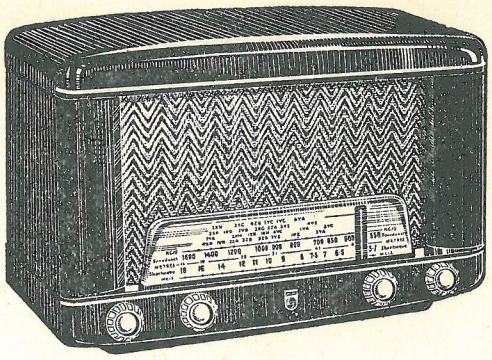
PHILIPS RADIOPLAYER
DUOPLAYER : MODEL BZ327A



Mains Supply 210–250 Volts, 50 c/s.

Wave Ranges — BROADCAST 535–1635 Kc/s

SHORTWAVE 5.5–19 Mc/s

Intermediate Frequency 455 Kc/s

REMOVAL FROM CABINET :

As the majority of adjustments are accessible only beneath the chassis, it is necessary to remove the chassis from the cabinet for most service work to be carried out, and the following procedure should be adopted.

Remove the mains plug from the supply.

Remove four push-on knobs.

Remove speaker plug from socket.

Loosen off the pointer clamping screw and release the drive cable from the pointer.

Remove the screw holding the plate aerial contact spring.

Remove four chassis mounting bolts.

The chassis will now slide out of the cabinet, leaving the dial mechanism and loudspeaker in the cabinet.

To replace the chassis, reverse the above procedure.

REPLACING THE DIAL SCALE :

The formed perspex embossed dial scale in this model is held in place by two stops and a short pin moulded inside the front of the cabinet.

To remove the scale from the cabinet, slide the pointer to one end of its travel, push the scale inwards, at the bottom centre, until it releases from the moulded pin and lift the scale vertically until it comes right out of the slot.

To replace the scale, fit one end between the cabinet and light shield first, then push the other side down, at the same time force the centre inwards slightly and push down until the hole in the scale clicks over the holding pin.

ALIGNMENT OF THE RECEIVER :

The only alignment adjustments accessible while the chassis is in its cabinet are the intermediate frequency slugs, the coil inductances and the broadcast padder.

Unless the intermediate frequency filters only have to be aligned, it is advisable to remove the chassis from its cabinet and use an auxiliary scale and pointer, as used on model BZ226A.

The auxiliary scale should be clipped onto the pulley mounting brackets on the front of the chassis, and the pointer attached to the top driving cable.

Switch on the receiver and allow it to warm up for a few minutes.

Turn the volume control to the maximum position and the tuning condenser to maximum capacity.

Set the pointer to the reference line at the low frequency end of the scale, and the waveband switch in the broadcast position.

Apply a signal of 455 Kc/s modulated 30% through a capacity of 0.01 mfd to the control grid of the ECH 42.

Adjust the intermediate frequency filters for maximum output by means of the adjusting slugs at the side of the cans (see trimmer position diagram), in the order:—

1. Diode Coil
2. EAF 42 Plate Coil
3. ECH 42 Plate Coil
4. EAF 42 Grid Coil

Repeat the above until maximum output is obtained.

The input required from the signal generator for a power output of 50 milliwatts at the secondary of the output transformer should not exceed 20 microvolts.

Disconnect the coupling condenser from the control grid of ECH 42 and connect the signal generator through a standard dummy aerial to the aerial and earth wire of the receiver.

Turn the pointer to the 1500 Kc/s position on the scale and apply a signal of 1500 Kc/s to the aerial.

Adjust the broadcast oscillator trimmer until the signal is tuned in, and adjust the aerial trimmer for maximum output.

Turn the pointer to the 600 Kc/s reference point on the scale and apply a signal of 600 Kc/s to the aerial.

Adjust the broadcast padder until the signal is tuned in and adjust the aerial inductance slug for maximum output.

Turn the pointer to the 1500 Kc/s position on the scale, and adjust as before.

Check the sensitivity and calibration at 950 Kc/s.

If the calibration is not correct, the sensitivity will be low, and if 950 Kc/s tunes in at a lower frequency on the scale, then the oscillator inductance adjusting slug should be screwed in, slightly overcorrecting, and the oscillator padder adjusted to correct 600 Kc/s, and the oscillator trimmer to correct 1500 Kc/s.

If 950 Kc/s tunes in at a higher frequency on the scale, then the oscillator inductance adjusting slug should be screwed out, again slightly overcorrecting, and the oscillator padder adjusted to correct 600 Kc/s and the oscillator trimmer adjusted to correct 1500 Kc/s. (The sensitivity at the three check points should not exceed 5 microvolts input for 50 milliwatts output.)

NOTE : Once the aerial inductance and trimmer have been adjusted at their respective frequencies, they should not be moved during calibration adjustments.

Turn the waveband switch to the shortwave band position.

Turn the oscillator trimmer to maximum capacity and the padder trimmer to the halfway position.

Set the pointer to the 17 Mc/s position on the scale, and apply a signal of 17 Mc/s to the aerial.

Turn the oscillator trimmer out until the ***second*** signal is tuned in and adjust the shortwave aerial trimmer for maximum output, rocking the tuning either side of the signal as the aerial adjustment is made.

Turn the pointer to the 6 Mc/s position on the scale, and apply a signal of 6 Mc/s to the aerial terminal of the receiver. Adjust the shortwave oscillator inductance until the signal is tuned in, and adjust the aerial inductance for maximum output.

Turn the pointer to the 17 Mc/s position on the scale, apply a signal of 17 Mc/s to the aerial and re-adjust as before, for calibration and sensitivity.

Apply a signal of 10 Mc/s to the aerial, and check for calibration. If the calibration is not correct, the oscillator inductance should be adjusted, slightly overcorrecting as in broadcast, and adjust the 17 Mc/s position with the shortwave oscillator trimmer and 6 Mc/s with the shortwave oscillator padder.

This oscillator padder must be adjusted with an insulated trimmer tool as the outside plates are at the oscillator grid potential (see circuit diagram C3).

When correctly aligned, the sensitivity should not exceed 15 microvolts for 50 milliwatts output.

Seal all trimmers and adjusting slugs.

VOLTAGE TABLE

All readings taken with a primary input of 230 volts, 50 c/s.

Full load primary current, should not exceed 225 mA.

Valve	Function	Filament	Plate	Screen	Cathode
ECH42	Frequency converter and oscillator	6.2V	225 Osc. 110	60	0
EAF42	I.F. amplifier demodulator and delayed A.V.C.	6.2V	225	69	0
EBC41	Audio voltage amplifier	6.2V	110	—	1.3
EL41	Audio power output	6.2V	260	225	5.6
EZ40	Rectifier	6.2V	280 A.C. per plate	—	300
8045N	Panel lamps (2 per set)	6.2V	—	—	—

The above voltages are measured between the point indicated and chassis with a meter having a movement of 20,000 ohms per volt on D.C. ranges and 1000 ohms per volt on A.C. ranges. Variations up to $\pm$ 10% permissible.

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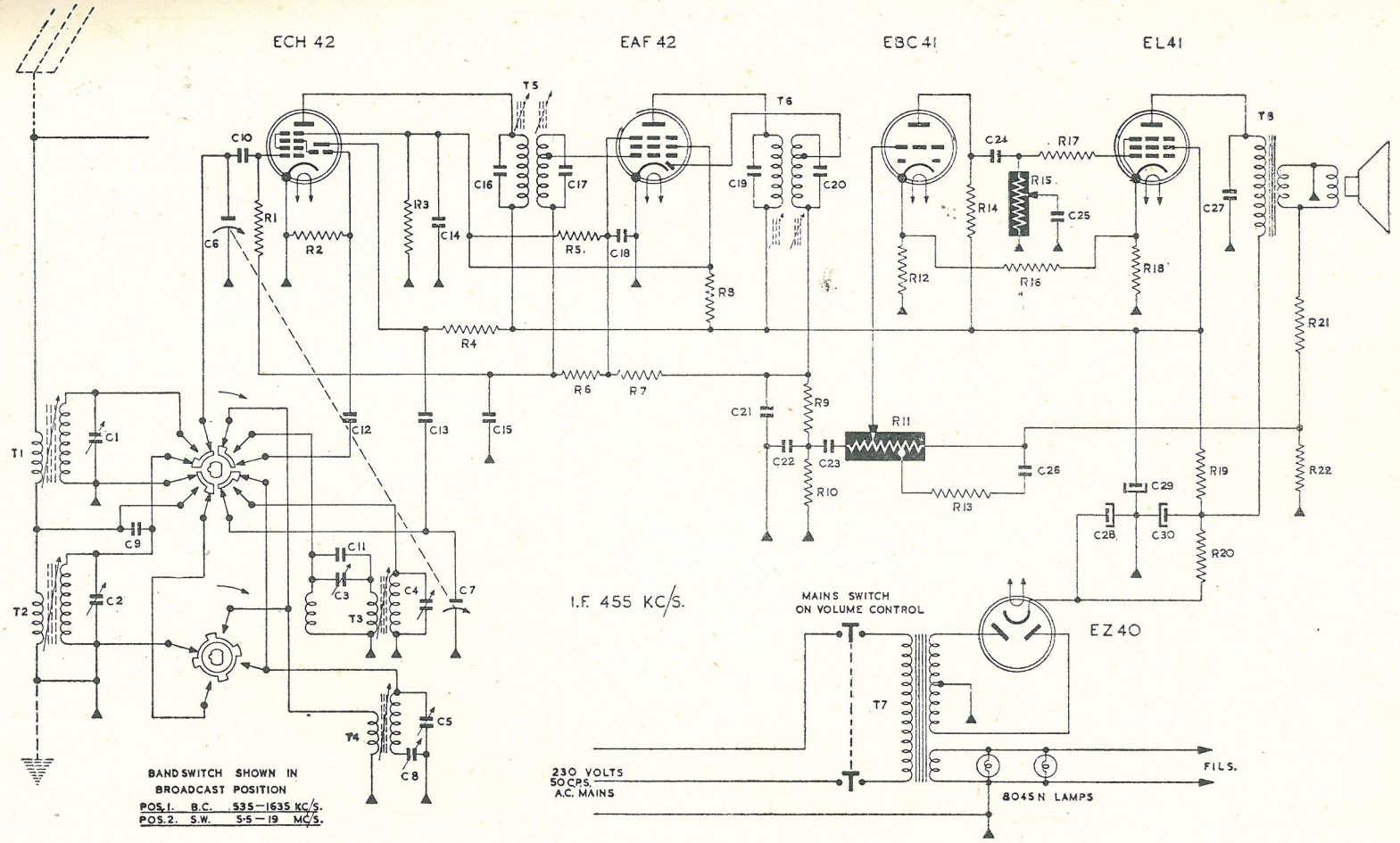


CONDENSERS

C1	3-30 mmfd air trimmer	C13	500 mmfd mica
C2	" " " "	C14	.05 mfd 500v. paper
C3	" " " "	C15	" " "
C4	" " " "	C16	110 mmfd I.F. condenser
C5	" " " "	C17	" " " "
C6	12-500 mmfd tuning condenser	C18	400 mmfd mica
C7	" " " "	C19	110 mmfd I.F. condenser
C8	150-750 mmfd B.C. padder	C20	" " " "
C9	3.9 mmfd ceramic	C21	100 mmfd ceramic
C10	150 " "	C22	" " "
C11	100 " "	C23	.01 mfd 500v. paper minicap
C12	56 " "	C24	" " " "
		C25	.002 mfd 500v. paper
		C26	.01 mfd 500v. paper minicap

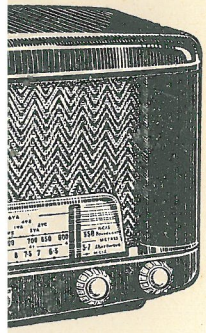
C27	.005 mfd 750v. paper	
C28	40 mfd 350v.	Triple
C29	20 " "	electro-
C30	40 " "	lytic

RESISTORS

R1	1 meg. ¼w. carbon	R8	30k 1w. carbon
R2	47k ½w. carbon	R9	270k ½w. carbon
R3	50k " "	R10	300k " "
R4	25k " "	R11	.65 + 2 meg. volume control
R5	10 meg. ½w. carbon	R12	1500 ohms ½w. carbon
R6	4.7 " " "	R13	100k ¼w. carbon
R7	2.2 " ¼w. "	R14	150k ½w. "
		R15	.5 meg. tone control
		R16	47k ½w. carbon
		R17	10k ½w. "
		R18	150 ohms 1w. carbon
		R19	2200 ohms 2w. carbon
		R20	500 ohms 4w. wire wound
		R21	220 ohms ½w. carbon
		R22	10 ohms ½w. carbon

COILS

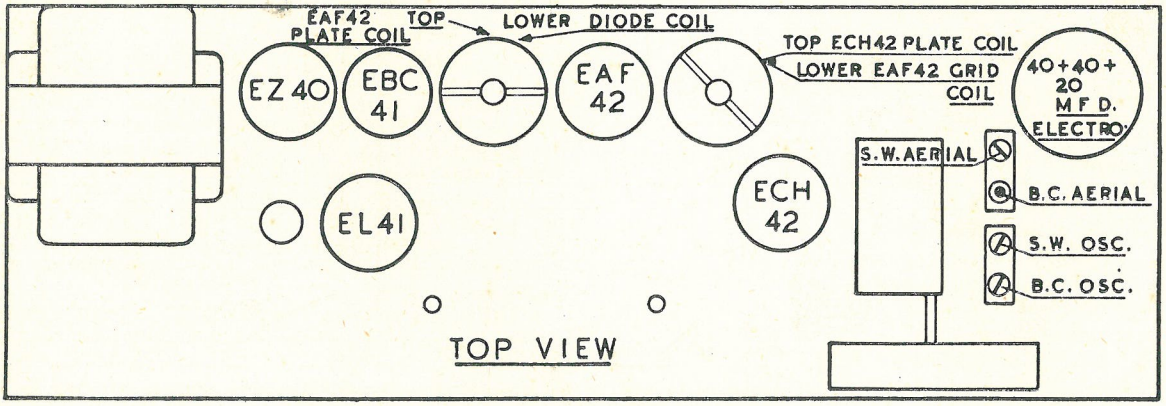
T1	S.W. aerial coil	VK 469-55
T2	B.C. " "	VK 469-54
T3	S.W. oscillator coil	VK 471-37
T4	B.C. " "	VK 471-36
T5	1st. I.F. Filter	A3 121-94
T6	2nd. I.F. Filter	A3 121-94
T7	Power transformer	VK 630-65
T8	Output "	VK 670-71



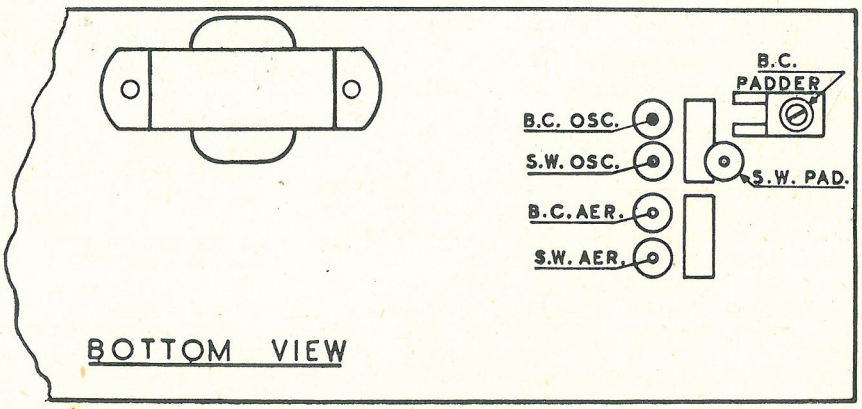
Coil and Transformer Resistances

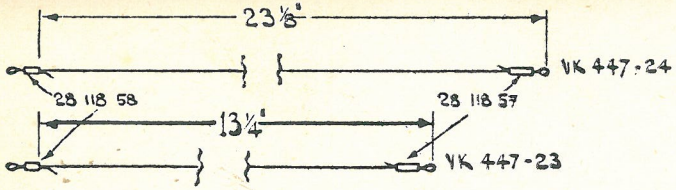
VK 469-54	Aerial Coil Broadcast	Primary Secondary	71 ohms 2.45 ohms
VK 469-55	Aerial Coil Shortwave	Primary Secondary	1.5 ohms 0.16 ohms
VK 471-36	Oscillator Coil Broadcast	Tuned Feedback	11 ohms 4.7 ohms
VK 471-37	Oscillator Coil Shortwave	Tuned Feedback Padder	0.17 ohms 0.345 ohms 1.5 ohms
A3 121-94	Intermediate Filter	Each winding Tap	7.25 ohms 4.4 ohms
VK 670-71	Output Transformer	Primary Secondary	320 ohms 0.57 ohms
VK 630-65	Power Transformer	Primary Filament Secondary	37.5 ohms 0.075 ohms 265 ohms 290 ohms

TRIMMER POSITION DIAGRAM

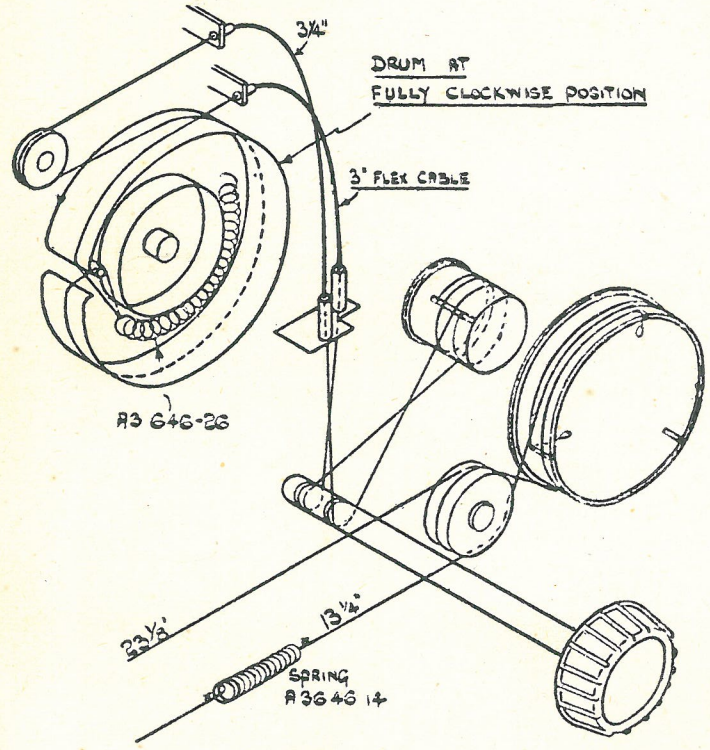


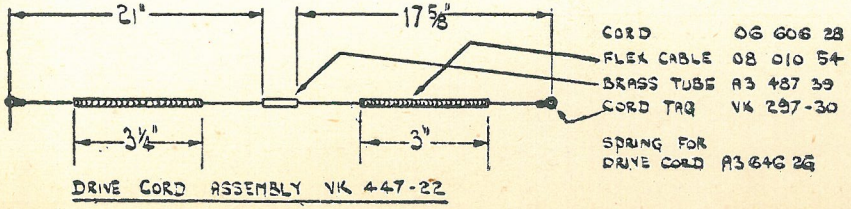
TRIMMER LOCATION DIAGRAMS





POINTER CORD ASSEMBLY





DRIVE CORD ASSEMBLY VK 447-22

REPLACING THE GANG DRIVE CORD :

It is necessary when replacing the gang drive cord, to remove the pointer drive cable drum. This is done by removing the pointer cable from the drum and removing the three fixing screws, and sliding the drum forward.

Turn the gang to the maximum capacity position and attach the spring A3 646-26 (see diagram) securely to the drum, by bending the lug on the drum over one end of the spring.

The small bakelite driving drum has a slot across the rim, with two small grooves to position the cord (VK 447-22). Under the slot is a round hole into which the brass tube on the cord is fitted, with the short end (17⅝") of the cord towards the back of the drum. With the slot in the drum at 10 o'clock the back cord is passed round the drum one and a half times in a clockwise direction towards the front of the drum, and the front cord is passed round the drum one and a quarter times in an anti-clockwise direction. A small piece of cellulose tape placed over the turns and drum will assist in keeping the cord in place while further threading operations are carried out.

The back cord is next fed over the drive shaft in an anti-clockwise direction for three turns towards the chassis, and the flex cable (3") is fitted into the right hand cable socket on the chassis bracket, and the lower cable socket on the gang condenser bracket. This end of the cord is then placed over the gang drum and brought through the slot in the drum and the tag placed over the end of the spring. The gang condenser should now be opened slightly to take up the slack in the cord, without placing any tension on the small driving drum. The front cord of the driving drum is now fed under the driving shaft in a clockwise direction for two and a half turns towards the front of the shaft and the flex cable (3¼") is fitted into the left hand cable socket on the chassis bracket and the upper socket on the gang condenser bracket. This end of the cord is next placed round the small brass pulley and round the gang drum in a clockwise direction.

Remove the cellulose tape from the small driving drum and with a pair of pliers expand the spring at the same time taking up the slack in the free end of the cord, until it can be continued round the drum, and passes through the slot in the drum, round the capstan and over the end of the spring. Release the spring and see that the cord is positioned on the drive shaft in such a way that it does not bind in the chassis bearing, and close up any gaps between adjacent turns. Turn the drive shaft a few times so that the tension is equalised, over the cord.

Replace the large pointer driving drum so that when the gang is in the maximum capacity position the longest slot in the rim of the drum is approximately at 12 o'clock.

REPLACING THE POINTER DRIVE CABLES :

With the gang in the minimum capacity position, place the smaller brass clamp (28-118-58) of the cable (VK 447-24) in the longest slot in the rim of the pointer driving drum, which should be at approximately 5 o'clock. The cable is then fed for a short distance round the drum in a clockwise direction, then placed over the rear pulley on the double pulley assembly and over the single pulley at the left hand end of the chassis. The spring (A3 646-14) is attached to the free end of the cable, and the other end of the spring attached to the cable (VK 447-23) at the loop on the end formed by the brass clamp (28-118-57), and the cable is passed under the front pulley of the double pulley assembly and over the driving drum, for two complete revolutions in a clockwise direction, towards the front of the rim. The tension spring is then stretched to allow the brass clamp (28-118-58) to slide into the shortest rim slot, at the 9 o'clock position of the drum. The cables should now be adjusted on the drums so that they do not cross, and the rear cable should progress towards the back of the drum rim when it is taking up cable.