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"TRADER" SERVICE SHEET 1182

CHAMPION 825

"Serenade" 2-band A.C./D.C. Table Superhet

EMPLOYING a "Selectopex" tuning control, the Champion 825 is a 3-valve (plus rectifier) 2-band miniature table receiver designed to operate from A.C. or D.C. mains of 200-250 V. The wavebands covered are 200-550 m and 900-2,000 m. The plastic cabinet in which the receiver is housed is available in four pastel shades (green, blue, cream and red).

Release date and original price: August 1954, £9 2s 9d. Purchase tax extra.

CIRCUIT DESCRIPTION

Aerial input via coupling coils **L1** (M.W.) and **L2** (L.W.) to single tuned circuits **L3, C26** (M.W.) and **L4, C26** (L.W.) which precede triode hexode valve **(V1, Mullard UCH42)** operating as frequency changer with internal coupling between the two sections.

Oscillator grid coils **L5** (M.W.) and **L6** (L.W.) are tuned by **C28.** Parallel trimming by **C9, C29** (M.W.) and **C9, C29, C30** (L.W.); series tracking by **C10** (M.W.) and **C11** (L.W.). Reaction coupling from anode circuit via **L7** and **L8,** with additional coupling across the common impedance of the tracker on M.W. Oscillator stabilization by **R4.**

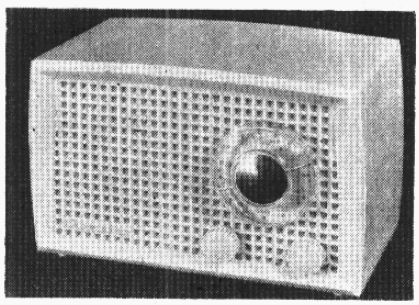
Second valve **(V2, Mullard UBF80)** is a double diode R.F. pentode, its pentode section operating as intermediate frequency amplifier with tuned transformer couplings **C4, L9, L10, C8** and **C15, L11, L12, C19.**

Intermediate frequency 465 kc/s.

One diode section of **V2** operates as signal detector. Audio frequency component in its rectified output is developed across volume control **R11,** which acts as diode load, and is passed via **C20** to control grid of pentode output valve **(V3, Mullard UL41).** I.F. filtering by **C17.** Tone correction by **C21.**

V2 pentode anode is coupled via **C16** to the second diode, and the resulting rectified output developed across **R8** is fed back as bias to **V1,** giving automatic gain control.

H.T. current is supplied by I.H.C. half-wave rectifier **(V4, Mullard UY41),** smoothing by **R17** and electrolytic capacitors **C23, C24.** Mains R.F. filtering by **C22.**



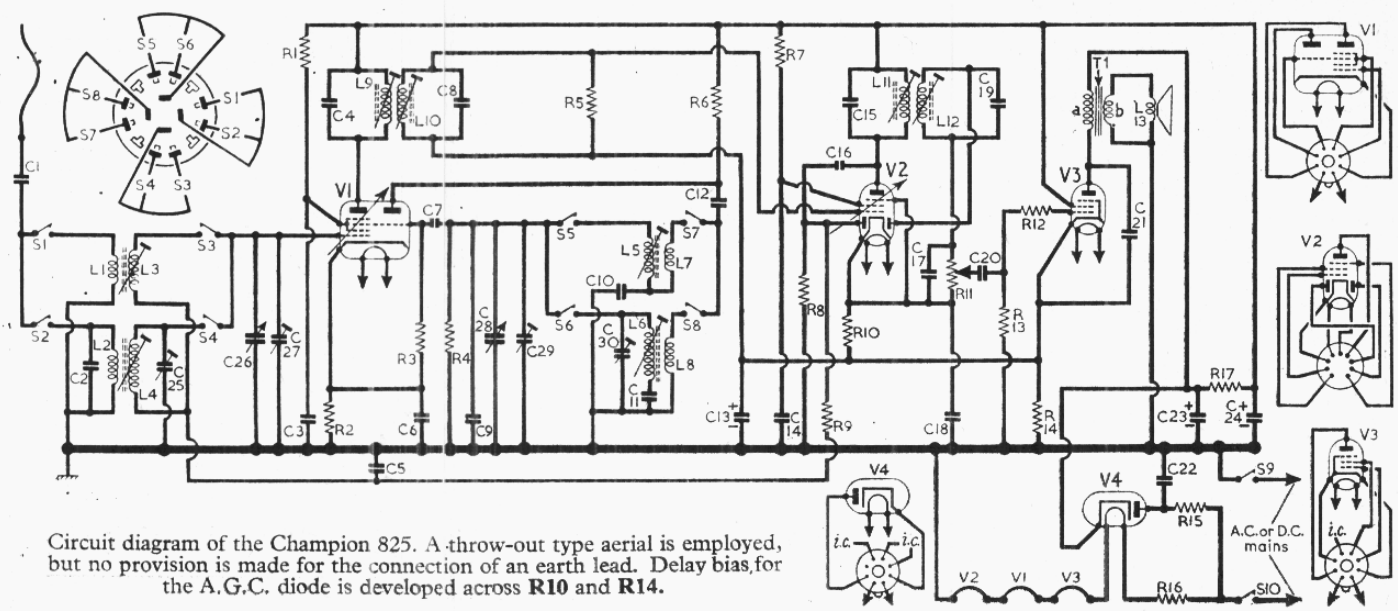
Appearance of the Champion 825.

COMPONENTS AND VALUES

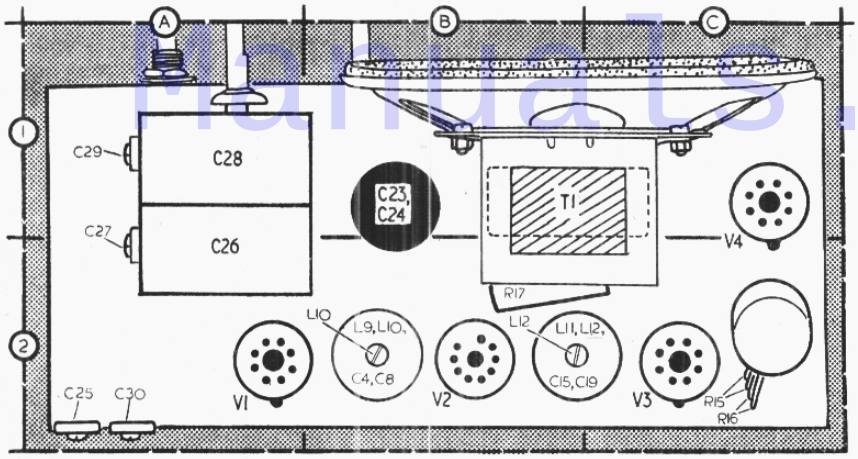
	CAPACITORS	Values	Locations
C1	Aerial coup. ...	470pF	—
C2	L.W. aerial shunt	100pF	G4
C3	V1 S.G. decoupling	0·01μF	G3
C4	I.F. tuning ...	100pF	B2
C5	A.G.C. decoupling	0·1μF	E3
C6	V1 cath. by-pass	0·05μF	G4
C7	V1 osc. C.G. ...	50pF	G4
C8	I.F. tuning ...	100pF	B2
C9	M.W. osc. trim. ...	10pF	G3
C10	M.W. osc. tracker	550pF	F3
C11	L.W. osc. tracker	150pF	G4
C12	Osc. reaction coup.	100pF	F3
C13*	V3 cath. by-pass	25μF	E3
C14	V2 S.G. decoupling	0·01μF	F4
C15	I.F. tuning ...	100pF	B2
C16	A.G.C. coupling ...	50pF	E4
C17	I.F. by-pass ...	300pF	E4
C18	V2 cath. by-pass	0·05μF	F4
C19	I.F. tuning ...	100pF	B2
C20	A.F. coupling ...	0·01μF	E3
C21	Tone corrector ...	0·01μF	D3
C22	Mains R.F. by-pass	0·01μF	D3
C23*	H.T. smoothing	32μF	B1
C24*	H.T. smoothing	32μF	B1
C25‡	L.W. aerial trim.	—	A2
C26†	Aerial tuning ...	—	A2
C27‡	M.W. aerial trim.	—	A2
C28†	Oscillator tuning	—	A1
C29‡	M.W. osc. trim. ...	—	A1
C30‡	L.W. osc. trim. ...	—	A2

* Electrolytic. † Variable. ‡ Pre-set.

	RESISTORS	Values	Locations
R1	V1 S.G. feed ...	33kΩ	F4
R2	V1 G.B.	180Ω	G4
R3	V1 osc. C.G. ...	47kΩ	F4
R4	Osc. stabilizer ...	33kΩ	G3
R5	V2 C.G.	680kΩ	F4
R6	Osc. anode feed ...	22kΩ	F4
R7	V2 S.G. feed ...	56kΩ	F4
R8	A.G.C. diode load	1MΩ	E4
R9	A.G.C. decoupling	1MΩ	E4
R10	V2 G.B.	330Ω	F4
R11	Volume control ...	500kΩ	F3
R12	V3 C.G. stopper ...	22kΩ	D4
R13	V3 C.G.	680kΩ	E3
R14	V3 G.B.	300Ω	E3
R15	V4 surge limiter	150Ω	C2
R16	Heater ballast ...	1,150Ω	C2
R17	H.T. smoothing ...	2·2kΩ	B2



Circuit diagram of the Champion 825. A throw-out type aerial is employed, but no provision is made for the connection of an earth lead. Delay bias for the A.G.C. diode is developed across **R10** and **R14.**



Plan view of chassis, showing the R.F. and oscillator trimmers in A1 and A2.

OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	Aerial coupling coils	32·0	G3
L2		76·0	G4
L3	Aerial tuning coils	4·5	G3
L4		21·0	G4
L5	Oscillator tuning	3·2	F3
L6		7·8	G4
L7	Oscillator reaction coupling	0·6	F3
L8		4·2	G4
L9	1st I.F. trans. Pri.	12·2	B2
L10	1st I.F. trans. Sec.	12·2	B2
L11	2nd I.F. trans. Pri.	12·2	B2
L12	2nd I.F. trans. Sec.	12·2	B2
L13	Speech coil	2·9	E3
T1	O.P. trans. a	150·0	B1
	b	—	
S1-S8	Waveband switches	—	G3
S9, S10	Mains sw., g'd R11	—	F3

CIRCUIT ALIGNMENT

To make the following adjustments accessible, the chassis should be removed from its carrying case as described in col. 3.

I.F. Stages.—Connect output of signal generator, via an 0.1 μF capacitor in each lead, to control grid (pin 6) of **V1** and chassis. Switch receiver to M.W. and turn gang to maximum capacitance. Feed in a 465 kc/s (645.16 m) signal and adjust the cores of **L12** (location reference B2), **L11** (E4), **L10** (B2) and **L9** (F4) for maximum output. Repeat these adjustments until no further improvement results.

R.F. and Oscillator Stages.—Transfer signal generator live lead to end of throw-out aerial lead. Check that with the gang at maximum capacitance, the cursor lines coincide with the short calibration lines at the high wavelength ends of the tuning scales.

M.W.—Switch receiver to M.W., tune to 550 m, feed in a 550 m (545.4 kc/s) signal and adjust the cores of **L5** (F3) and **L3** (G3) for maximum output. Tune receiver to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C29** (A1) and **C27** (A2) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch receiver to L.W., tune to 2,000 m, feed in a 2,000 m (150 kc/s) signal and adjust the cores of **L6** (G4) and **L4** (G4) for maximum output. Tune to 1,000 m, feed in a 1,000 m (300 kc/s) signal and adjust **C30** (A2) and **C25** (A2) for maximum output. Repeat these adjustments until no further improvement results.

Switch Table

Switches	L.W.	M.W.
S1	—	C
S2	C	—
S3	—	C
S4	C	—
S5	—	C
S6	C	—
S7	—	C
S8	C	—

GENERAL NOTES

Switches.—**S1-S8** are the waveband switches ganged together in a single rotary unit beneath the chassis. The unit is indicated in the underside illustration of the chassis and shown in detail inset in the top left-hand corner of the circuit diagram overleaf, where it is drawn as viewed from the rear of an inverted chassis. The associated switch table (col. 2) gives the switch operations for the two control settings, starting from the fully anti-clockwise position. A dash indicates open, and **C**, closed.

S9, S10 are the Q.M.B. mains switches, ganged with the volume control **R11.**

Modification.—**R5,** which was shunted across **L10, C8** in our receiver, may not be fitted in earlier models. The same applies to **C2** and **C9,** which were added during production.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from 230 V A.C. mains. The receiver was switched to M.W. and tuned to the high wavelength end of the band.

Voltages were measured with an Avo Electronic TestMeter, and as this instrument has a high internal resistance, allowance should be made for the current drawn by other types of meter. Chassis was the negative connection in each case.

Valve	Anode V	Anode mA	Screen V	Screen mA	Cath. V
V1 UCH42	183 (Oscillator 106)	3·1 (4·5)	80	3·4	1·75
V2 UBF80	183	4·4	100	1·9	15·0
V3 UL41	223	29	183	5·4	13·0
V4 UY41	195*	—	—	—	230†

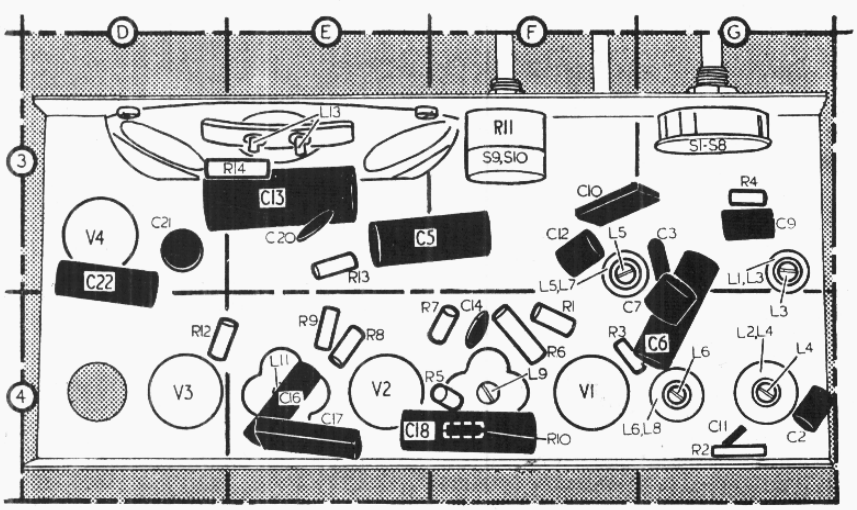
* A.C. reading. † Cathode current, 50 mA.

DISMANTLING

Removing Chassis.—Remove control knobs, including "Selectopex" tuning knob, from front of receiver;

remove self-tapping chassis bolt securing rear edge of chassis to cabinet, and withdraw chassis rearwards out of cabinet.

To separate back cover from chassis, remove two Phillips-head plastic bolts and unsolder the aerial input lead to the chassis from the tag strip on the back cover.



Underside view of chassis showing the R.F. and oscillator core adjustments in location references F3, G3 and G4.

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