

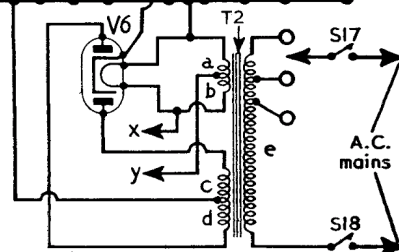
CIRCUIT ALIGNMENT

Equipment Required.—A.M./F.M. signal generator, modulated 30 per cent at 400c/s for A.M., and unmodulated for F.M.; an output meter; a 20,000-ohms-per-volt meter, two matched 220kΩ carbon resistors; and an insulated trimming tool for core adjustments.

Check that with the gang at minimum the F.M. tuner carriage is $\frac{1}{16}$ inch

from fully open, and adjust if necessary by rotating the drive collar on the gang shaft. Also check that with the gang at minimum capacitance the cursor coincides with the datum line at the right-hand end of the L.W. scale.

L8 and L9 are ferrite rod tuned and should be adjusted for maximum output by sliding their formers along the ferrite rod and securing them to the rod with an adhesive after alignment.



Capacitors							
C1	0.001 μ F	J5		C44	0.01 μ F	H4	
C2	0.001 μ F	J5		C45	500pF	G4	
C3	3pF	J5		C46	220pF	G4	
C4	6pF	J5		C47	0.01 μ F	G4	
C5	6pF	J5		C48	2 μ F	G4	
C6	20pF	J5		C49	0.01 μ F	E3	
C7	20pF	J5		C50	0.01 μ F	G4	
C8	0.001 μ F	J5		C51	220pF	G4	
C9	0.01 μ F	J5		C52	0.01 μ F	F4	
C10	12pF	J5		C53	0.003 μ F	E3	
C11	100pF	J5		C54	8 μ F	E4	
C12	15pF	J5		C55	50 μ F	C2	
C13	0.001 μ F	H3		C56	50 μ F	C2	
C14	0.01 μ F	B2		C57	50 μ F	F4	
C15	0.01 μ F	B2					
C16	4,700pF	B2		Resistors			
C17	130pF	H3		R1	220 Ω	J5	
C18	30pF	H3		R2	1M Ω	J5	
C19	—	B2		R3	4.7k Ω	A1	
C20	0.01 μ F	H4		R4	1.5k Ω	A2	
C21	82pF	H4		R5	220k Ω	H3	
C22	0.04 μ F	H4		R6	1.5M Ω	B2	
C23	—	B1		R7	3.3k Ω	B2	
C24	30pF	B1		R8	470k Ω	B2	
C25	10pF	H4		R9	150 Ω	H4	
C26	80pF	H4		R10	47k Ω	H4	
C27	435pF	H4		R11	56k Ω	H4	
C28	495pF	H4		R12	18k Ω	G4	
C29	200pF	H4		R13	180 Ω	G4	
C30	10pF	A2		R14	2.2k Ω	G4	
C31	15pF	A2		R15	82 Ω	G4	
C32	100pF	A2		R16	47k Ω	G4	
C33	100pF	A2		R17	47k Ω	G4	
C34	0.1 μ F	G4		R18	150 Ω	G4	
C35	0.04 μ F	G4		R19	2.2M Ω	G4	
C36	0.01 μ F	G4		R20	47k Ω	G4	
C37	15pF	B2		R21	220k Ω	H3	
C38	22pF	B2		R22	820k Ω	E3	
C39	220pF	G4		R23	10M Ω	G4	
C40	350pF	B2		R24	220k Ω	F4	
C41	350pF	B2		R25	150k Ω	G4	
C42	220pF	G4		R26	820k Ω	E3	
C43	0.04 μ F	H4		R27	4.7k Ω	F4	
				R28	150 Ω	F4	

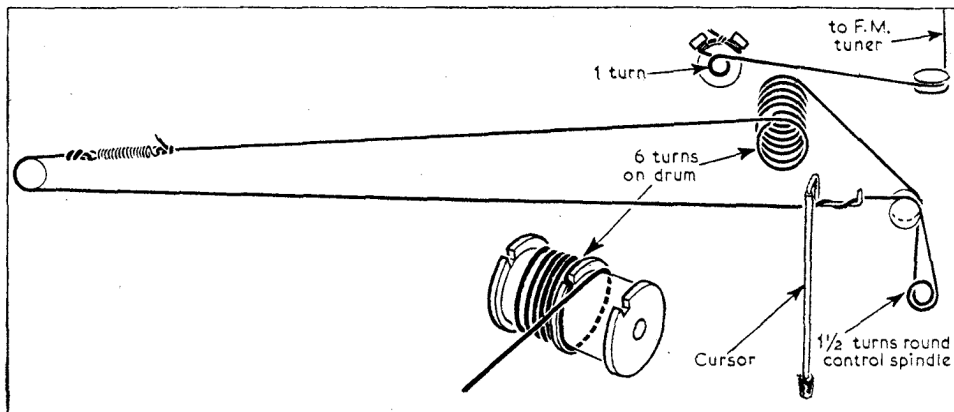
A.M. Alignment

- 1.—Connect the output meter across external speaker sockets.
- 2.—Switch receiver to M.W. and tune it to 550m. Turn volume control to maximum. Connect signal generator to V2b control grid (pin 2) and chassis. Feed in a 470kc/s signal and adjust L20 (B2), L19 (B2), L15 (A2) and L14 (A2) in that order for maximum output, reducing the generator output as the circuits are brought into line.
- 3.—Tune receiver to 500m. Connect signal generator via dummy aerial to the A.M. aerial and earth sockets. Feed in a 600kc/s signal and adjust L10 (H4) for maximum output.
- 4.—Tune receiver to 200m, feed in a 1,500kc/s signal and adjust C24 (B1) and C18 (B2) for maximum output.
- 5.—Tune receiver to 425m, feed in a 700kc/s signal and adjust the position of L8 (B2) for maximum output.
- 6.—Switch receiver to L.W., and tune it to 1,400m. Feed in a 214.3kc/s signal and adjust C26 (H4) and L9 (C2) for maximum output.

F.M. Alignment

- 1.—Switch receiver to F.M. and tune it to the low frequency end of the scale. Turn volume and tone controls fully clockwise. Connect the two 220k Ω matched resistors in series across R20 (G4). Connect 20,000 ohms/volt output meter between the junction of the two 220k Ω resistors and chassis. Connect signal generator to the control grid (pin 2) of V3 and chassis. Feed in a 10.7Mc/s C.W. signal (not modulated) and adjust L16 (B2) for maximum output.
- 2.—Connect output meter between the junction of the two 220k Ω resistors and the junction of R15 (G4) and C39 (G4) and adjust L17 (B2) for zero output. L17 should be tunable from a maximum in one direction to a maximum in the other direction. The correct tuning point is the zero position between the two peaks.

- 3.—Connect output meter across C39 (G4). Connect signal generator to control grid (pin 2) of V2 and chassis. Feed in a 10.7Mc/s signal and adjust L13 (A2) and L12 (A2) for maximum output. Retune L16 (B2) if necessary.
- 4.—Connect signal generator to the junction of R3 (A1) and R4 (A1) via a 0.001 μ F H.T. isolating capacitor. Feed in a 10.7Mc/s signal and adjust L6 (A2) and L7 (A2) for maximum output.
- 5.—Tune receiver to 91Mc/s. Connect signal generator to the F.M. aerial sockets and feed in a 91Mc/s signal, unmodulated. Adjust L4 (J5) and L3 (J5) for maximum output.



Switches	F.M.	M.W.	L.W.	Gram.
S1	C	—	—	—
S2	C	—	—	—
S3	—	C	C	—
S4	—	C	—	C
S5	—	C	—	C
S6	—	—	C	C
S7	—	—	C	C
S8	—	—	C	C
S9	—	—	C	C
S10	—	C	C	C
S11	—	C	C	—
S12	C	—	—	—
S13	C	—	—	—
S14	—	C	C	—
S15	—	—	C	C

A.M. Drive Cord.—A length of nylon cord of approximately 47 inches is required, which should be run as shown at the head of this column, where it is drawn as seen when viewed from the front of the chassis with the gang at maximum capacitance. In this position the slots in the double drive drum should be approximately 45 degrees from the vertical position, at about 10 o'clock. Attach the cord spring to one end of the new cord and temporarily anchor the other end of the spring to the unused earthing lug situated above the chassis near the volume control. Pass the cord one turn clockwise round the front section of the double drive drum, then through the slot in the central fin and then five turns clockwise round the rear section of the drum. Pass the cord over the rear plastics pulley and clockwise round the plastics pulley at the other end of the chassis. Release the spring from its temporary anchor position and tie the free end of the cord to the free end of the spring so that the spring is under slight tension. Seal the knots with adhesive and fit the cursor.

F.M. Drive Cord.—Replacement of this tuning drive necessitates the complete removal of the F.M. tuner unit and the F.M. circuits will require re-alignment after the tuning unit drive cord has been replaced.
A length of nylon cord of approximately 10 inches is required together with a brass eyelet. To remove F.M. unit, disconnect the leads and bonding braid, release the pointer drive and remove four screws from beneath the tuner chassis. Remove the screening cover (four 6 B.A. cheese head screws). Make a half-inch loop in one end of the cord so that this knot is slightly imbedded into the eyelet and the shank of the latter enters the hole in the insulated panel. The eyelet should now be threaded on to the cord so that the shank faces the front of the unit. Tie a small knot at the 6 1/2 inch mark, seal with adhesive, and pull the cord so that this knot is slightly imbedded into the eyelet and the shank of the latter enters the hole in the insulated panel. Replace the screening cover and reassemble the tuning unit on to the receiver chassis. Pass the looped cord round the plastics pulley and then one turn anti-clockwise round the gang spindle. Then pass it round one screw on the collar on the gang spindle, and loop it on to the second screw, as shown in the sketch.

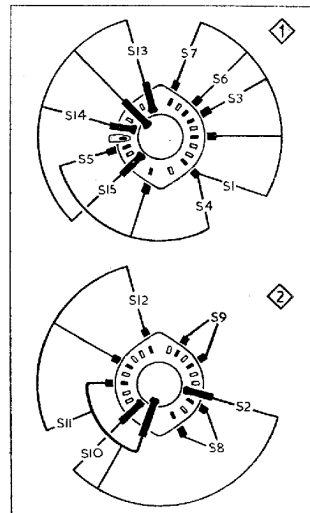
Valve	Anode		Screen		Cath.	
	V	mA	V	mA	V	mA
V1a ECC85	—	—	—	—	—	—
V1b ECC85	208	9.3	—	—	—	—
V2a ECH81	182	5.6	—	—	—	—
V2b ECH81	74	2.9	—	—	—	—
V3 EF89	251	2.3	96	6.2	1.8	11.5
V4d EABC80	230	7.3	103	4.5	1.8	11.8
V5 EL84	225	6.9	96	2.1	1.78	8.5
V6 EZ80	213	7.4	103	2.3	1.9	9.1
	75	0.7	—	—	—	—
	78	0.6	—	—	—	—
	255	43.0	225	4.6	6.8	47.6
	248	39.0	207	4.1	6.2	43.0
	245	—	—	—	—	—

*Set switched to A.M.

†Set switched to F.M.

‡Each anode A.C.

Waveband Switch Diagrams



Diagrams of the two switch units, as seen from the rear. The associated table is in the next column.

EKCO - A320