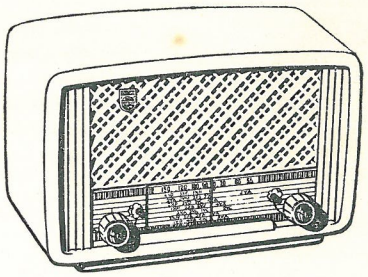
# PHILIPS RADIOPLAYER: MODEL BZ246U

5 Valve Superheterodyne Receiver

Mains Supply: 210-250 volts A.C., 50-100 c/s or D.C.

Tuning Range: 535-1635 Kc/s

Intermediate Frequency: 455 Kc/s



## REMOVAL FROM THE CABINET

By removing the back and bottom cover, it is possible to carry out most service work, however, if essential to remove the chassis from the cabinet proceed as follows:

Remove the mains plug from the supply. Remove the back and bottom cover. Take out the UY41 valve, and unsolder the two speaker wires from the lug strip on the top of the chassis. Turn the tuning control to the low frequency end of the dial, and remove the two control knobs. Remove the two screws, retaining the dial scale. Pull the top of the dial scale forward clear of the ridge, and lift forward and upwards to clear the bottom lip. Remove the two chassis retaining screws, located in the front skirt of the chassis. Slide the chassis partly out of the cabinet, then pull the top of the pointer forward, and push back into the slot in the cabinet. Slide the chassis clear of the cabinet.

When replacing the chassis in the cabinet, place the cabinet upside down, protecting the top with a piece of felt on the bench. Turn the tuning condenser to the low frequency end of the dial. Slide the chassis partly into the cabinet, and position the pointer in the slot opening in the front of the cabinet. Slide the chassis right in, and replace the holding screws in the front skirt. Replace the dial scale, making sure that the bottom of the dial slides past the light shield, and refit the screws.

Replace the knobs. Resolder the speaker connections, replace the UY41 valve.

Replace the back and bottom cover.

## ALIGNMENT OF THE RECEIVER

Attention is drawn to the fact that the high tension supply is rectified from the mains supply, so that in the event of the mains cord, being improperly connected, it is possible that the phase of the supply is connected to the chassis. Therefore, before commencing work on the receiver it is advisable to check the mains plug for correct phasing. Further checks may be carried out, by connecting a neon lamp between chassis and earth, measuring the potential of the chassis with respect to neutral or earth with a low consumption A.C. voltmeter, or by using a suitable 1:1 isolating transformer.

Set the pointer to the reference position on the dial, with the tuning condenser at maximum capacity.

This reference position is the short gap in the horizontal lines on the right hand end of the scale, below 550 Kc/s. 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 the minimum capacity position.

Apply a signal of 455 Kc/s, modulated 30% through a capacity of 0.01 mfd to the control grid of the UCH42 valve. Adjust the micro-band pass filters by means of the adjusting slugs on the top of the cans, in the order (see trimmer position diagram) 1—Diode Coil, 2—UAF42 Plate Coil, 3—UCH42 Plate Coil, 4—UAF42 Grid Coil.

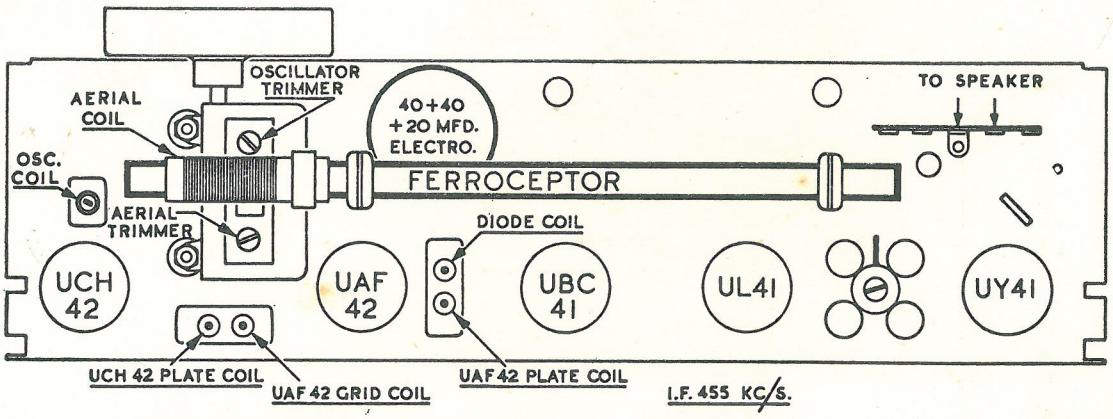
Disconnect the 0.01 mfd condenser from the control grid of the UCH42 valve, and connect the signal generator, via a standard dummy to the aerial and earth sockets on the back of the chassis.

Apply a signal of 600 Kc/s to the aerial socket and turn the pointer to the 600 Kc/s position on the dial.

Adjust the oscillator coil slug until the signal is tuned in, and with an insulated rod, adjust the coil on the Ferroceptor rod for maximum output.

Turn the pointer to the 1400 Kc/s position on the dial scale, and apply a signal of 1400 Kc/s to the aerial. Adjust the oscillator trimmer until the signal is correctly tuned, and adjust the aerial trimmer for maximum output.

Repeat as for 600 Kc/s and seal the Ferroceptor coil firmly in position. Check at 1400 Kc/s and adjust if necessary. Check the calibration at 950 Kc/s. The rather low impedance of the signal generator and dummy, damps the high Q value of the input circuit, so that if the receiver is to have an optimum performance on the Ferroceptor, the final adjustment of the aerial trimmer and Ferroceptor should be made by radiating the signal to the receiver, feeding the signal generator into a loop of six turns of approximately 6" diameter, mounted in a vertical plane, with its centre 5" above the bench, at right angles to the longitudinal axis of the Ferroceptor, and about 12" away. When all adjustments are correct seal the trimmers and adjusting slugs.




TRIMMER DIAGRAM

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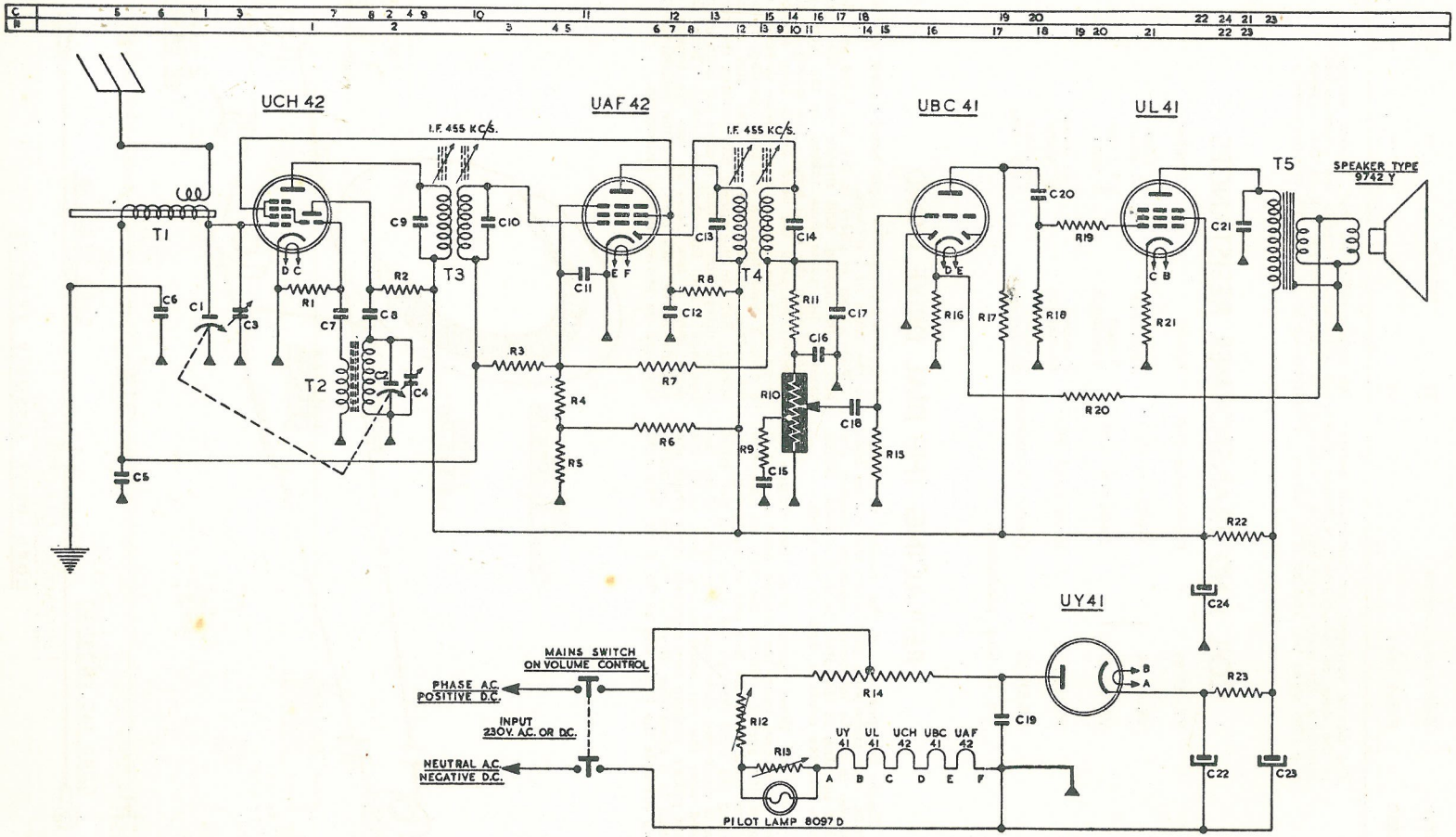



## CONDENSERS

| | |
|---|---|
| C1 | 12-460 mmfd gang condenser |
| C2 | 10-193 mmfd gang condenser |
| C3 | 25 mmfd compression trimmer |
| C4 | 25 mmfd compression trimmer |
| C5 | .05 mfd 350V. paper |
| C6 | .01 mfd 750V. paper |
| C7 | 47 mmfd ceramic |
| C8 | 150 mmfd ceramic |
| C9 | I.F. condenser |
| C10 | I.F. condenser |
| C11 | 500 mmfd mica |
| C12 | .05 mfd 350V. paper |
| C13 | I.F. condenser |
| C14 | I.F. condenser |
| C15 | .01 mfd 500V. paper |
| C16 | 100 mmfd ceramic |
| C17 | 100 mmfd ceramic |
| C18 | .005 mfd 350V. paper |
| C19 | .01 mfd 750V. paper |
| C20 | .01 mfd 500V. paper |
| C21 | .005 mfd 750V. paper |
| C22 | 40 mfd 350V. } triple |
| C23 | 40 mfd 350V. } elect- |
| C24 | 20 mfd 350V. } rolytic |

## RESISTORS

| | |
|---|---|
| R1 | 47K ¼W. carbon |
| R2 | 25K ¼W. carbon |
| R3 | 4.7M ¼W. carbon |
| R4 | 10M ¼W. carbon |
| R5 | 100K ¼W. carbon |
| R6 | 470K ¼W. carbon |
| R7 | 2.2M ¼W. carbon |
| R8 | 15K 1W. carbon |
| R9 | 15K ¼W. carbon |
| R10 | 500K volume control tapped at 50K |
| R11 | 47K ¼W. carbon |
| R12 | Tempco resistor 49-379-62 |
| R13 | Tempco resistor 49-379-67 |
| R14 | 910 ohms tapped at 180 ohms |
| R15 | 4.7M ¼W. carbon |
| R16 | 10 ohms ¼W. carbon |
| R17 | 250K ½W. carbon |
| R18 | 680K ½W. carbon |
| R19 | 10K ¼W. carbon |
| R20 | 100 ohms ½W. carbon |
| R21 | 150 ohms 1W. carbon |
| R22 | 1000 ohms 1W. carbon |
| R23 | 370 ohms 4W. wire wound |

## COILS

| | | |
|---|---|---|
| T1 | Ferroxcube rod aerial | VK-469-63 |
| T2 | Oscillator coil | VK-471-44 |
| | *Oscillator coil | VK-471-46 |
| T3 | 1st I.F. transformer | A3-126-84 |
| T4 | 2nd I.F. transformer | A3-126-84 |
| T5 | Output transformer | VK-670-95 |

* In later production.

# VOLTAGE TABLE

All readings taken with an input of 230 volts 50c/s.
Full load input current (moving iron ammeter) 225 mA.

| VALVE | FUNCTION | FILAMENTS | PLATE | SCREEN | CATHODE |
|---|---|---|---|---|---|
| UCH42 | Frequency converter and oscillator | 14 | Conv. 160 Osc. 85 | 65 | — |
| UAF42 | I.F. amplifier, Detector and delayed A.V.C. | 12.6 | 160 | 65 | — |
| UBC41 | Voltage Amplifier | 14 | 60 | — | — |
| UL41 | Power output | 45 | 170 | 160 | 8.8 |
| UY41 | Half wave rectifier | 31 | 215 A.C. | — | 210 |
| 8097D | Panel lamp | 19 | — | — | — |

The above voltages are measured between the points indicated and chassis, except in the case of the filament voltages which are measured between the valve-socket terminals, the meter used 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 + or — 5% are permissible.

# COIL AND TRANSFORMER RESISTANCES

| | | | |
|---|---|---|---|
| VK-469-63 | Ferroceptor Coil | Tuned | 1.12 ohm |
| VK-471-44 | Oscillator Coil | Tuned | 11 ohms |
| | | Feedback | 4.7 ohms |
| VK-471-46* | Oscillator Coil | Tuned | 6.7 ohms |
| | | Feedback | 3 ohms |
| A3-126-84 | Micro-band filter | Primary | 8.25 ohms |
| | | Secondary | 4.7 ohms |
| VK-670-95 | Output Transformer | Primary | 270 ohms |
| | | Secondary | 0.525 ohms |

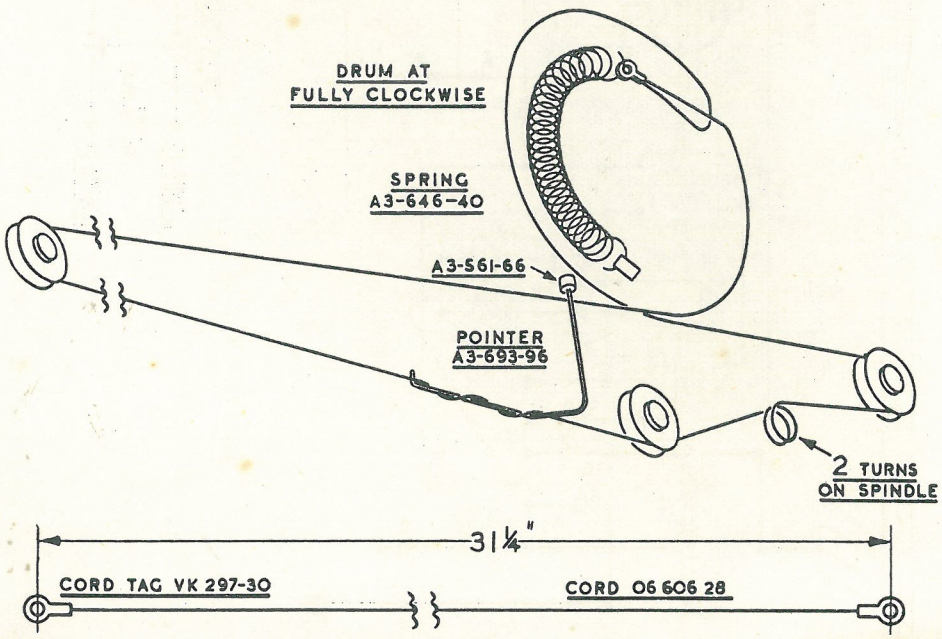
* In later production.

# REPLACING THE DIAL DRIVE CORD

Check the position of the tuning condenser drum, and make sure that when the tuning condenser is in the maximum capacity position, the cord opening in the drum is at 3 o'clock. Make sure that the drum is tight on the shaft.

Place the drum spring over the tongue in the drum and bend the tongue back so that it grips the spring. Thread the tag, on one end of the cord on to the free end of the spring, and bring the cord through the opening in the drum in a clockwise direction to 6 o'clock. Place the cord over the left hand pulley, then under the mid pulley, making two complete turns round the shaft in a clockwise direction the cord progressing towards the knob end of the shaft. The cord is then fed round the right hand pulley, and on to the drum at 6 o'clock.

With a pair of pliers in the left hand grip the end of the spring, and stretch round the brass drum at the same time taking up the slack in the cord with the right hand. The spring should be stretched until the cord end is long enough to go round the drum in a clockwise direction to 3 o'clock, then through the cord opening, round the brass capstan and over the end of the spring. Release the spring and position the cord on the drive shaft so that it does not bind in the bearings when the shaft is turned. Turn the drive shaft a few times so that the tension is equalised over the cord. Fix the pointer on to the cord as shown in the illustration.




CORD DRIVE ASSEMBLY VK 447-75