

NUMBER FORTY-TWO
(VOLUME TWO)

'TRADER' SERVICE SHEETS

PORTADYNE J/A.C. JUBILEE A.C. SUPERHET

THE Portadyne Jubilee A.C. superhet is a table receiver of conventional design, provided with a portable indoor aerial, known as the "Porta," which is mounted on a reel fixed to the inside of the cabinet.

CIRCUIT DESCRIPTION

Aerial input via fixed series condenser **C1**, switches **S1** (I.W.) and **S2** (M.W.), and choke coil **L2** (I.W.) and coupling coil **L1** (M.W.), to primary of inductively-coupled band-pass filter. Primary **L3**, **L4** tuned by **C19**; secondary **L5**, **L6** tuned by **C21**; top coupling by small capacity **C31**.

First valve (**V1**, Mullard metallised **FC4**) is an octode operating as frequency-changer with electron coupling. Oscillator grid coils **L7**, **L8** tuned by **C23**; anode reaction coils **L9**, **L10**; I.W. tracking by pre-set condenser **C26**.

Second valve, a variable-mu pentode (**V2**, Mullard metallised **VP4**), operates as intermediate frequency amplifier with tuned-primary tuned-secondary transformer couplings **L11**, **L12** and **L13**, **L14**.

Intermediate frequency 112 KC/S.

Diode second detector is part of double diode triode (**V3**, Mullard metallised

TDD4). Second diode provides D.C. potential, developed across resistance **R17**, which is fed back by way of decoupling circuit as G.B. to frequency-changer and I.F. valves, giving automatic volume control. Delay voltage is obtained from voltage drop along **R16**.

Audio-frequency output from rectifier diode is developed across **R10** and passed by way of I.F. stopper **R11** to grid of **V3** triode section. Provision for connection of gramophone pick-up across grid resistance **R12**. On "gram," switch **S7** earths grid of **V2** and thus prevents radio break-through.

Resistance-capacity coupling to high-efficiency output pentode (**V4**, Cossor **42MP-Pen**) with manual volume control **R18** (operative on radio and gramophone) in grid circuit. Fixed tone compensation by condenser **C16**.

H.T. current is supplied by full-wave rectifying valve (**V5**, Mullard **IW3**). Smoothing by speaker field winding **L17** and electrolytic condensers **C17**, **C18**.

DISMANTLING THE SET

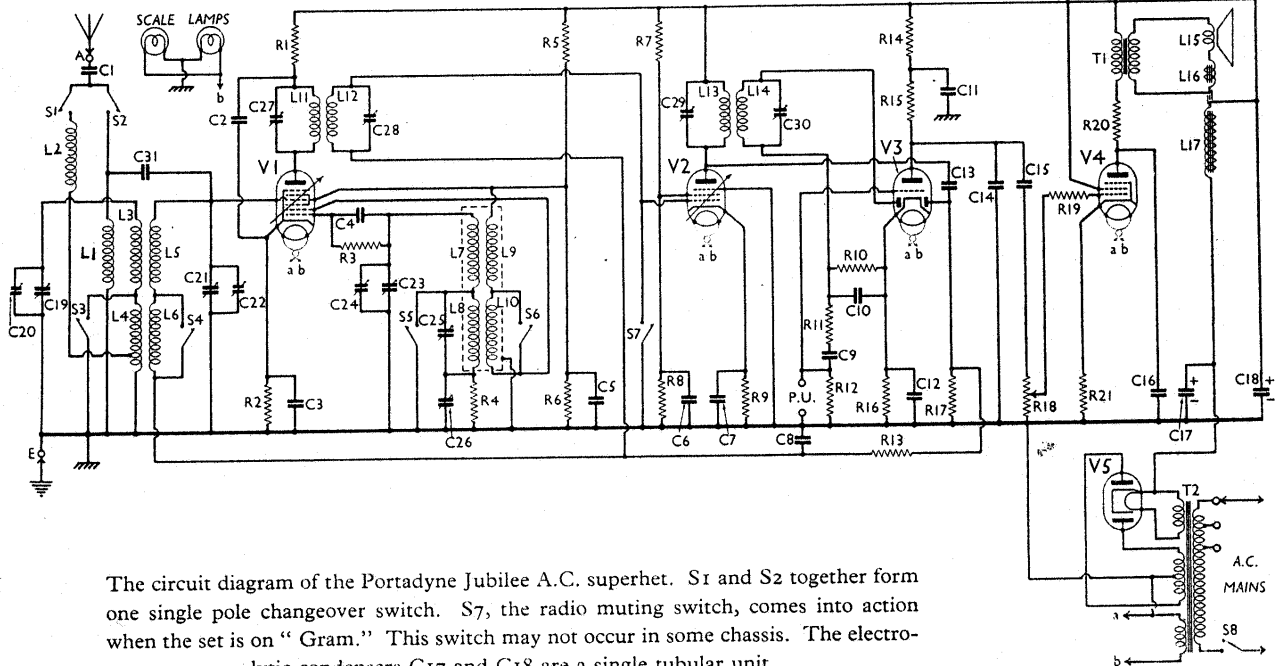
Removing Chassis.—Remove knobs (2 grub screws each). Unplug the three

speaker leads from the sockets on the right of the speaker sub-baffle, and free them from the clip which holds them in position. Detach the speaker frame earthing lead. Remove the four round head self-tapping screws and washers holding chassis to base of cabinet. Chassis may now be completely withdrawn. When replacing, do not forget to re-connect the speaker earthing wire, and observe the colour coding of the speaker leads. Two of the sockets are marked red and black, while the blue lead connects to the central socket.

Removing Speaker.—It is best to remove this complete on its sub-baffle, which is held to the front of the cabinet by six wood screws. The speaker unit can then be detached from the baffle, first unsoldering the three leads to the connection sockets on the baffle.

COMPONENTS AND VALUES

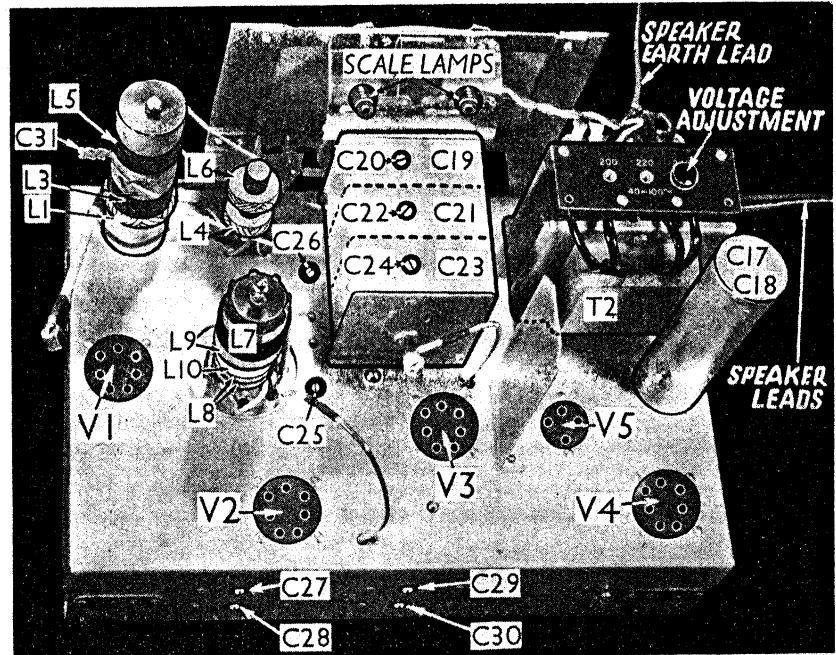
Resistances		Values (ohms)
R1	V1 pent. anode decoupling ..	20,000
R2	V1 fixed G.B. resistance ..	150
R3	V1 osc. grid resistance ..	50,000
R4	Osc. I.W. tracker shunt ..	10,000
R5	V1 S.G.'s pot. divider	30,000
R6		30,000
R7	V2 S.G. pot. divider ..	30,000
R8		25,000
R9	V2 fixed G.B. resistance ..	300
R10	V3 rectifier diode load ..	500,000
R11	I.F. stopper ..	50,000
R12	V3 grid resistance ..	1,000,000
R13	A.V.C. circuit decoupling ..	1,000,000
R14	V3 anode decoupling ..	30,000
R15	V3 anode resistance ..	30,000
R16	V3 G.B. resistance ..	1,000
R17	V3 A.V.C. diode load ..	1,000,000
R18	Manual volume control ..	500,000
R19	V4 grid H.F. stopper ..	100,000
R20	V4 anode stabiliser ..	300
R21	V4 G.B. resistance ..	150



The circuit diagram of the Portadyne Jubilee A.C. superhet. **S1** and **S2** together form one single pole changeover switch. **S7**, the radio muting switch, comes into action when the set is on "Gram." This switch may not occur in some chassis. The electrolytic condensers **C17** and **C18** are a single tubular unit.

Condensers		Values (μF)
C1	Aerial series condenser	0.0005
C2	V1 pent. anode decoupling	0.1
C3	V1 cathode by-pass	0.1
C4	V1 osc. grid condenser	0.0002
C5	V1 S.G.'s by-pass	0.1
C6	V2 S.G. by-pass	0.1
C7	V2 cathode by-pass	0.1
C8	A.V.C. circuit decoupling	0.1
C9	L.F. coupling to V3 triode	0.1
C10	I.F. by-pass	0.0002
C11	V3 anode decoupling	1.0
C12	V3 cathode by-pass	0.1
C13	Coupling to A.V.C. diode	0.0001
C14	V3 anode H.F. by-pass	0.0005
C15	L.F. coupling to V4	0.1
C16	V4 anode tone corrector	0.002
C17	H.T. smoothing, electrolytics	4.0
C18		8.0
C19	Band-pass primary tuning	—
C20	Band-pass pri., trimmer, pre-set	—
C21	Band-pass secondary tuning	—
C22	Band-pass sec. trimmer, pre-set	—
C23	Oscillator tuning	—
C24	Oscillator main trimmer, pre-set	—
C25	Oscillator I.W. trimmer, pre-set	—
C26	Oscillator I.W. tracker, pre-set	—
C27	1st I.F. trans. pri. tuning	—
C28	1st I.F. trans. sec. tuning	—
C29	2nd I.F. trans. pri. tuning	—
C30	2nd I.F. trans. sec. tuning	—
C31	Band-pass top coupling	Very low

Other Components		Values (ohms)
L1	M.W. aerial coupling coil	5.0
L2	Aerial choke coil (L.W.)	50.0
L3	Band-pass primary coils	7.0
L4	Band-pass secondary coils	12.5
L5		7.0
L6		12.5
L7	Oscillator grid tuning coils	3.3
L8		21.0
L9	Oscillator anode reaction coils	3.6
L10		7.3
L11	1st I.F. trans.	Pri. ... 50.0
L12		Sec. ... 50.0
L13	2nd I.F. trans.	Pri. ... 50.0
L14		Sec. ... 50.0
L15	Speaker speech coil	2.0
L16	Hum neutralising coil	0.1
L17	Speaker field winding	2,000



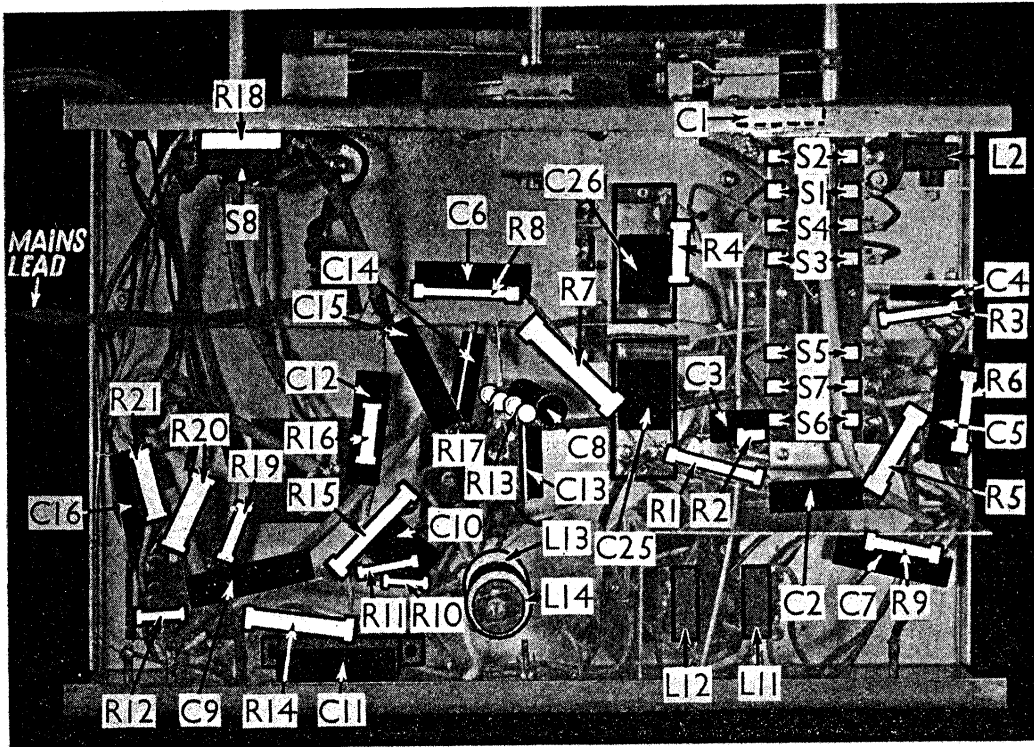
Plan view of the chassis. The screen of the coil unit L7-L10 has been removed. C31 is a very small fixed condenser, formed by twisted insulated wires. L9 is wound over the empire silk covering over L7. L10 occupies one groove towards the bottom of the former, while L8 is wound in the remaining two grooves.

Other Components (cont.)		Values (ohms)
T1	Speaker input trans.	Pri. ... 800
		Sec. ... 0.35
	Pri. total ... 35.0	
T2	Mains trans.	Heater sec. ... 0.1
		Rect. heater sec. ... 0.15
		H.T. sec. ... 650
S1-S6	Waveband switches, ganged	—
S7	Radio muting switch on gram.	—
S8	Mains switch, ganged R18	—

VALVE ANALYSIS

The voltage and current readings in the table overleaf were obtained from a representative chassis working with 230 V 50 cycle A.C. mains, and with the voltage adjustment set at 240. No aerial or earth connections were made. All voltages

(Continued overleaf.)



Under-chassis view. The two cross strips, held by screws, have been removed for the sake of clarity. Many of the resistances are covered with empire sleeving. L11-L14 form the two I.F. transformers. All the switches are clearly indicated.

PORTADYNE MODEL J/A.C.
(continued)

were measured on the 1,200 V scale of an Avometer with the chassis as negative.

Valve	Anode Volts	Anode Current (mA)	Screen Volts	Screen Current (mA)
V1 FC4*	175	3.6	70	2.6
V2 VP4 ..	225	4.4	75	1.7
V3 TDD4 ..	95	2.0	---	---
V4 42 MP -Pen	190	27.0	220	5.4
V5 IW3 ..	310†	---	---	---

*Osc. anode (G2) 65V, 0.9mA. †A.C., each anode.

GENERAL NOTES

Coils.—All the coils in the signal frequency and oscillator circuits, with the exception of **L2** (shown in the under chassis view) are in three units on top of the chassis. Of these, only the oscillator unit is screened, and the screen has been removed in our plan chassis view. The screen is held by a central domed nut, but before it can be completely removed, the earthing lead which is soldered inside the screen must be detached. It is best to unsolder the other end of this lead, and draw it through the hole in the chassis.

Coils **L1**, **L3**, **L5** and **L4**, **L6** are clearly indicated in the plan view of the chassis. In the oscillator unit there are **L7-L10**. **L9** is wound over the Empire silk taping which covers **L7**. **L8** and **L10** are in three slots at the bottom of the coil former,

L10 occupying the top slot, and **L8** the two lower ones.

Underneath the chassis will be found, in addition to **L2**, the two I.F. transformers, with their windings **L11**, **L12** and **L13**, **L14**. These are clearly indicated in our under-chassis view.

Switches.—**S1-S7** are in one unit, seen in the under-chassis view, and the contacts of each are indicated. **S8** is the Q.M.B. mains switch, ganged with **R18**. **S1** to **S6** are the waveband switches, while **S7**, which may be omitted in early chassis, is provided for the purpose of muting the radio circuits when the set is used with a pick-up. There is no actual pick-up switch. **S1** and **S2** really form a single pole change-over switch.

The switch positions are shown in the table below, C indicating "closed" and O "open."

Switch	M.W.	L.W.	Gram
S1	O	C	O
S2	C	O	O
S3	C	O	O
S4	C	O	O
S5	C	O	O
S6	C	O	O
S7	O	O	C

Condenser C31.—This will be found in association with the signal frequency coil unit **L1**, **L3**, **L5**, and comprises two insulated twisted wires. It should not be tampered with, as its capacity, though small, is critical.

Condensers C27-C30.—These are the I.F. trimmers, and are reached through

holes in the back of the chassis. They are indicated in our plan chassis view.

Scale Lamps.—These are two Osram M.F.S. types, rated at 6.2 V, 0.3 A. To replace them, slacken the two hexagonal nuts holding the lampholder assembly, and slide this sideways until the large holes in it clear the holding nuts.

Condensers C17, C18.—These are two electrolytics in a single tubular unit. The case is negative. The blue lead emerging at the base is the positive of **C17** (4 μ F), while the red lead is the positive of **C18** (8 μ F).

Condensers C25, C26.—These are respectively the oscillator L.W. trimmer, and the oscillator L.W. tracker, and are reached through holes in the top of the chassis. The holes are indicated in the plan chassis view, while the condensers themselves are seen in the under-chassis view.

Alternative Valves.—**V3** may be a Mullard TDD4 (met.), a Mazda AC/HL/DD (met.) or a Cossor D.D.T. **V4** may be a Cossor 42 MP-Pen, a Mazda AC2/Pen or a Mullard Pen 4 VB.

External Speaker.—No sockets for this are provided on the chassis, but a low resistance (3-6 Ω) speaker could be connected across the two bottom tags on the internal speaker transformer, which are normally blank.

Use of Sleeving.—Some of the resistances, and most of the screened leads in the receiver, are covered with large diameter empire sleeving.