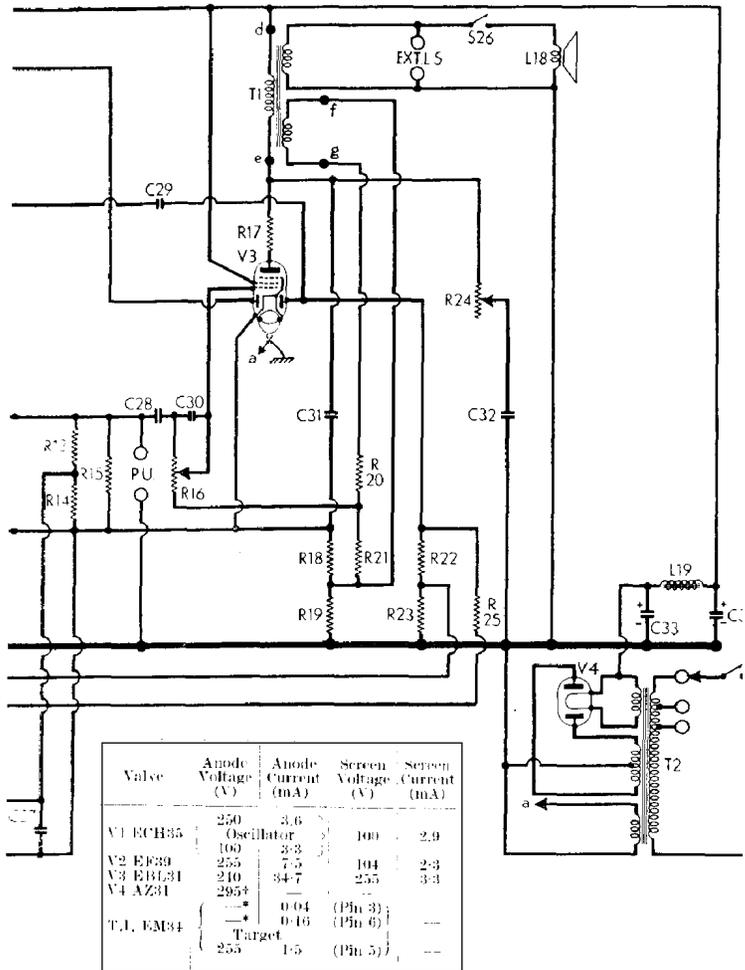
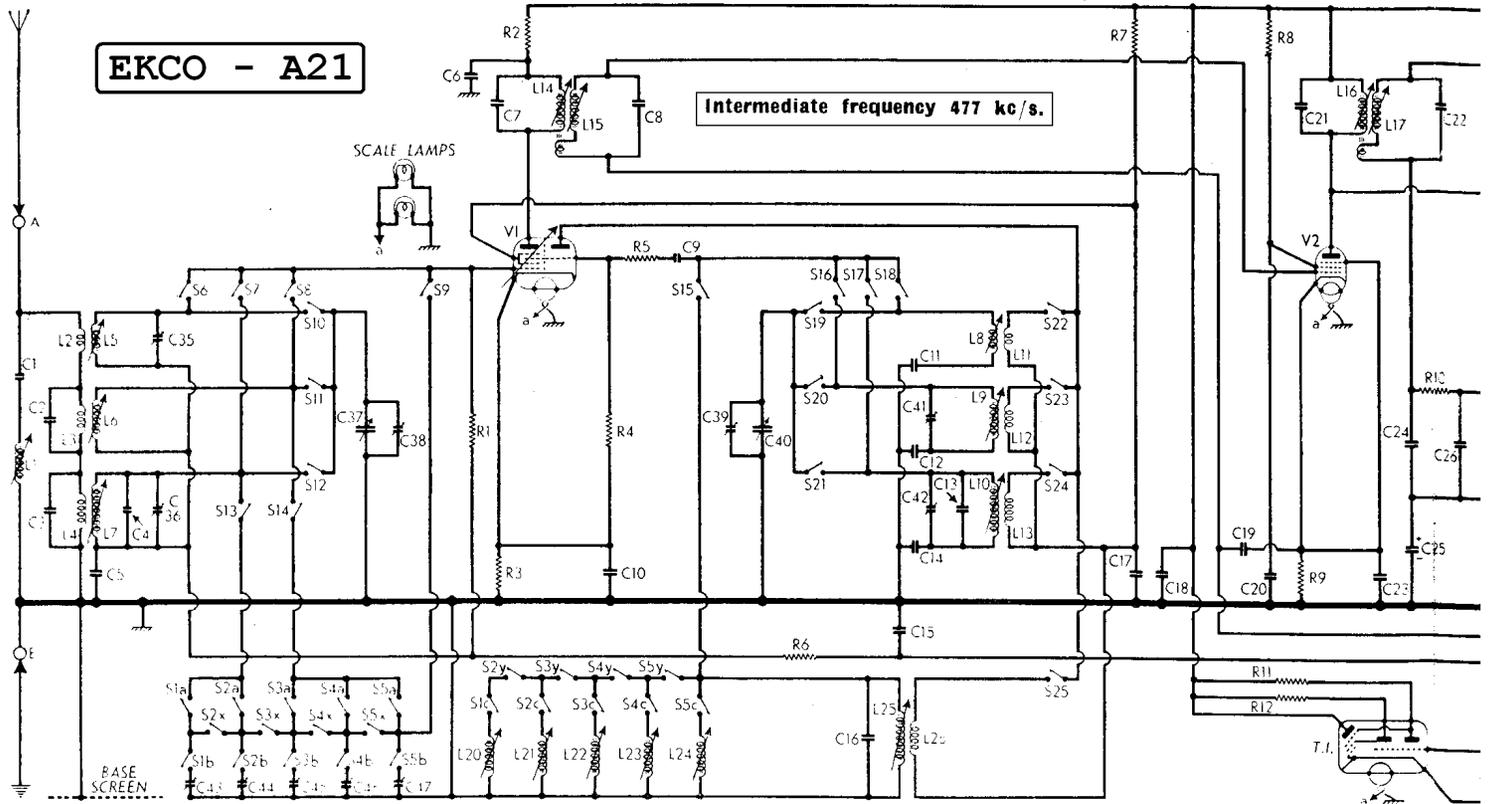


# EKCO - A21

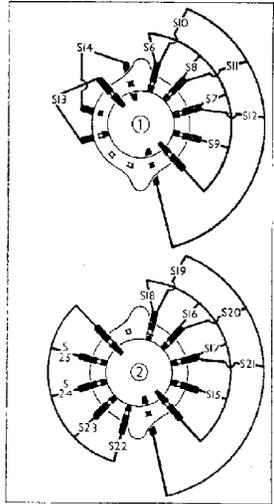


Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH35	250	3.6	100	2.9
	100	3.3		
V2 EF39	255	7.5	104	2.4
V3 EBL31	210	84.7	255	3.4
V4 AZ31	295†	—	—	—
	—	0.04 (Pin 3)	—	—
	—	0.16 (Pin 6)	—	—
T.I. 6M34	255	1.5 (Pin 5)	—	—

\* No appreciable reading \* Each anode, A.C.

CAPACITORS		Values (μF)
C1	Aerial I.F. filter tuning ...	0.000030
C2	Aerial M.W. shunt ...	0.00033
C3	Aerial L.W. shunt ...	0.00082
C4	Aerial L.W. fixed trimmer ...	0.000082
C5	V1 hex. C.G. decoupling ...	0.1
C6	V1 hex. anode decoupling ...	0.1
C7	1st I.F. transformer fixed tuning capacitors ...	0.00015
C8	1st I.F. transformer fixed tuning capacitors ...	0.00015
C9	V1 osc. C.G. capacitor ...	0.000068
C10	V1 cathode by-pass ...	0.1
C11	Osc. circ. S.W. tracker ...	0.0039
C12	Osc. circ. M.W. tracker ...	0.00056
C13	Osc. L.W. fixed trimmer ...	0.0002
C14	Osc. circ. L.W. tracker ...	0.00033
C15	A.V.C. line decoupling ...	0.02
C16	Master oscillator tuning ...	0.00027
C17	V1 osc. anode and S.G. decoupling ...	0.1
C18	H.T. circuit R.F. by-pass ...	0.1
C19	V2 C.G. decoupling ...	0.05
C20	V2 S.G. decoupling ...	0.1
C21	2nd I.F. transformer fixed tuning capacitors ...	0.00015
C22	2nd I.F. transformer fixed tuning capacitors ...	0.00015
C23	V2 cathode by-pass ...	0.1
C24	L.F. by-pass capacitor ...	0.00012
C25*	V3 cathode by-pass ...	50.0
C26	I.F. by-pass capacitor ...	0.0001
C27	T.I. C.G. decoupling ...	0.1
C28	A.F. coupling to V3 pent. ...	0.02
C29	V3 A.V.C. diode coupling ...	0.000015
C30	Treble boost capacitor ...	0.000039
C31	Fixed tone corrector ...	0.0025
C32	Part variable tone control ...	0.04
C33*	H.T. smoothing capacitors ...	8.0
C34*	H.T. smoothing capacitors ...	16.0
C35†	Aerial S.W. trimmer ...	—
C36†	Aerial L.W. trimmer ...	—
C37†	Aerial circuit tuning ...	—
C38†	Aerial M.W. trimmer ...	—
C39†	Osc. circ. S.W. trimmer ...	—
C40†	Oscillator circuit tuning ...	—
C41†	Osc. circ. M.W. trimmer ...	—
C42†	Osc. circ. L.W. trimmer ...	—
C43†	Aerial S.W. trimmer ...	0.00044
C44†	Aerial L.W. trimmer ...	0.00027
C45†	Aerial circuit tuning ...	0.00055
C46†	Aerial circuit press-button tuning trimmers ...	0.0004
C47†	Aerial circuit press-button tuning trimmers ...	0.00013

\* Electrolytic. † Variable. ‡ Pre-set.



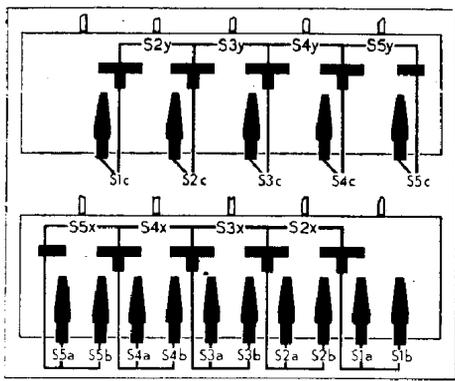
Diagrams of the waveband and manual/auto change switch units, drawn as seen from the rear of an inverted chassis.

# EKCO - A21

RESISTORS		Values (ohms)
R1	V1 hex. C.G. resistor ...	1,800,000
R2	V1 hex. anode decoupling ...	1,500
R3	V1 fixed G.B. resistor ...	220
R4	V1 osc. C.G. resistor ...	47,000
R5	V1 osc. C.G. stabiliser ...	220
R6	A.V.C. line decoupling ...	100,000
R7	V1 osc. anode and S.G. H.T. feed ...	27,000
R8	V2 S.G. H.P. feed ...	68,000
R9	V2 fixed G.B. resistor ...	220
R10	I.F. stopper ...	47,000
R11	T.I. anode load resistors ...	6,800,000
R12		1,500,000
R13	T.I. C.G. feed potential divider ...	1,000,000
R14		1,000,000
R15	V3 signal diode load ...	680,000
R16	Manual volume control ...	1,000,000
R17	V3 pent. anode stopper ...	47
R18	V3 pent. G.B. and A.V.C. delay resistors ...	150
R19		180
R20	Feed-back coupling potential divider ...	47,000
R21		12,000
R22	V3 A.V.C. diode load resistors ...	360,000
R23	470,000	
R24	Variable tone control ...	20,000
R25	A.V.C. line decoupling ...	1,000,000

OTHER COMPONENTS		Approx. Values (ohms)
L1	Aerial I.F. filter coil ...	15.0
L2	Aerial coupling coils ...	0.1
L3		9.5
L4		33.0
L5		very low
L6	Aerial M.W. tuning coil ...	2.0
L7	Aerial L.W. tuning coil ...	23.0
L8	Osc. S.W. tuning coil ...	very low
L9	Osc. M.W. tuning coil ...	2.5
L10	Osc. L.W. tuning coil ...	3.5
L11	Osc. S.W. reaction coil ...	0.25
L12	Osc. M.W. reaction coil ...	0.4
L13	Osc. L.W. reaction coil ...	0.6
L14	1st I.F. trans. { Pri. ...	5.0
L15		Sec. ...
L16	2nd I.F. trans. { Pri. ...	5.0
L17		Sec. ...
L18	Speaker speech coil ...	2.6
L19	H.T. smoothing choke ...	700.0
L20	Oscillator circuit press-button tuning coils ...	6.4
L21		5.7
L22		4.5
L23		3.6
L24		2.0
L25		8.5
L26	Master oscillator coils ...	5.0
L27		350.0
T1	Output trans. { Spkr. sec. ...	0.5
T2		F.B. sec. ...
T3	Mains trans. { Pri. total ...	45.0
T4		Heater sec. ...
T5	Rect. heat. sec. ...	0.2
T6	H.T. sec., total ...	760.0
S1a, b, to S5a, b, x S1c, to S5c, y	Aerial circuit press-button switches ...	—
S6-S25	Oscillator circuit press-button switches ...	—
S26	Waveband switches ...	—
S27	Inf. speaker switch ...	—
S28	Mains switch, gauged R16 ...	—

Switch	Auto	L.W.	M.W.	S.W.
S6	—	—	—	C
S7	—	C	—	—
S8	—	—	C	—
S9	C	—	—	—
S10	—	—	—	C
S11	—	—	C	—
S12	—	C	—	—
S13	C	—	—	—
S14	C	—	—	—
S15	C	—	—	—
S16	—	—	C	—
S17	—	C	—	—
S18	—	—	—	C
S19	—	—	—	C
S20	—	—	C	—
S21	—	C	—	—
S22	—	—	—	C
S23	—	—	C	—
S24	—	C	—	—
S25	C	—	—	—



Both sides of the press-button switch unit, as seen from the rear. Above, the side seen in our under-chassis view overleaf; below, the upper side, facing the chassis deck.

### Drive Cord Replacement

The centre of a 46in length of cord should first be tied by a clove hitch knot to the top of the cursor. With the gang at maximum, adjust the drive drum so that the gap in its rim is at about 4 o'clock, when viewed from the front, and hold the cursor steady so that it covers the vertical lines at the high-wavelength ends of the S.W. and M.W. scales.

Now pass the right-hand cord length over the right-hand pulley on the scale assembly, downwards to the groove in the control spindle, glancing the groove on the rim of the drive drum in passing, and round the control spindle one and a half times in a clockwise direction; then take it up the groove on the left of the drive drum and round it through the gap in the rim, and tie off on a small eyelet which hooks to the end of the tension spring.

Take the left-hand length of cord over the left-hand pulley on the scale, then down diagonally to the drive drum, under it and up along its groove in an anti-clockwise direction to the gap, through the gap and tie off on another eyelet, which hooks on to the spring with the first eyelet.

The cursor should take up the position given previously when the gang is at maximum. When the gang is at minimum, the pointer should cover the vertical lines at the other ends of the scales. It can be adjusted within small limits by freeing the drum on the gang spindle and turning the drum.

### CIRCUIT ALIGNMENT

**I.F. Stages.**—Connect signal generator leads via a 0.01 $\mu$ F capacitor to control grid (top cap) of V1 and chassis, turn the volume and tone controls fully clockwise and tune to 560 m on scale. Feed in a 477 kc/s (628.93 m) signal, and adjust the cores of L14, L15, L16 and L17 in turn for maximum output.

**I.F. Filter.**—Transfer signal generator leads to A and E sockets, via a suitable dummy aerial. Feed in a 477 kc/s signal, and adjust the core of L1 for minimum output.

**R.F. and Oscillator Stages.**—With the gang at maximum, the pointer should cover the line terminating the M.W. scale at 560 m. It may be adjusted if the fixing screws in the drive wheel bush are slackened.

Before commencing M.W. alignment, switch set to S.W., feed in a 20 m (15 Mc/s) signal tune it in, and adjust C39 to obtain correct calibration. To check accuracy of setting find the image at 21.4 m. If it does not appear re-adjust C39 until signal and image appear in their correct positions.

**M.W.**—Switch set to M.W., tune to 250 m on scale, feed in a 250 m (1,200 kc/s) signal, and adjust C41 for maximum output. Feed in a 500 m (600 kc/s) signal, tune it in, and adjust the core of L9 for maximum output. Readjust trimmer and coil in turn until calibration is correct. Tune to 230 m on scale, feed in a 230 m (1,304 kc/s) signal, and adjust C38 for maximum output.

**S.W.**—Having already adjusted the oscillator circuit as explained earlier, switch set to S.W., tune to 20 m on scale, feed in a 20 m (15 Mc/s) signal, and adjust C35 for maximum output.

**L.W.**—Switch set to L.W., tune to 1,300 m on scale, feed in a 1,300 m (230.8 kc/s) signal, and adjust C42, then C36, for maximum output. Tune to 1,700 m on scale, feed in a 1,700 m (175.5 kc/s) signal, and adjust the core of L10 to correct calibration, then the core of L7 for maximum output, and repeat these adjustments until no improvement can be obtained.

### Press-Button Setting

Remove the escutcheon surrounding the press-buttons (two screws) at the front of the cabinet, exposing the adjusting screws above and below the button plungers. Numbering the buttons from left to right, their ranges are: 1, 1,430-1,986 m; 2, 1,160-1,640 m; 3, 342-560 m; 4, 267-450 m; 5, 200-308 m.

Having selected the button to be reset, tune in the required station manually to identify it (or feed in the correct signal from a signal generator to A and E sockets), turn the waveband switch to the auto position (white dot), unscrew the lower adjustment as far as it will go without the use of force, using the double-ended tool provided with the receiver.

Now depress the button, and screw up the lower adjustment again slowly until the signal is heard, then adjust the upper and lower adjustments in turn for maximum output, using the tuning indicator as an output meter.

When the adjustments are completed, slide the appropriate station label into its slot, and replace the trimming tool in the clip provided for it on the back cover of the receiver.

Sketch showing the connecting panel at the rear of the tuning assembly, showing the connecting points for the nine leads. It is drawn as seen in an inverted chassis.

