"TRADER" SERVICE SHEET

1155

VIDOR "HENLEY"

Model CN426 A.C./A.D. Portable

THE Vidor "Henley" portable, model CN426, is a 4-valve, 2-band A.C./A.D. battery superhet covering the waveband ranges of 187-571m and 1,052-2,000m. It is designed to operate either from all-dry batteries, or from A.C. mains of 195-255 V, 40-100 c/s. An alarm switch operated by the lid, warns the user if the lid is closed while the receiver is still working.

Release date and original price: September 1953, £13 5s. Purchase tax and batteries extra.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, L2, C28** (M.W.) or **L3, L4, C28** (L.W.) precedes a heptode valve **(V1, Mullard DK92)** which operates as frequency changer with internal coupling. Oscillator grid coils **L5** (M.W.) and **L6** (L.W.) are tuned by **C29.** Parallel trimming by **C30** (M.W.) and **C6, C31** (L.W.); series tracking by **C7** (M.W.) and **C8** (L.W.). Inductive reaction coupling from anode circuit by **L7** (M.W.) and **L8** (L.W.).

Second Valve **(V2, Mullard DF91)** is an R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C3, L9, L10, C4** and **C12, L11, L12, C13.**

Intermediate frequency 475 kc/s.

Diode signal detector is part of diode pentode valve **(V3, Mullard DAF91).** Audio frequency component in rectified output is developed across volume control **R9,** which acts as diode load, and is passed via **C17** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C14, R8, C15.** D.C. potential developed across **R8, R9** is fed back as bias to **V1** and **V2** giving automatic gain control.

Resistance-capacitance coupling by **R12, C20** and **R16** between **V3** and pentode output valve **(V4, Mullard DL94).** Negative feed-back tone correction by **R17** between the anodes of **V4** and **V3.**

For battery operation, power supplies are carried by switches **S9(B), S11(B)** and **S13(B)** which close in the battery position of the mains/battery control. For A.C. mains operation, **S10(M), S12(M)** and **S14(M)** close instead and H.T. current is then supplied by full-wave metal rectifier **(MR1, Westinghouse 15B39).** H.T. smoothing by **R21** and electrolytic capacitors **C24, C25.** Filament current is taken from the H.T. circuit, the filaments being connected in series and fed via ballast resistors **R19, R20. R3, R6, R11** and **R18** are filament shunts to bypass H.T. current past the heater chain.

The filaments remain series-connected for battery operation, bias being obtained from

(*Continued col. 1 overleaf*)

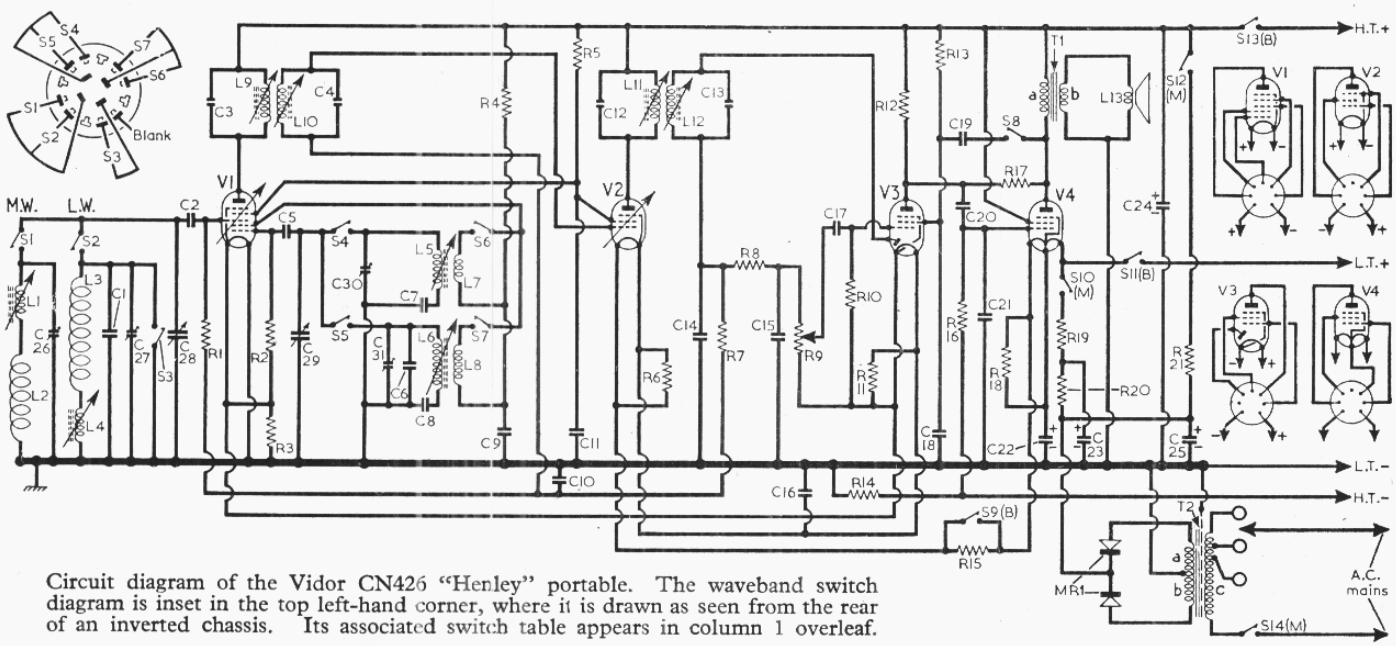
Appearance of the Vidor CN426.

COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	L.W. aerial trim....	100pF	D1
C2	V1 C.G.	100pF	E3
C3	1st I.F. trans. tuning ...	65pF	C1
C4	1st I.F. trans. tuning ...	65pF	C1
C5	V1 osc. C.G. ...	100pF	F4
C6	L.W. osc. trim. ...	200pF	D2
C7	M.W. osc. tracker...	532pF	E3
C8	L.W. osc. tracker...	280pF	E4
C9	Osc. anode decoup.	0·1μF	E4
C10	A.G.C. decoupling	0·05μF	C1
C11	S.G. decoupling ...	0·1μF	F4
C12	2nd I.F. trans. tuning ...	65pF	B1
C13	2nd I.F. trans. tuning ...	65pF	B1
C14	I.F. by-passes ...	100pF	G4
C15	I.F. by-passes ...	100pF	G4
C16	Filament by-pass...	0·05μF	C1
C17	A.F. coupling ...	0·001μF	G4
C18	V3 S.G. decoupling	0·05μF	G3
C19	Alarm coupling ...	0·005μF	G4
C20	A.F. coupling ...	0·01μF	G4
C21	I.F. by-pass ...	200pF	G4
C22*	Filament by-pass...	100μF	B1
C23*	Filament smoothing	25μF	B2
C24*	H.T. smoothing	32μF	H4
C25*	H.T. smoothing	32μF	H4
C26‡	M.W. aerial trim....	70pF	D1
C27‡	L.W. aerial trim. ...	70pF	D2
C28†	Aerial tuning ...	523pF	D1
C29†	Oscillator tuning...	523pF	D2
C30‡	M.W. osc. trim. ...	70pF	D2
C31‡	L.W. osc. trim. ...	70pF	D2

	RESISTORS	Values	Locations
R1	V1 C.G.	4·7MΩ	F3
R2	V1 osc. C.G. ...	27kΩ	F4
R3	V1 filament shunt	120Ω	F4
R4	Osc. anode feed ...	33kΩ	E4
R5	S.G. H.T. feed ...	39kΩ	F4
R6	V2 filament shunt	150Ω	F4
R7	A.G.C. decoupling	2·2MΩ	F3
R8	I.F. stopper ...	47kΩ	G4
R9	Volume control ...	1MΩ	A1
R10	V3 C.G.	4·7MΩ	G4
R11	V3 filament shunt	120Ω	F4
R12	V3 anode load ...	1MΩ	G4
R13	V3 S.G. feed ...	4·7MΩ	G4
R14	V4 G.B.	220Ω	G4
R15	V4 G.B.	10Ω	H3
R16	V4 C.G.	2·2MΩ	G4
R17	Neg. feed-back ...	8·2MΩ	G4
R18	V4 filament shunt	330Ω	G3
R19	Filament ballast	700Ω	H4
R20	Filament ballast	1·4kΩ	F4
R21	H.T. smoothing ...	1·2kΩ	H4

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Vidor CN426 "Henley" portable. The waveband switch diagram is inset in the top left-hand corner, where it is drawn as seen from the rear of an inverted chassis. Its associated switch table appears in column 1 overleaf.

OTHER COMPONENTS			Approx. Values (ohms)	Locations
L1	M.W. loading coil		4·4	E4
L2	M.W. frame aerial		1·6	—
L3	L.W. frame aerial		12·6	—
L4	L.W. loading coil		6·6	E3
L5	Oscillator tuning coils		3·2	E4
L6			6·6	E4
L7	Oscillator reaction coils		1·3	E4
L8			2·2	E4
L9	1st I.F. trans.	Pri.	20·5	C1
L10		Sec.	20·5	C1
L11	2nd I.F. trans.	Pri.	20·5	B1
L12		Sec.	20·5	B1
L13	Speech coil		2·9	—
T1	O.P. trans.	a	760·0	—
		b	—	—
T2	Mains trans	a	280·0	
		b	280·0	A2
		c, total	424·0	
S1-S7	Waveband switches		—	E3
S8	Alarm switch		—	—
S9(B)-S14(M)	Mains/Battery sw.		—	H3
MR1*	Mains H.T. rectifier		—	G4

* Westinghouse 15B39.

Circuit Description—continued

points of appropriate potential in the filament chain. For mains operation **R15** is inserted in the heater chain to raise **V4** filament potential to the correct bias level. When operating from batteries the extra bias for **V4** is supplied by the voltage developed across **R14** in the H.T. negative lead to chassis.

When the lid of the carrying case is closed, **S8** also closes, causing positive feed-back via **C19** between **V4** anode and **V3** screen grid, and producing a warning note in the speaker if the set is still switched on.

Waveband Switch Table

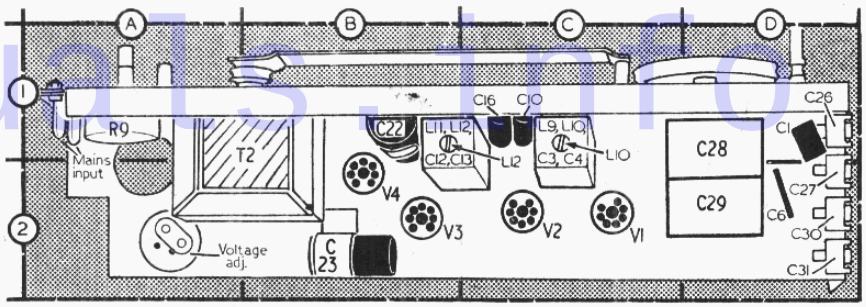
Switches	M.W.	L.W.
S1	C	—
S2	—	C
S3	C	—
S4	C	—
S5	—	C
S6	C	—
S7	—	C

CIRCUIT ALIGNMENT

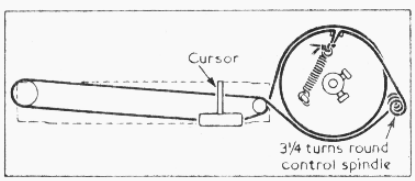
To gain access to the core and trimmer adjustments, the two captive bolts in the front corners of the receiver escutcheon should be unscrewed, and the escutcheon lifted up into a vertical position.

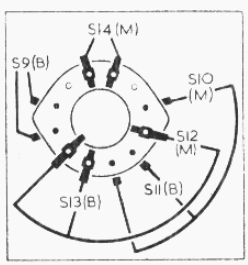
I.F. Stages.—Switch receiver to M.W. and turn gang to minimum capacitance. Connect output of signal generator across **C28** (location reference D1), feed in a 475 k/cs (631.6m) signal and adjust the cores of **L12** (B1), **L11** (G4), **L10** (C1) and **L9** (F4) for maximum output.

R.F. and Oscillator Stages.—Check that with the gang at maximum capacitance the cursor coincides with the 2,000m mark at the extreme right-hand end of the tuning scale. Transfer signal generator leads to frame aerials, placing them in close proximity to the windings in the lid of the carrying case. The batteries should be in their normal positions for the following adjustments, and the receiver escutcheon should be raised only sufficiently to give access to the cores and trimmers.



Plan view of the chassis showing the trimmer adjustments along its right-hand edge.



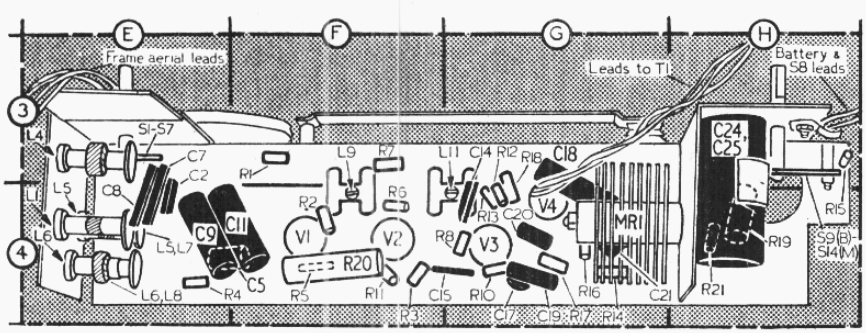


Above: Sketch of the tuning drive system as seen from front.

Left: Diagram of the mains/battery switch unit.

M.W.—With receiver still on M.W., tune to 500m, feed in a 500m (600 kc/s) signal and adjust the cores of **L5** (E4) and **L1** (E4) for maximum output. Tune receiver to 200m, feed in a 200m (1,500 kc/s) signal and adjust **C30** (D2) and **C26** (D1) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch receiver to L.W., tune to 1,900m, feed in a 1,900m (158 k/cs) signal and adjust the cores of **L6** (E4) and **L4** (E3) for maximum output. Tune receiver to 1,100m, feed in a 1,100m (273 k/cs) signal and adjust **C31** (D2) and **C27** (D2) for maximum output.



Underside view of the chassis. The core adjustments face outwards to the left.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those derived from the manufacturers' information. They were measured on a receiver which was switched to M.W. and was operating from a new set of batteries. There was no signal input. When operated from 245 V A.C. mains, **V4** anode current increased to 7.7 mA and its screen current increased to 1.7 mA.

Voltages were measured with a 500 ohms-per-volt meter, chassis being the negative connection in every case. When operating from A.C. mains, the voltage measured across **C25** was 104 V. When operating from batteries, the voltage measured across **R14** was 2 V.

Valve	Anode		Screen	
	V	mA	V	mA
V1 DK92 ...	88	6·0	44	0·15
	Oscillator			
	25	1·6		
V2 DF91 ...	88	1·2	44	0·5
V3 DAF91 ...	*	0·035	*	0·015
V4 DL94 ...	86	4·8	88	1·1

* Very low reading.

GENERAL NOTES

Switches.—S1-S7 are the waveband switches, ganged in a single rotary unit beneath the chassis. The unit is indicated in our under-chassis illustration, and shown in detail in the diagram inset in the top left-hand corner of the circuit diagram overleaf.

S8 is the alarm switch, located in the carrying case and operated by the lid stay.

S9 (B)—S14 (M) are the mains/battery/off switches, ganged in a single rotary unit beneath the chassis. This unit is shown in detail in column 2, where it is drawn as seen from the rear of an inverted chassis. For mains operation switches **S10 (M), S12 (M)** and **S14 (M)** close as indicated by the suffix **(M).** For battery operation **S9 (B), S11 (B)** and **S13 (B)** close.

Batteries.—The batteries recommended by the manufacturers are: H.T., Vidor L5536, rated at 90 V; L.T., Vidor L5060, rated at 7.5 V.

Tuning Drive Replacement.—About 30 inches of high-grade fishing line (the manufacturers specify Python Flax, Braided No. 20) is required for a new drive cord, which should be run as shown in the sketch in column 2, where the tuning drive system is drawn as seen from the front of the chassis, with the gang at maximum capacitance. The cursor can be fitted afterwards, and adjusted as explained under "Circuit Alignment."

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