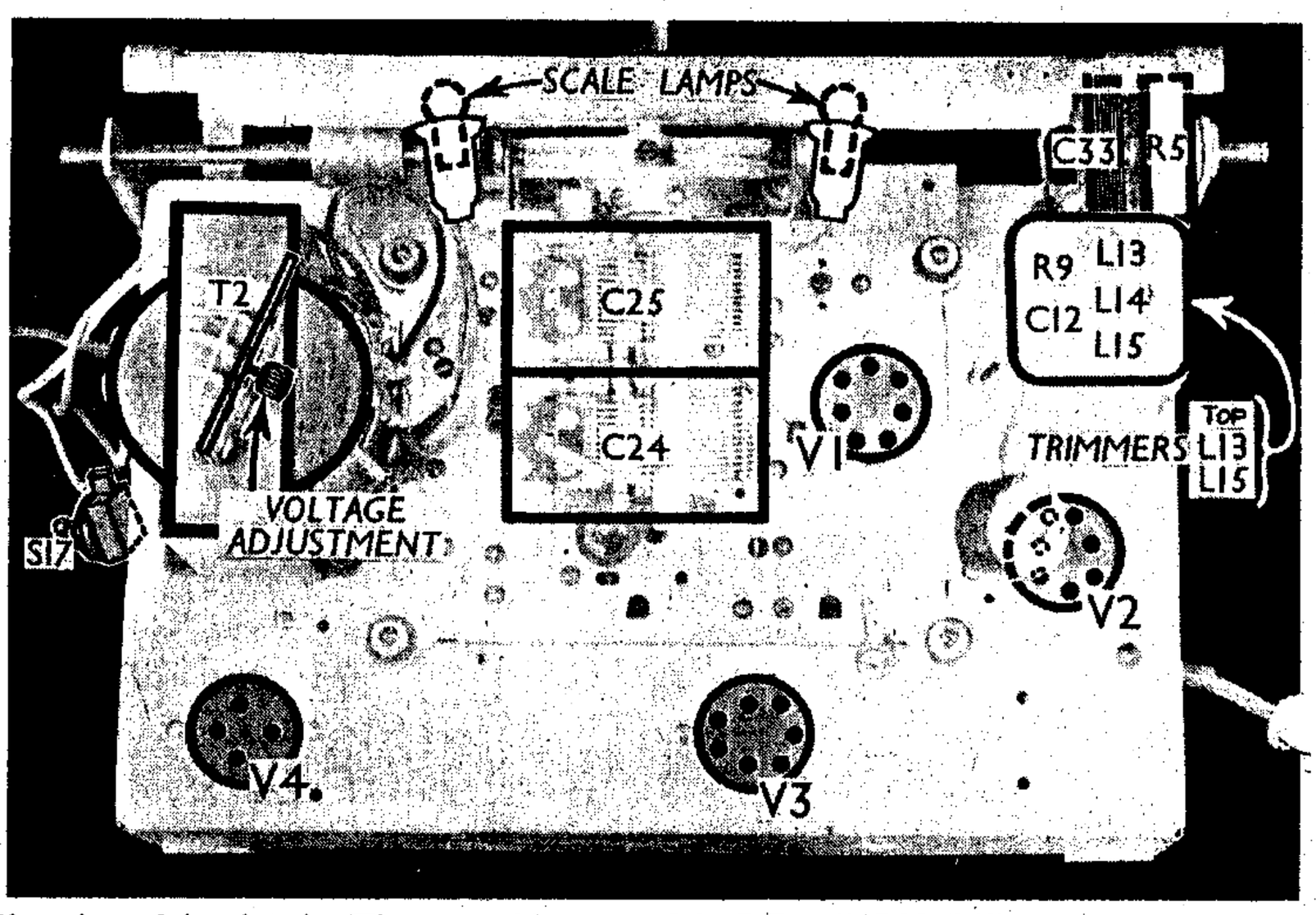
Coils.—**L1, L4**; **L2, L5**; **L3, L6**; **L7, L10**; **L8, L11 and L9, L12** are on separate unscreened tubular formers beneath the chassis. In the case of the S.W. units, **L4** and **L7** are the thick copper wire windings. The special I.F. transformer, **L13-L15** is in a screened unit on the chassis deck. This unit also contains **R9** and **C12.** The coils **L13** and **L15** are trimmed by adjusting their cores through holes at the right of the screen. **L13** is adjusted through the upper hole, and **L15** through the lower.

Scale Lamps.—These are fitted in special rubber holders, which can be removed by rotating and withdrawing. The lamps are Osram M.E.S. types, rated at 6·5 V, 0·3 A, having small sized bulbs.

External Speaker.—Sockets are provided at the rear of the chassis for a high impedance (8,000 Ω) external speaker.

Condensers C19, C20.—These are two 8 μF dry electrolytics in a single carton beneath the chassis having a common negative (black) lead. The red lead is the positive of **C19**, and the yellow, the positive of **C20.**

Trimmer Condensers.—There are ten of these, all mounted beneath the chassis, and adjustable by hexagonal nuts. In most cases the actual chassis forms one of the "plates," and only one connection (to the moving plate) goes to the trimmer.



Plan view of the chassis. The moveable cores of the I.F. coils L13, L15 are reached through holes at the right hand side of the I.F. unit. S17 is normally fitted at the right hand side of the cabinet.

CIRCUIT ALIGNMENT

I.F. Stage.—The I.F. coils have moveable cores which are used for I.F. trimming purposes in much the same way as normal I.F. trimming condensers. It is, however, essential to use a non-metallic screwdriver for adjusting the cores, which are accessible through holes in one side of the I.F. coil can, and may be screwed in or out as required.

On the M.W. and L.W. bands the fixed condensers **C5** and **C9** are connected in parallel with **L13** and **L15,** and tuning is effected by adjusting the cores (I.F., 465 KC/S).

On the S.W. band **L13** and part of **L15** are connected in parallel, **L15** being fed via **C7**, and **C32** is used for tuning to the correct frequency (I.F., 1,363 KC/S). The coil cores must not be re-adjusted after tuning them to 465 KC/S.

It is important to make sure that no reaction is applied during the I.F. adjustments. The best way to ensure this is to disconnect the I.F. reaction condenser **C33.**

First stop the oscillator circuit from oscillating by shorting out **C25** (e.g. by connecting the common tag of **S7-S9** to chassis). Connect signal generator to control grid (top cap) of **V1** and chassis, and feed in a 465 KC/S signal, with the set switched to M.W. or L.W., reaction condenser disconnected, and volume control at maximum.

Adjust the cores of **L13** and **L15** for maximum output.

Switch set to S.W., feed in a 1,363 KC/S signal, and adjust **C32** for maximum output.

Remove short on **C25,** but leave **C33** disconnected.

R.F. and Oscillator Stages.—S.W.—Connect signal generator to **A** and **E** sockets, and switch set to S.W. Feed in an 18 MC/S (16.6 m.) signal, tune to 18 MC/S on scale, and adjust **C26,** then **C21,** for maximum output. Feed in a 7 MC/S (49·9 m.) signal, tune to 7 MC/S on scale, and adjust **C29** for maximum output, rocking the gang slightly for optimum results.

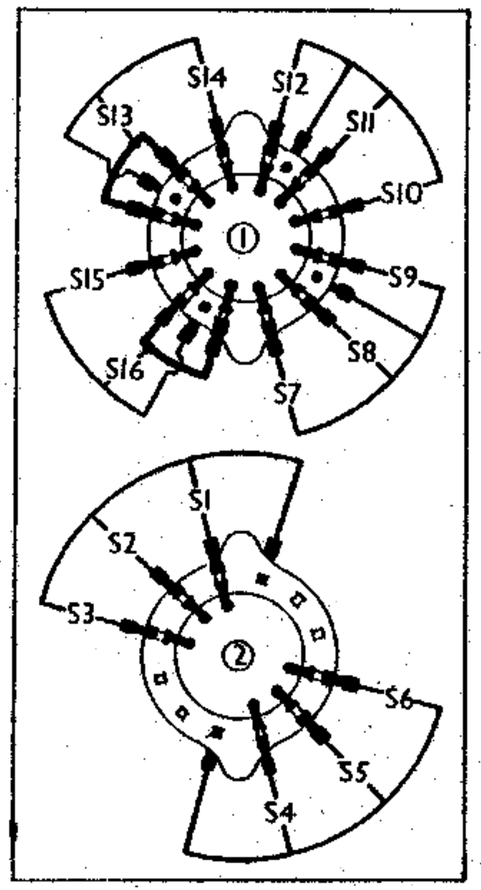
M.W.—Switch set to M.W., feed in a 1,400 KC/S (214 m.) signal, tune to 214 m. on scale, and adjust **C27**, then **C22**, for maximum output. Feed in a 575 KC/S (522 m.) signal, tune to 522 m. on scale, and adjust **C30** for maximum output, rocking the gang slightly.

L.W.—Switch set to L.W., feed in a 300 KC/S (1,000 m.) signal, tune to 1,000 m. on scale, and adjust **C28,** then **C23,** for maximum output. Feed in a 160 KC/S (1,875 m.) signal, tune to 1,875 m. on scale, and adjust **C31** for maximum output, while rocking the gang slightly.

Finally, re-connect the reaction condenser, **C33.**

COSSOR 484 SWITCH TABLE AND DIAGRAMS

Switch	S.W.	M.W.	L.W.
S1	C	—	—
S2	—	C	—
S3	—	—	C
S4	C	—	—
S5	—	C	—
S6	—	—	C
S7	C	—	—
S8	—	C	—
S9	—	—	C
S10	C	—	—
S11	—	C	—
S12	—	—	C
S13	—	C	C
S14	C	—	—
S15	C	—	—
S16	—	C	C



Switch diagrams, looking from the rear of the underside of the chassis.

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