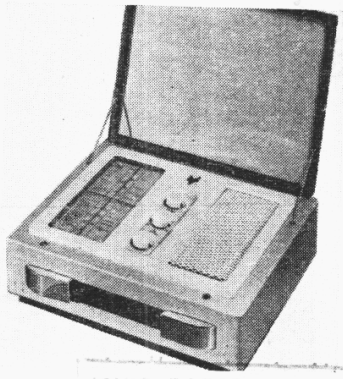
Supplement to Wireless & Electrical Trader, September 13, 1952

"TRADER" SERVICE SHEET

1060

VIDOR "LIDO"

Model CN411 Portable



AN unusual feature of the Vidor CN411 "Lido" portable is that it has an all-metal carrying case. Another feature is the provision of an alarm switch to warn the user when the lid is closed while still working. The receiver is a 4-valve (plus metal rectifier) superhet designed to operate from heavy-duty or lightweight batteries, or from A.C. mains of 200-250 V, for which a double-wound transformer is used. The waveband ranges are 190-550 m and 1,075-1,825 m.

Release date and original price: November 1950, £16 12s 8d without batteries. Purchase tax extra.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, L3, C30** (M.W.) or **L2, C30** (L.W. precedes a heptode valve **(V1, Mullard DK91)** which operates as frequency changer with internal coupling. Oscillator grid coil **L4** (M.W.) is tuned by **C31**. For L.W. operation **C9, C33** are shunted across **L4**. Parallel trimming by **C32** (M.W.); series tracking by **C8** (M.W. and L.W.). Inductive reaction coupling on M.W. and L.W. by **L5**.

Second valve **(V2, Mullard DF91)** is an R.F. pentode operating as intermediate frequency amplifier with tuned transformer couplings **C5, L6, L7, C6** and **C13, L8, L9, C14**.

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 **R10**, which acts as diode load, and passed via **C17** to control grid of pentode section, which operates as A.F. amplifier. I.F. filtering by **C15, R9, C16** in diode circuit and **C20** in pentode circuit. D.C. potential developed across **R9, R10** is fed back as bias to F.C. valve, giving automatic gain control. The I.F. bias is fixed.

Resistance-capacitance coupling by **R14, C21** and **R16** between **V3** pentode and pentode output valve **(V4, Mullard DL94)**. Fixed tone correction by **C24** in anode circuit.

For battery operation, power supplies are carried by switches **S6(B)** and **S8(B)** which close in the battery positions. For A.C. mains operation **S5 (M), S7 (M)** and **S9 (M)** close instead. H.T. current is then supplied by full-wave metal rectifier **(MR1, SenTerCel RM2)**. H.T. smoothing by **R21** and electrolytic capacitors **C22** and **C27**.

Filament current is taken from the H.T. circuit, the filaments being connected in series and fed via ballast resistors **R19, R20. R2, R7, R12** and **R17** are filament shunts to by-pass H.T. current past the heater chain.

When the lid of the carrying case is closed **S10** also closes, causing positive feed-back via **C23** between **V4** anode and **V3** screen grid, and producing a warning note in the speaker if the set is still switched on.

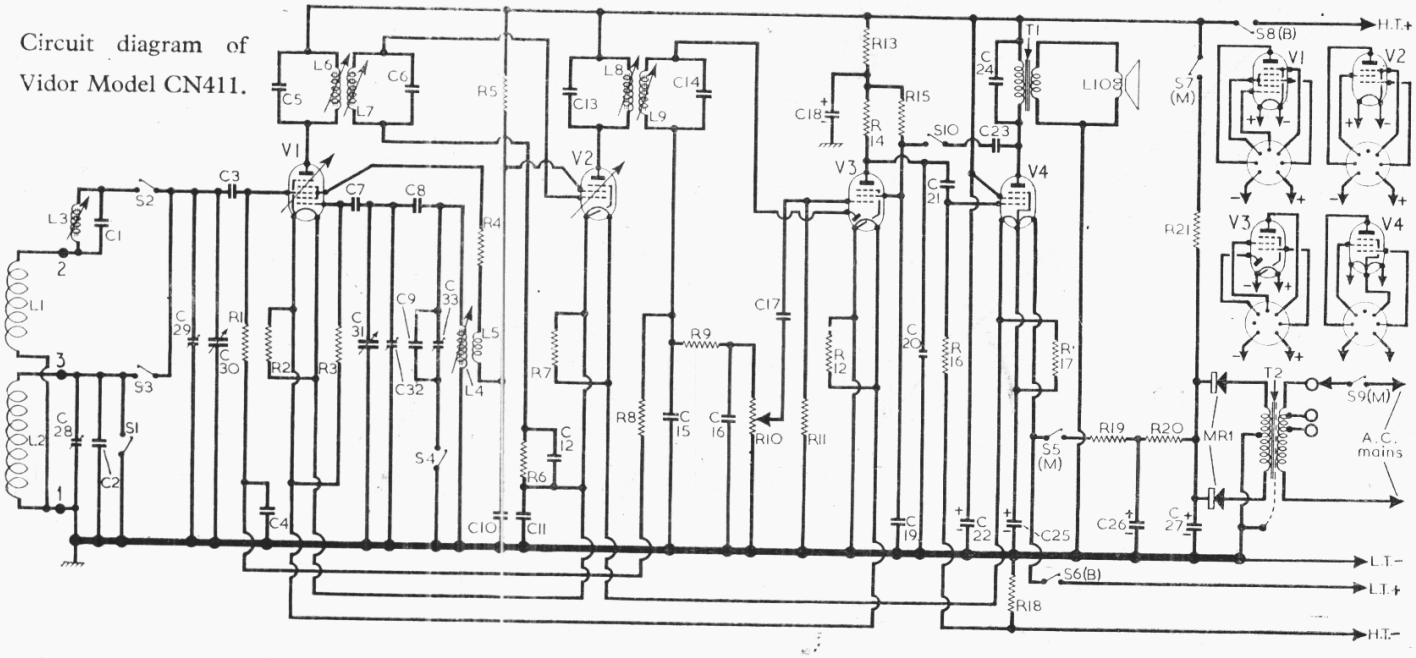
COMPONENTS AND VALUES

	CAPACITORS	Values	Locations
C1	M.W. aerial trim.	100pF	F4
C2	L.W. aerial trim.	190pF	F3
C3	V1 C.G.	0·001μF	B2
C4	A.G.C. decoupling	0·05μF	F3
C5	1st I.F. trans.	100pF	B2
C6	tuning	100pF	B2
C7	V1 osc. C.G.	100pF	F4
C8	Osc. tracker	532pF	F4
C9	L.W. osc. trim.	400pF	B1
C10	H.T. decoupling	0·1μF	H3
C11	Filament by-pass	0·1μF	G3
C12	V2 C.G. decoup.	0·01μF	G3
C13	2nd I.F.trans.	100pF	C1
C14	tuning	100pF	C1
C15	I.F. by-passes	100pF	F3
C16		100pF	F3
C17	A.F. coupling	500pF	G4
C18*	H.T. decoupling	2μF	D2
C19	S.G. decoupling	0·05μF	H3
C20	I.F. by-pass	65pF	G3
C21	A.F. coupling	500pF	G3
C22*	H.T. reservoir	32μF	A1
C23	Alarm coupling	0·005μF	D2
C24	Tone corrector	0·01μF	C2
C25*	Filament by-pass	100μF	D2
C26*	Filament smoothing	25μF	A1
C27*	H.T. smoothing	32μF	A1
C28‡	L.W. aerial trim.	40pF	F3
C29‡	M.W. aerial trim.	40pF	F3
C30†	Aerial tuning	§528pF	F3
C31†	Oscillator tuning	§528pF	F4
C32‡	M.W. osc. trim.	40pF	F3
C33‡	L.W. osc. trim.	80pF	B2

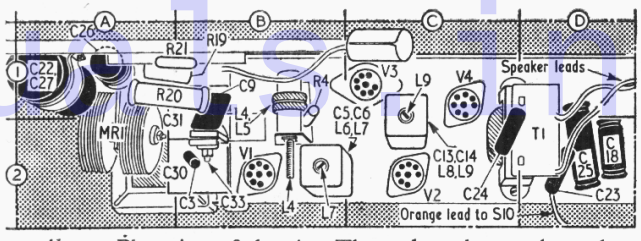
	RESISTORS	Values	Locations
R1	V1 C.G.	4·7MΩ	F3
R2	Filament shunt	120Ω	F3
R3	V1 osc. C.G.	100kΩ	F3
R4	Osc. stabilizer	2·2kΩ	B1
R5	H.T. decoupling	8·2kΩ	G3
R6	V2 C.G.	4·7MΩ	G3
R7	Filament shunt	150Ω	G3
R8	A.G.C. decoupling	2·2MΩ	F3
R9	I.F. stopper	47kΩ	G3
R10	Volume control	2MΩ	G4
R11	V3 C.G.	4·7MΩ	G3
R12	Filament shunt	100Ω	G4
R13	H.T. decoupling	56kΩ	H3
R14	V3 anode load	1MΩ	G3
R15	V3 S.G. feed	4·7MΩ	H3
R16	V4 C.G.	2·2MΩ	G3
R17	Filament shunt	330Ω	G3
R18	V4 G.B.	100Ω	G4
R19	Filament ballast	680Ω	A1
R20		1·5kΩ	A1
R21	H.T. smoothing	1·8kΩ	A1

* Electrolytic. † Variable. ‡ Pre-set.
§ "Swing" value, min. to max.

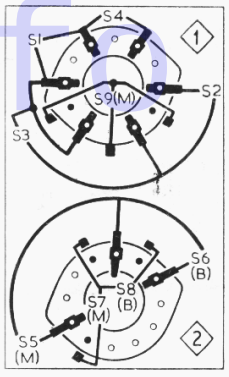
Circuit diagram of Vidor Model CN411.



OTHER COMPONENTS		Approx. Values (ohms)	Locations
L1	M.W. frame aerial	2·0	—
L2	L.W. frame aerial	15·0	—
L3	M.W. loading coil	1·6	F4
L4	Osc. tuning coil ...	1·2	B1
L5	Osc. reaction coil ...	1·0	B1
L6	1st I.F. Pri.	20·0	B2
L7	trans. Sec. ...	20·0	B2
L8	2nd I.F. Pri.	20·0	C1
L9	trans. Sec. ...	20·0	C1
L10	Speech coil ...	2·9	—
T1	O.P. trans. Pri.	470·0	D2
	Sec.	0·5	
T2	Mains Pri., total	220·0	E4
	trans. Sec., total	240·0	
S1-S4	Waveband and	—	G4
S5-S9	power switches	—	
S10	Alarm switch ...	—	—
MR1	Metal rectifier RM2	—	A2



Above : Plan view of chassis. The scale and control panel is seen at top left. **MR1** and **C30, C31** are actually below the level of the deck.



Right : Waveband switch diagrams as seen from rear of an inverted chassis, with associated switch table below. The table starts with knob pointer at 10 o'clock.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured on our receiver when it was operating from a new set of batteries. Readings taken with the receiver operating from 230 V A.C. mains were about 10% higher. The receiver was tuned to the high wavelength end of M.W. and the volume control set to maximum, but there was no signal input.

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

Valve	Anode V	Anode mA	Screen V	Screen mA
V1 DK91 ...	93	0·4	53	2·0
V2 DF91 ...	93	3·0	67	1·0
V3 DAF91 ...	19	0·07	20	0·012
V4 DL94 ...	89	5·0	93	1·0

DISMANTLING

Removing Chassis.—Slacken off the two knurled-head screws securing the base cover, and, hinging it open, remove it from the carrying case;

open lid of carrying case and remove knobs (recessed grub screws) together with transparent name-plate;

remove wood screws and spacers from inside ends of lid, prise out the frame aerial cover and unsolder the three frame aerial leads;

unsolder leads from speech coil tags on speaker;

unsolder orange lead from tag on lid-operated alarm switch beside speaker;

unsolder blue alarm switch lead from chassis tag indicated in chassis illustration at location (H3);

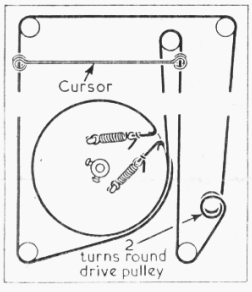
unplug leads from batteries (if fitted) and remove four 4BA nuts (with shake-proof washers) securing front and rear edges of main scale and control mounting plate;

slacken two 4BA nuts near speech coil tags securing end of vertical portion of chassis to side of carrying case and withdraw chassis.

When replacing; the frame aerial leads which are numbered 1 to 3 in the under-chassis illustration should be reconnected in this order, from left to right, to the tags in the lid.

GENERAL NOTES

Switches.—**S1-S4** are the waveband switches, and **S5 (M), S6 (B), S7 (M), S8 (B), S9 (M)** are the mains/battery/off switches, all ganged together in two 6-position rotary units. These are indicated by arrows in our chassis illustration, and shown in detail in the diagrams inset beside the upper chassis illustration, where they are viewed in the direction indicated by the arrows. **S1, S2** close on M.W.; **S3, S4** close on L.W.; of the remainder, those with the suffix (M) close for mains operation, and those with (B) for battery. At "off" all switches are open.



Sketch showing tuning drive system as seen from front with tuning scale removed.

S10 is the alarm switch, located in the carrying case and operated by the ball-chain stay.

Batteries.—L.T., 7.5 V; H.T., 90 V. Lightweight types recommended are Vidor L5048 and L5512 respectively; heavy-duty types are L5058 and L5039 respectively. A 3-pin plug is provided for the lightweight H.T. battery, but this is inserted in an adaptor socket (location G4) when heavy batteries are used, bringing wander-plug leads into circuit.

Switch	Battery L.W.	Battery M.W.	Battery Off	A.C. Mains L.W.	A.C. Mains M.W.	A.C. Mains Off
S1 ...	—	C	—	—	C	—
S2 ...	—	C	—	—	C	—
S3 ...	C	—	—	C	—	—
S4 ...	C	—	—	C	—	—
S5(M) ...	—	—	—	C	C	—
S6(B) ...	C	C	—	—	—	—
S7(M) ...	—	—	—	C	C	—
S8(B) ...	C	C	—	—	—	—
S9(M) ...	—	—	—	C	C	—

The same 2-pin plug is used for both L.T. batteries, but when lightweight types are used, both H.T. and L.T. batteries are held by a webbing strap, and the H.T. wander plugs are inserted into parking sockets.

Tuning Drive Cord Replacement.—About 6 feet of high-grade fishing line is required for a new drive cord, which should be run as shown in the accompanying sketch, where the gang is at maximum capacitance. The scale plate must be removed (four 6BA nuts, bolts and lock-washers). The cursor can be fitted afterwards and adjusted as explained under "Circuit Alignment."

Chassis Divergencies.—The values and circuit arrangement shown here are as we found them in our sample receiver, but the following differences may be found in other chassis: **R19** may be 900 Ω, **R20** 2.15 kΩ, **R21** 2.7kΩ, **R2** 150 Ω, **R7** 220 Ω, **R12** 120 Ω and **R17** 470 Ω. Further, **L7** may instead of being returned to **V2** filament via **R6, C12** as we show it, be connected via a 1.8 MΩ resistor to the A.G.C. line, and via a 4.7 MΩ resistor to the positive end of **V4** filament.

CIRCUIT ALIGNMENT

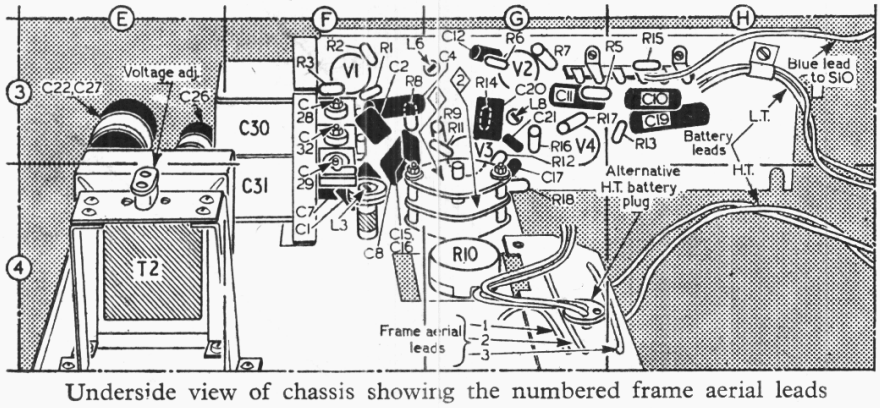
To gain access to the core and trimmer adjustments, the chassis should be removed from its carrying case. Before aligning the I.F. stages, the cores should be freed by carefully melting the wax with which they are sealed.

I.F. Stages.—Switch receiver to M.W., and turn gang to minimum capacitance. Connect signal generator output across **C30** (location reference F3), feed in a 475 kc/s (631.6 m) signal and adjust the cores of **L9, L8, L7** and **L6** (C1, G3, B2) in that order for maximum output, reducing the input as the circuits come into line to avoid A.G.C. action. Reseal the cores with soft wax.

R.F. and Oscillator Stages.—Check that with the gang at maximum capacitance, the cursor is horizontal and coincides with the calibration point above the 550 m mark on the M.W. tuning scale. Transfer signal generator leads to frame aerials, placing them in close proximity to the windings in the lid of the carrying case.

M.W.—Switch receiver to M.W., tune to 500 m, feed in a 500 m (600 kc/s) signal and adjust the cores of **L4** (B2) and **L3** (F4) for maximum output. Tune receiver to 200 m, feed in a 200 m (1,500 kc/s) signal and adjust **C32** (F3) and **C29** (F3) for maximum output. Repeat these adjustments until no further improvement results.

L.W.—Switch receiver to L.W., tune to 1,200 m, feed in a 1,200 m (250 kc/s) signal and adjust **C33** (B2) and **C28** (F3) for maximum output. Repeat these adjustments.



Underside view of chassis showing the numbered frame aerial leads referred to in "Dismantling". The H.T. battery plug is shown "parked".

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