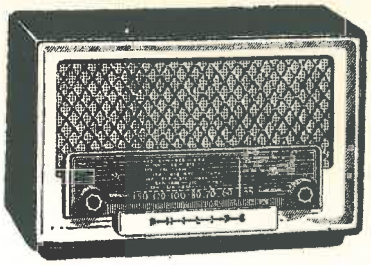
PHILIPS RADIO "QUINTET" Model BZ256U



5-valve Superheterodyne Receiver.

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

Tuning Range: 535-1600 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 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.

If the receiver is being aligned in its cabinet the reference position is the end of the heavy calibration bar below 550 kc/s. When alignment is being done with the chassis removed from the cabinet an auxiliary pointer should be used and set to the index line below 550 kc/s on the paper scale fixed to the front of the chassis.

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.

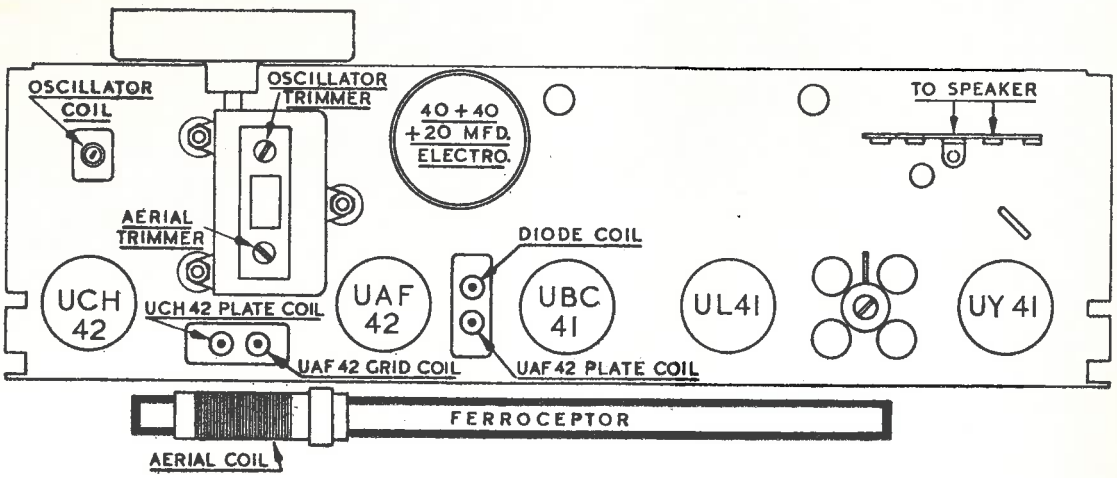
Disconnect the 0.01 mfd. condenser from the control grid of the UCH42 valve, and connect the signal generator, via a standard dummy, to the aerial and earth sockets on the back of the chassis.

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

VOLTAGE TABLE

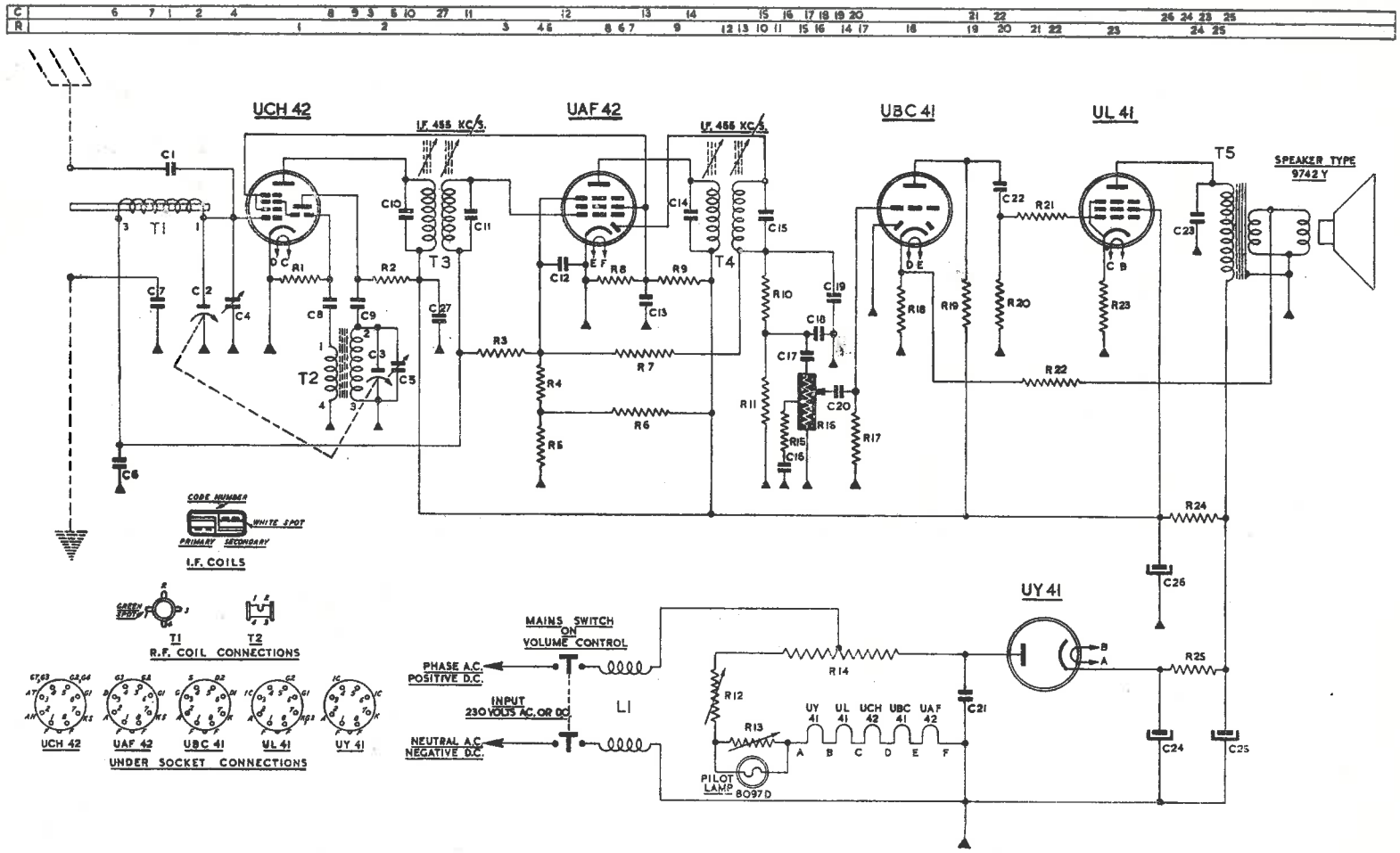
All readings taken with an input of 230 volts 50 c/s.
Full load input current (moving iron ammeter) 225 mA.

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 1,000 ohms per volt on A.C. ranges. Variations up to ± 5% are permissible.

COIL AND TRANSFORMER RESISTANCES

T1	Ferroxcube aerial coil	VK 469 73		1.1 ohms
T2	Oscillator Coil	VK 471 50	Tuned Feedback	6.75 ohms 3.15 ohms
T3	1st I.F. filter	A3 126 84	Primary Secondary	8.25 ohms 4.7 ohms
T4	2nd I.F. filter	A3 126 84	Primary Secondary	8.25 ohms 4.7 ohms
T5	Output transformer	VK 670 95	Primary Secondary	270 ohms 0.525 ohms
L1	Mains filter choke	VK 460 63	Each Winding	3.7 ohms



CONDENSERS

C1 10 mmfd ceramic
C2 12—460 mmfd gang condenser
C3 10—193 mmfd gang condenser
C4 25 mmfd compression trimmer
C5 25 mmfd compression trimmer
C6 .05 mfd 100 v. paper
C7 .01 mfd 750 v. paper
C8 47 mmfd ceramic
C9 150 mmfd ceramic
C10 I.F. condenser
C11 I.F. condenser
C12 500 mmfd. mica
C13 .05 mfd 350 v. paper
C14 I.F. condenser
C15 I.F. condenser
C16 .01 mfd 500 v. paper
C17 .01 mfd. paper
C18 100 mmfd ceramic } diode filter
C19 100 mmfd ceramic }
C20 .005 mfd 350 v. paper
C21 .01 mfd. 750 v. paper
C22 .01 mfd. 500 v. paper
C23 .005 mfd. 750 v. paper
C24 40 mfd }
C25 40 mfd } 350 v. triple electrolytic
C26 20 mfd }
C27 .1 mfd 350 v. paper

RESISTORS

R1 47 k ½ w. carbon
R2 25 k ½ w. carbon
R3 4.7 m ¼ w. carbon
R4 10 m. ¼ w. carbon
R5 270 k ½ w. carbon
R6 470 k ½ w. carbon
R7 2.2 m. ¼ w. carbon
R8 27 k ½ w. carbon
R9 15 k 1 w. carbon
R10 47 k ½ w. carbon diode filter
R11 330 k
R12 Tempco resistor 49—379—62
R13 Tempco resistor 49—379—67
R14 910 ohms tapped at 180 ohms
R15 15 k ½ w. carbon
R16 2 meg. volume control tapped at .4 meg.
R17 4.7 m. ¼ w. carbon
R18 10 ohms ½ w. carbon
R19 100 k ½ w. carbon
R20 680 k ½ w. carbon
R21 10 k ½ w. carbon
R22 100 ohms ½ w. carbon
R23 150 ohms 1 w. carbon
R24 1000 ohms 1 w. carbon
R25 370 ohms 4 w. wire wound

COILS

T1 Ferroxcube aerial coil VK 469—73
T2 oscillator coil VK 471—50/04
T3 1st I.F. transformer A3—126—84
T4 2nd I.F. transformer A3—126—84
T5 output transformer VK 670—95
L1 mains filter choke VK 460—63

LIST OF SPARE PARTS

Cabinet—Brown and Cream	A3 735 83
Cabinet—Cream	A3 770 16
Flocked paper backing for dial	VK 310 08
Pointer Assembly	A3 699 32
Dial Scale	VK 852 17
Ornamental Screws	S94 011/13
Knobs	A3 736 74
Grub Screw for Knob	S93 006/6BD
Back and Bottom Plate Assembly	VK 359 81
Wire-wound Resistor R 14	RO 910 16W
Asbestos Washer	A3 559 14
Tuning condensers with trimmer C2-C5	49 001 99
Clips for I.F. transformers	A3 652 58
Volume control with switch R16	49 904 55/ DL M4 + 1M6
Tuning spindle	VK 005 28
"C" ring	C 01/0312
Clip for oscillator coil	A3 652 75
Pilot lampholder	VK 286 04.2
Tuning condenser drum assembly	A3 417 23
Ferroxcube rod	56 681 23/4B

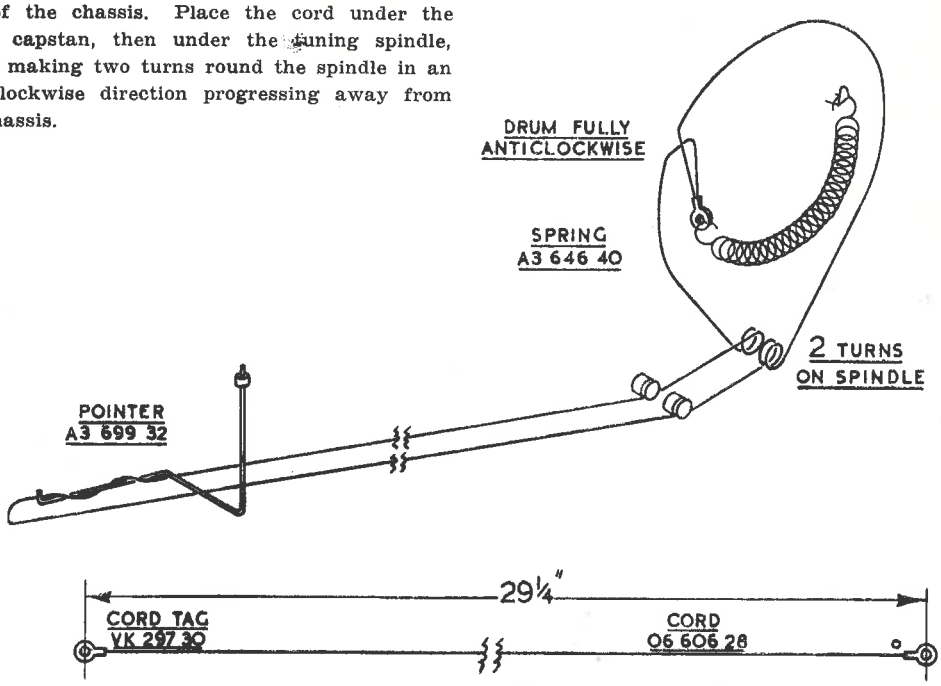
REPLACING THE DIAL DRIVE CORD

Check the position of the tuning condenser drum, and make sure that when the tuning condenser is in the minimum-capacity position the cord opening in the rim of the drum is at 9 o'clock. Check that the drum is tight on the shaft. Place the drum spring (A3 646 40) over the tongue in the drum, and bend it back so that it grips the spring.

Hook the free end of the spring on to the tag at one end of the cord assembly. Place the cord round the small brass capstan on the drum, then through the opening on the rim of the drum, and in an anti-clockwise direction to the tuning spindle. The end is then passed under the tuning spindle, making two turns in an anti-clockwise direction, progressing away from the chassis, then under the upper brass capstan on the front of the chassis, round the pulley at the left-hand end of the chassis. Place the cord under the lower capstan, then under the tuning spindle, again making two turns round the spindle in an anti-clockwise direction progressing away from the chassis.

The cord then comes off the spindle, on to the tuning condenser drum at the 4 o'clock position, and passes round the drum in an anti-clockwise direction. Stretch the spring round the inner drum, taking up the slack in the cord, until the end can be fed through the opening in the rim of the drum, and the tag hooked 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 bearing when the shaft is turned.

Rotate the tuning spindle a few times so that the tension is equalized over the cord. Fix the pointer on to the cord, as shown in the illustration.



CORD DRIVE ASSEMBLY VK 447-89