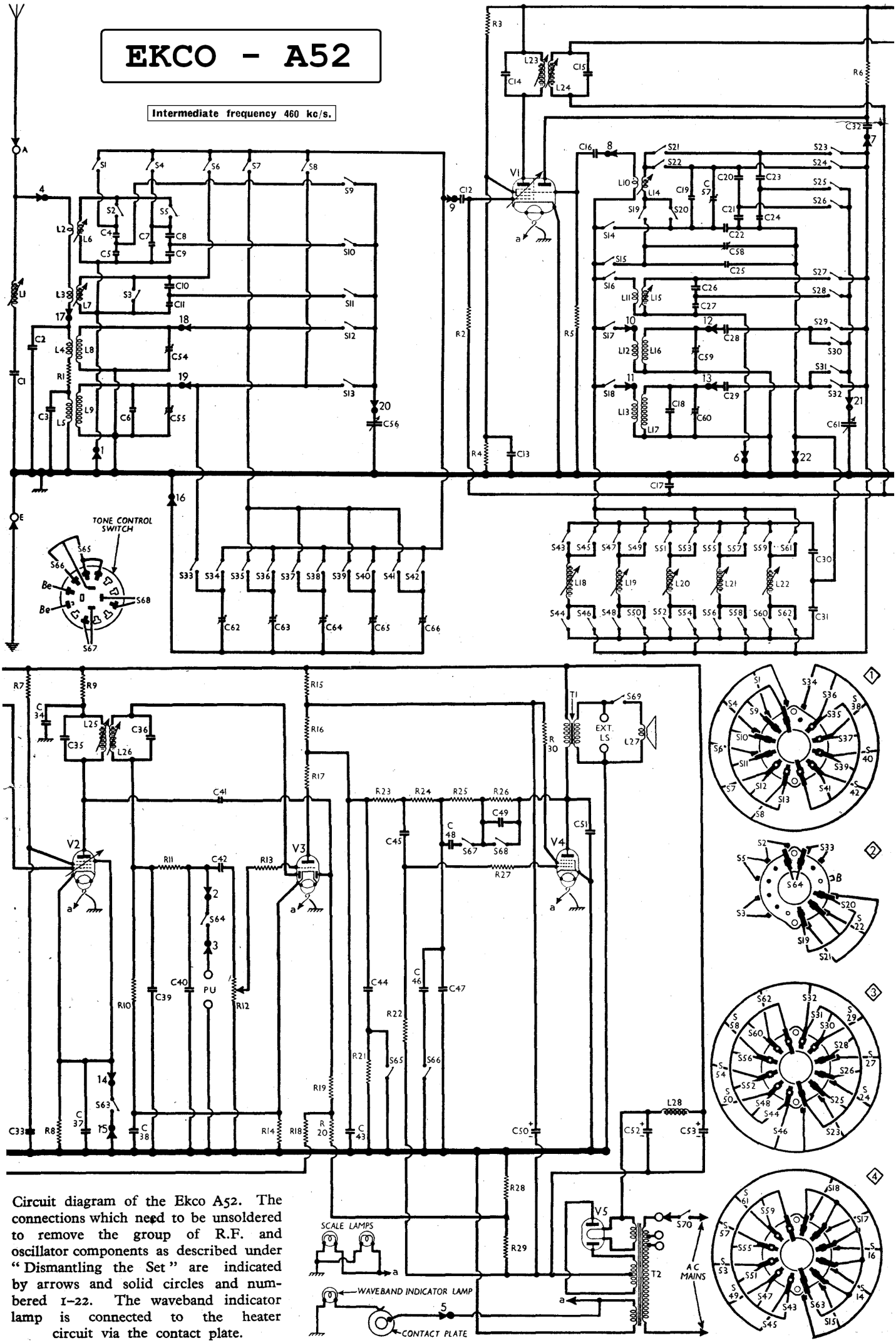
EKCO - A52

Intermediate frequency 460 kc/s.



Circuit diagram of the Ekco A52. The connections which need to be unsoldered to remove the group of R.F. and oscillator components as described under "Dismantling the Set" are indicated by arrows and solid circles and numbered 1–22. The waveband indicator lamp is connected to the heater circuit via the contact plate.

EKCO - U75

	RESISTORS	Values (ohms)	Locations
R1	Aerial series ...	330	A1
R2	V1 hex. C.G. ...	680,000	L4
R3	V1 S.G. H.T. potential divider ...	33,000	L5
R4		33,000	L5
R5	V1 osc. C.G. ...	47,000	L5
R6	Osc. anode load ...	22,000	L5
R7	V2 S.G. feed ...	100,000	M7
R8	V2 cath. resistor ...	47,000	M7
R9	V2 H.T. decoupling	2,200	M7
R10	Sig. diode load ...	470,000	N7
R11	I.F. stopper ...	47,000	N7
R12	Volume control ...	1,000,000	G3
R13	V3 grid stopper ...	220,000	C2
R14	V3 G.B., part A.G.C. delay	1,000	N7
R15	H.T. feed resistor...	10,000	G5
R16	V3 triode anode load resistors ...	47,000	G6
R17		22,000	G6
R18	A.G.C. decoupling	1,500,000	N7
R19	A.G.C. diode load resistors ...	470,000	N7
R20		1,000,000	N7
R21	Part tone control...	470,000	E4
R22	V4 C.G. resistor ...	470,000	G5
R23	Parts of tone control circuit ...	22,000	G6
R24		470,000	G5
R25		470,000	H5
R26		1,000,000	H5
R27	V4 C.G. stopper ...	470	G5
R28	V1, V2, V4 fixed G.B., part A.G.C. delay, resistors ...	33	G5
R29		68	G5
R30	V4 S.G. stopper ...	100	G5

	CAPACITORS	Values (μF)	Locations
C1	I.F. filter tuning ...	0·00015	L6
C2	Aerial M.W. shunt	0·00047	A1
C3	Aerial L.W. shunt	0·00082	A1
C4	Aerial S.W.1. band-spread capacitors	0·000056	J4
C5		0·000039	H4
C6	Aerial L.W. trim....	0·000047	A2
C7	Aerial S.W.2. band-spread capacitors	0·000047	H4
C8		0·00015	J4
C9		0·0001	H4
C10	Aerial S.W.3. band-spread capacitors	0·0012	J4
C11		0·000068	H4
C12	V1 hex. C.G.	0·0003	L4
C13	V1 S.G. decoup. ...	0·1	L5
C14	1st I.F. transformer tuning	0·00015	A2
C15		0·00015	A2
C16	V1 osc. C.G. ...	0·000047	L5
C17	A.G.C. decoupling	0·1	M7
C18	Osc. L.W. trim. ...	0·00027	K5
C19	Oscillator S.W.2. band-spread capacitors ...	0·000017	H4
C20		0·0003	K4
C21		0·0001	J5
C22		0·00027	H4
C23	Oscillator S.W.1. band-spread capacitors	0·00024	J4
C24		0·000068	J4
C25		0·000082	H4
C26	Oscillator S.W.3. band-spread capacitors	0·001	K5
C27		0·000068	K4
C28	Osc. M.W. tracker	0·00057	K5
C29	Osc. L.W. tracker	0·00047	J5
C30	Osc. pre-set tuning reaction... ...	0·00082	H4
C31		0·00033	H4
C32	Osc. anode coup. ...	0·00047	L4
C33	V2 S.G. decoup. ...	0·1	N7
	Continued next col.		

	CAPACITORS (*continued*)	Values (μF)	Locations
C34	V2 anode decoup....	0·1	N7
C35	2nd I.F. transformer tuning ...	0·00015	B2
C36		0·00015	B2
C37	V2 cath. by-pass	0·005	M7
C38	V3 cath. by-pass ...	0·5	N7
C39	I.F. by-passes ...	0·0001	N7
C40		0·0001	N7
C41	A.G.C. coupling ...	0·000015	N7
C42	A.F. coupling ...	0·005	F3
C43	I.F. by-pass ...	0·0025	G5
C44	Part tone control...	0·005	E4
C45	A.F. coupling ...	0·01	G6
C46	Parts of tone control circuit ...	0·00016	E5
C47		0·00016	H5
C48		0·00027	E4
C49		0·002	H6
C50*	H.T. feed decoup.	4·0	E6
C51	Tone corrector ...	0·0025	H5
C52*	H.T. smoothing capacitors ...	8·0	F5
C53*		16·0	F5
C54‡	Aerial M.W. trim.	—	A1
C55‡	Aerial L.W. trim....	—	A2
C56†	Aerial tuning ...	—	B1
C57‡	Osc. S.W.2. trim....	0·00003	H4
C58‡	Osc. S.W.1. track...	0·00003	H4
C59‡	Osc. M.W. trim. ...	—	A2
C60‡	Osc. L.W. trim. ...	—	B2
C61†	Oscillator tuning ...	—	B1
C62‡	Aerial M.W. and L.W. pre-set tuning capacitors ...	—	K6
C63‡		—	J6
C64‡		—	J6
C65‡		—	J6
C66‡		—	H6

*Electrolytic. † Variable. ‡Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	I.F. filter coil ...	8·5	L6
L2	Aerial coupling coils	Very low	H4
L3		Very low	H4
L4		13·5	A1
L5		38·0	A1
L6	Aerial tuning coils	Very low	H4
L7		Very low	H4
L8		5·0	A1
L9		31·0	A1
L10	Oscillator reaction coils	Very low	K4
L11		Very low	K4
L12		1·2	K5
L13		2·0	K5
L14	Oscillator tuning coils	Very low	K4
L15		Very low	K4
L16		3·0	K5
L17		6·5	K5
L18	Oscillator M.W. and L.W. pre-set tuning coils ...	3·7	H5
L19		4·0	J5
L20		3·5	J5
L21		2·0	J5
L22		1·8	K5
L23	1st I.F.trans. Pri.	9·0	A2
L24	1st I.F.trans. Sec.	9·0	A2
L25	2nd I.F. trans. Pri.	9·0	B2
L26	2nd I.F. trans. Sec.	9·0	B2
L27	Speech coil ...	2·7	—
L28	Smoothing choke...	540·0	F4
S1-S64	Waveband, gram and pre-set tuning switches	—	J4
S65-S68	Tone control switches	—	E4
S69	Int. spkr. switch ...	—	G6
S70	Mains sw., g'd R12	—	G3
T1	Output trans. Pri.	485·0	B2
	Output trans. Sec.	0·4	B2
T2	Mains trans. Pri., total	45·0	D2
	Mains trans. Heat. sec.	Very low	D2
	Mains trans. Rect. heat. sec., ...	Very low	D2
	Mains trans. H.T. sec., total ...	615·0	D2

DRIVE CORD REPLACEMENT

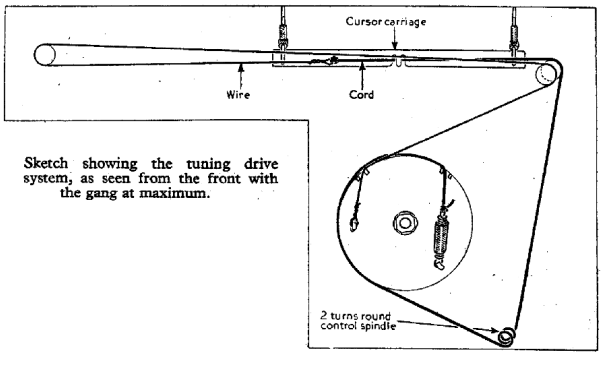
The drive cord consists of 33in of stranded steel wire (obtainable, ready looped, from the manufacturers under Part No. B33563) and about 36in of cord. The sketch below shows the course taken by this combination, as seen when viewed from the front when the gang is at maximum capacitance.

Tie one end of the cord to one of the looped ends of the steel wire, pass the free loop at the other end of the wire through the left-hand slot in the gang drive drum flange, and hook it to the anchor, as shown in the sketch.

The drive wire should then be run at shown, passing in an anti-clockwise direction over the front right-hand pulley, anti-clockwise over the left-hand pulley; the cord section, continuing the run, should then pass clockwise over the rear right-hand pulley, down to the control spindle, and twice round it clockwise.

Finally, the cord must pass clockwise round the gang drum groove, its free end being fed through the right-hand slot and tied to the tension spring. The spring should expand by about half an inch when hooked to its anchor.

The cursor carriage engages the drive cord in a slot, which may be located approximately in the first instance just above the gang spindle, final adjustment being made when the chassis is in the cabinet, as explained under "Circuit Alignment."



Sketch showing the tuning drive system, as seen from the front with the gang at maximum.

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 ECH35	255	1·95	78	2·45
	Oscillator			
	115	5·0		
V2 EF39	235	4·2	97	2·0
V3 EBC33	92	1·9	—	—
V4 EL33	241	29·0	210	3·0
V5 AZ31	290†	—	—	—

† Each anode, A.C.

R.F. and Oscillator Stages.—With the gang at maximum capacitance the cursors should coincide with the high wavelength ends of their respective scales. Errors may be corrected by sliding the cursor carriage along the drive cord. For S.W. alignment a crystal controlled signal generator is desirable, and the receiver should finally be checked against broadcast stations of known wavelength. Transfer "live" signal generator lead to **A** socket, via a suitable dummy aerial.

M.W.—With set still switched to M.W., tune to 250 m on scale, feed in a 250 m (1,200 kc/s) signal, and adjust **C59** (A2) and **C54** (A1) for maximum output. To gain access to the former capacitor it will be necessary to remove the paxolin cover (three machine screws) at the side of **V2, V3** sub-assembly.

L.W.—Switch set to L.W., tune to 1,111 m on scale, feed in a 1,111 m (270 kc/s) signal, and adjust **C60** (B2) and **C55** (A2) for maximum output.

S.W.3.—Switch set to S.W.3, tune to 42.87 m on scale, feed in a 42.87 m (7 Mc/s) signal, and adjust the cores of **L15** (K3) and **L7** (H3) for maximum output.

S.W.2.—Switch set to S.W.2, tune to 20 m on scale, feed in a 20 m (15 Mc/s) signal, and adjust the core of **L14** (K3) for maximum output. Tune to 16.67 m on scale, feed in a 16.67 m (18 Mc/s) signal, and adjust **C57** (C1) and the core of **L6** (H3) for maximum output. Repeat these adjustments until no improvement results and note that any error on this band will be repeated on S.W.1.

S.W.1.—Switch set to S.W.1, tune to 13.96 m on scale, feed in a 13.96 m (21.5 Mc/s) signal, and adjust **C58** (B1) for maximum output.

I.F. Filter.—Switch set to M.W., tune to 500 m on scale, feed in a strong 460 kc/s signal, and adjust the core of **L1** (A2) for minimum output.

CIRCUIT ALIGNMENT

I.F. Stages.—Switch set to M.W. turn gang and volume control to maximum, connect signal generator, via an 0.1 μF in the "live" lead, to control grid (top cap) of **V1** and the **E** socket, feed in a 460 kc/s (652.1 m) signal, and adjust the cores of **L26, L25, L24** and **L23** (location references B2, A2) for maximum output. When correctly aligned an input signal of 100 μV should produce 50 mW power output.