

CAPACITORS		Values	Locations
C1	Aerial and earth isolators ...	0.001 $\mu$ F	G4
C2		0.01 $\mu$ F	G4
C3	Aerial couplings ...	500pF	G3
C4		0.003 $\mu$ F	G3
C5	L.W. aerial trim...	40pF	G3
C6	1st I.F. trans. ...	88pF	B1
C7	tuning ...	88pF	B1
C8	A.G.C. decoupling	0.02 $\mu$ F	F3
C9	L.W. reaction shunt	0.002 $\mu$ F	F3
C10	L.W. osc. trim. ...	100pF	F3
C11	V1 osc. C.G. ...	100pF	G3
C12	M.W. osc. tracker	410pF	G3
C13	L.W. osc. tracker...	180pF	F3
C14	S.G. decoupling ...	0.1 $\mu$ F	F3
C15	2nd I.F. trans. ...	88pF	C1
C16	tuning ...	88pF	C1
C17	V2 cath-by-pass ...	0.04 $\mu$ F	E3
C18	I.F. by-passes ...	330pF	E3
C19		100pF	E4
C20	A.F. coupling ...	0.01 $\mu$ F	E3
C21*	H.T. smoothing ...	32 $\mu$ F	C2
C22	A.F. coupling ...	0.02 $\mu$ F	D3
C23	Part tone control...	1,500pF	E3
C24	Tone corrector ...	0.01 $\mu$ F	D4
C25*	H.T. smoothing ...	32 $\mu$ F	C2
C26	Mains R.F. by-pass	0.05 $\mu$ F	E4
C27†	S.W. aerial trim...	40pF	A2
C28†	M.W. aerial trim...	40pF	A2
C29†	Aerial tuning ...	—	A1
C30†	S.W. osc. trim. ...	40pF	B2
C31†	M.W. osc. trim. ...	40pF	A2
C32†	Oscillator tuning ...	—	A1

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

Valve	Anode		Screen		Cath.
	V	mA	V	mA	
V1 12BE6	207.0	1.5	70.0	5.0	—
V2 12BA6	207.0	0.55	70.0	1.6	0.4
V3 12AT6	56.5	0.3	—	—	—
V4 19AQ5	196.0	35.0	207.0	2.7	10.5
V5 35W4	185.0*	—	—	—	218.0†

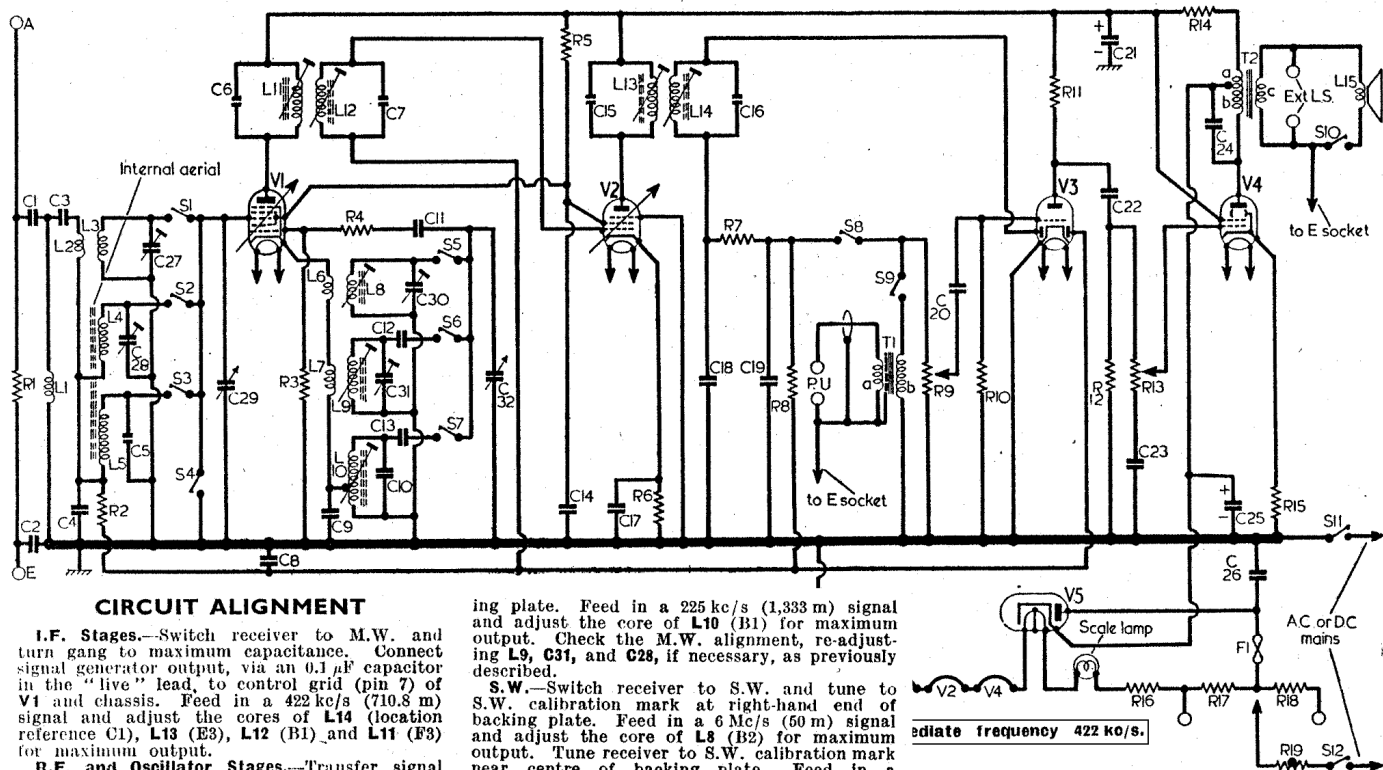
\* A.C. reading. † Cathode current 47 mA.

RESISTORS		Values	Locations
R1	Anti-static shunt...	1M $\Omega$	G4
R2	A.G.C. decoupling	100k $\Omega$	G4
R3	V1 osc. C.G. ...	22k $\Omega$	F3
R4	Osc. stabilizer ...	47 $\Omega$	F3
R5	S.G. H.T. feed ...	18k $\Omega$	E3
R6	V2 G.B. ...	47 $\Omega$	E3
R7	I.F. stopper ...	100k $\Omega$	E3
R8	A.G.C. decoupling	2.2M $\Omega$	E4
R9	Volume control ...	500k $\Omega$	E3
R10	V3 C.G. ...	10M $\Omega$	E3
R11	V3 anode load ...	470k $\Omega$	E4
R12	V4 C.G. ...	220k $\Omega$	E3
R13	Tone control ...	250k $\Omega$	D3
R14	H.T. smoothing ...	820 $\Omega$	D4
R15	V4 G.B. ...	270 $\Omega$	E4
R16	Heater ballast and voltage adj. ...	640 $\Omega$	B2
R17		80 $\Omega$	B2
R18		80 $\Omega$	B2
R19	Thermistor CZ2 ...	—	F4

## KOLSTER-BRANDES LR15

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Mod. hum filter ...	17.5	G4
L2	Aerial coupling ...	—	G3
L3		—	G3
L4	Aerial tuning coils	0.6	A2
L5		12.8	A2
L6	Osc. reaction coupling coils ...	—	F4
L7		0.5	F3
L8	Osc. tuning coils...	—	F4
L9		4.6	F3
L10*	1st I.F. trans. { Pri. Sec. }	7.8	F3
L11		21.0	B1
L12	2nd I.F. trans. { Pri. Sec. }	21.0	B1
L13		21.0	C1
L14	Speech coil	2.8	C1
L15		—	—
T1	P.U. trans. { a b }	2,900.0	A1
		4,000.0	—
		5.0	C1
T2	O.P. trans. { a b }	665.0	—
		0.3	—
S1-S9	Waveband switches	—	G3
S10	Speaker switch ...	—	D4
S11, S12	Mains sw., g'd R13	—	D3
F1		250 mA fuse ...	B2

\* Tapped at 0.7 $\Omega$  from chassis end.



### CIRCUIT ALIGNMENT

**I.F. Stages.**—Switch receiver to M.W. and turn gang to maximum capacitance. Connect signal generator output, via an 0.1 $\mu$ F capacitor in the "live" lead, to control grid (pin 7) of V1 and chassis. Feed in a 422 kc/s (710.8 m) signal and adjust the cores of L14 (location reference C1), L13 (E3), L12 (B1) and L11 (F3) for maximum output.

**R.F. and Oscillator Stages.**—Transfer signal generator leads to A and E sockets. As the tuning scale remains fixed in the cabinet when the chassis is removed, reference is made, during the following alignment instructions, to calibration marks printed along the lower edge of the scale backing plate. Check that with the gang at maximum capacitance, the cursor coincides with calibration mark "D" on the scale backing plate.

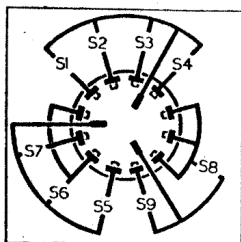
**M.W.**—Switch receiver to M.W. and tune to M.W. calibration mark at right end of backing plate. Feed in a 600 kc/s (500 m) signal and adjust the core of L9 (B1) for maximum output. Tune to M.W. calibration mark near the centre of the backing plate. Feed in a 1,400 kc/s (214 m) signal and adjust C31 (A2) and C28 (A2) for maximum output. During the final adjustments to C28, rock the gang for optimum results.

**L.W.**—Switch receiver to L.W. and tune to L.W. calibration mark at centre of scale back-

ing plate. Feed in a 225 kc/s (1,333 m) signal and adjust the core of L10 (B1) for maximum output. Check the M.W. alignment, re-adjusting L9, C31, and C28, if necessary, as previously described.

**S.W.**—Switch receiver to S.W. and tune to S.W. calibration mark at right-hand end of backing plate. Feed in a 6 Mc/s (50 m) signal and adjust the core of L8 (B2) for maximum output. Tune receiver to S.W. calibration mark near centre of backing plate. Feed in a 15 Mc/s (20 m) signal and adjust C30 (B2) and C27 (A2) for maximum output, rocking the gang while adjusting C27 for optimum results.

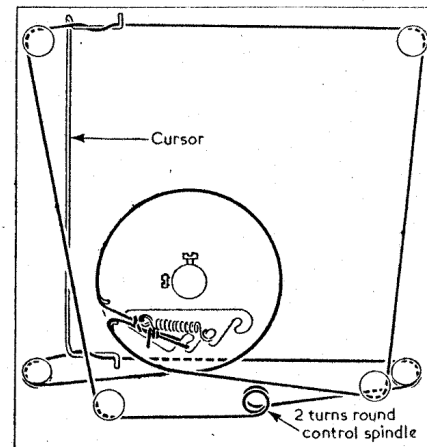
Switches	Gram	L.W.	M.W.	S.W.
S1	—	—	—	—
S2	—	—	—	—
S3	—	—	—	—
S4	—	—	—	—
S5	—	—	—	—
S6	—	—	—	—
S7	—	—	—	—
S8	—	—	—	—
S9	—	—	—	—



Above: Table of the waveband switch operations.

Left: Diagram of the waveband switch unit as seen from the rear of an inverted chassis.

**Drive Cord Replacement.**—About 6ft of high grade flax fishing-line, plaited and waxed, is required for a drive cord. The gang should be tuned to maximum capacitance, and, starting with one end of the cord tied to one of the lugs in the drive drum, the cord should be passed out through the gap in the drum and led off in an anti-clockwise direction, as indicated in the sketch of the tuning drive system.



Sketch of the tuning drive system as seen from the rear of an upright chassis.