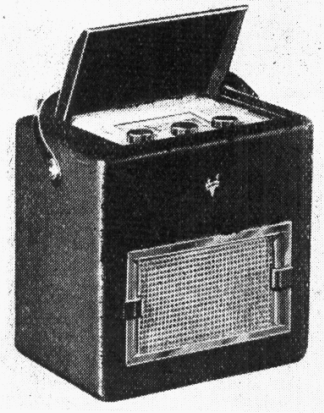
"TRADER" SERVICE SHEET

873

VIDOR

CN360 & 360A



THE Vidor CN360 and 360A are 4-valve 3-band all-dry battery superhets with a S.W. range of 16-50 m. The small differences between the two are explained under "Chassis Divergencies" overleaf. An entry slot is provided in the back cover to permit a mains unit to be conveniently fitted.

The export versions CN364 and 364A are identical with the CN360 and 360A. This *Service Sheet* was prepared from a CN360A.

Release date and original price: October 1947; £15 15*s*, *with batteries, plus purchase tax.*

CIRCUIT DESCRIPTION

Tuned frame aerial input by **L1, C28** (S.W.), **L2, L3** (in parallel), **C28** (M.W.) and **L3, C28** (L.W.) which precede a heptode valve **(V1, Mullard DK91)** operating as frequency changer with electron coupling. For S.W. operation only, provision is made for the connection of an external aerial to a tapping on **L1.**

Oscillator grid coils **L4** (S.W.), **L5** (M.W.) and **L6** (L.W.) are tuned by **C29,** with parallel trimming by **C30** (M.W.) and **C31** (L.W.), and series tracking by **C7** (S.W.), **C8** (M.W.) and **C9** (L.W.). Reaction coupling to grid by coils **L7** (S.W.), **L8** (M.W.) and **L9** (L.W.).

Second valve **(V2, Mullard DF91)** is a variable-mu R.F. pentode operating as intermediate frequency amplifier with tuned-transformer couplings.

Intermediate frequency 456 kc/s.

Diode second detector is part of single diode pentode valve **(V3, Mullard DAF91).** Audio frequency component in rectified output is developed across manual volume control **R10,** which is the diode load resistor, and passed via A.F. coupling capacitor **C17** and grid resistor **R12** to C.G. of pentode section, which operates as A.F. amplifier.

I.F. filtering by **C15, R9, C16** in diode circuit and **C20** in pentode anode circuit, and voltage negative feed-back from anode to control grid of **V3** via the isolating capacitor **C18** and attenuating resistor **R11.**

D.C. potential developed across **R9, R10** is tapped off and fed back, via a decoupling circuit, as G.B. to F.C. and I.F. valves, giving automatic volume control.

Resistance-capacitance coupling by **R14, C21, R15** between **V3** pentode and pentode output valve **(V4, Mullard DL92),** whose dual filament sections are wired in parallel. Fixed tone correction in anode circuit by **C23.**

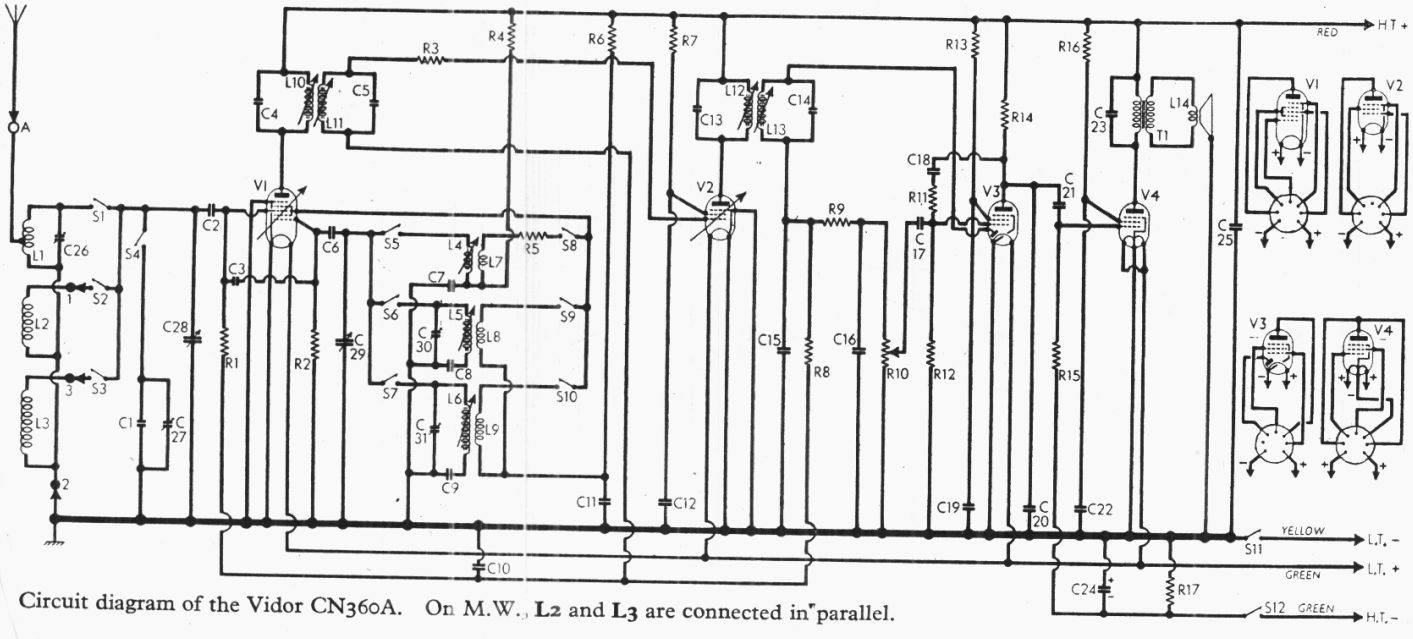
COMPONENTS AND VALUES

	RESISTORS	Values (ohms)	Locations
R1	V1 pent. C.G. ...	1,000,000	G5
R2	V1 osc. C.G. ...	100,000	H5
R3	V2 C.G. Stopper ...	820	H5
R4	Osc. S.W. H.T. feed	10,000	J4
R5	Osc. S.W. stabilizer	33	E2
R6	Osc. H.T. feed ...	15,000	J5
R7	V2 S.G. H.T. feed...	68,000	J5
R8	A.V.C. decoupling	2,200,000	L4
R9	I.F. stopper ...	47,000	L5
R10	Volume control ...	1,000,000	B1
R11	F.-B. coupling ...	8,200,000	N5
R12	V3 pent. C.G. ...	2,200,000	M4
R13	V3 S.G. H.T. feed...	4,700,000	M4
R14	V3 pent. anode load	1,000,000	M5
R15	V4 C.G. resistor ...	2,200,000	N5
R16	V4 S.G. H.T. feed...	15,000	M5
R17	V4 G.B. resistor ...	820	K4

	CAPACITORS	Values (μF)	Locations
C1	Aerial L.W. trim....	0·000015	D3
C2	V1 pent. C.G. ...	0·0001	H4
C3	S.W. neutralising...	0·000006	G4
C4	1st I.F. trans. tuning ...	0·000065	F3
C5	1st I.F. trans. tuning ...	0·000065	F3
C6	V1 osc. C.G. ...	0·0001	H4
C7	Osc. S.W. tracker	0·005	E2
C8	Osc. M.W. tracker	0·000635	C3
C9	Osc. L.W. tracker	0·00023	C3
C10	A.V.C. decoupling	0·1	H5
C11	Osc. H.T. decoup....	0·1	I5
C12	V2 S.G. decoup. ...	0·1	I5
C13	2nd I.F. trans. tuning ...	0·000065	B2
C14	2nd I.F. trans. tuning ...	0·000075	B2
C15	I.F. by passes ...	0·0001	L4
C16	I.F. by passes ...	0·0001	K4
C17	A.F. coupling ...	0·01	N4
C18	F.-B. coupling ...	0·01	N5
C19	V3 S.G. decoup. ...	0·1	L4
C20	I.F. by-pass ...	0·0001	M4
C21	A.F. coupling ...	0·01	N4
C22	V4 S.G. decoup. ...	0·1	M5
C23	Tone corrector ...	0·003	M5
C24*	G.B. by-pass ...	50·0	J4
C25	H.T. reservoir ...	1·0	J4
C26‡	Aerial S.W. trim....	0·00004	D3
C27‡	Aerial L.W. trim....	0·00008	D3
C28†	Frame aerial tuning	0·000532	C1
C29†	Oscillator tuning ...	0·000532	C2
C30‡	Osc. M.W. trim.	0·00008	D2
C31‡	Osc. L.W. trim. ...	0·00024	D2

* Electrolytic. † Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)	Locations
L1	S.W. frame aerial...	Very low	G4
L2	M.W. frame aerial	1·3	D1
L3	L.W. frame aerial...	22·0	E1
L4	Oscillator tuning coils ...	Very low	E2
L5	Oscillator tuning coils ...	≷ 0·4	D3
L6	Oscillator tuning coils ...	≷ 2·7	C3
L7	Oscillator reaction coils ...	Very low	E2
L8	Oscillator reaction coils ...	1·5	D3
L9	Oscillator reaction coils ...	2·5	C3
L10	1st I.F. trans. Pri. ...	8·25	F3
L11	1st I.F. trans. Sec. ...	8·25	F3
L12	2nd I.F. trans. Pri. ...	8·25	B2
L13	2nd I.F. trans. Sec. ...	10·0	B2
L14	Speech coil ...	2·5	—
T1	Speaker trans. Pri. ...	360·0	—
	Speaker trans. Sec. ...	0·8	—
S1-S10	W/band switches ...	—	E1
S11	L.T. circuit switch	—	B1
S12	H.T. circuit switch	—	B1



Circuit diagram of the Vidor CN360A. On M.W., **L2** and **L3** are connected in parallel.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating from a set of new batteries. The receiver was tuned to the lowest wavelength on the M.W. band.

Voltages were measured on the 400 V scale of a model 7 Avometer, chassis being the negative connection.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 DK91	82	1·25	55	1·85
V2 DF91	82	1·1	47	0·38
V3 DAF91	6	0·06	3	0·01
V4 DL92	78	4·6	64	1·0

GENERAL NOTES

Switches.—**S1-S10** are the waveband switches, ganged in two rotary units beneath the chassis. These are indicated in our rear (plan) view of the chassis by the numbers **1** and **2** in diamonds, and shown in detail in the diagrams in col. 2 where they are drawn as seen from the bottom edge of the chassis. The table below gives the switch positions for the three control settings, starting from the fully anti-clockwise (L.W.) position of the control knob. A dash indicates open, and **C** closed.

Switch	L.W.	M.W.	S.W.
S1	—	—	C
S2	—	C	—
S3	C	C	—
S4	C	—	—
S5	—	—	C
S6	—	C	—
S7	C	—	—
S8	—	—	C
S9	—	C	—
S10	C	—	—

S11, S12 are the Q.M.B. battery switches, ganged with the volume control **R10**.

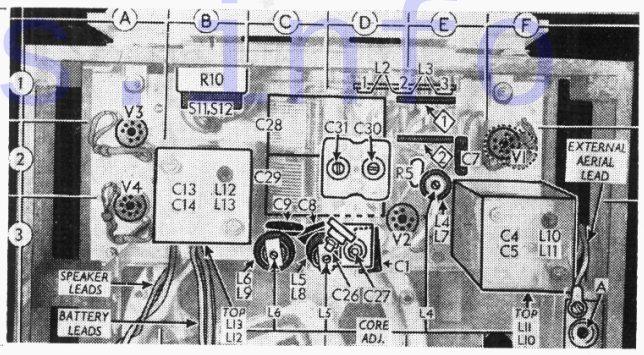
Frame Windings.—The S.W. frame winding **L1** runs round the edge of the main wooden support, which forms the sub-baffle, and is indicated in our front (under) chassis view. The M.W. and L.W. windings **L2, L3** are on a separate frame which is held to the main support by brackets and are terminated at a tag strip indicated in our rear view (D1, E1) where they are numbered **1, 2, 3** to agree with the circuit diagram.

The oscillator circuit coils **L4, L7, L5, L8**; and **L6, L9** are in three unscreened tubular units. All have adjustable cores, and their positions are indicated in our rear view of the chassis.

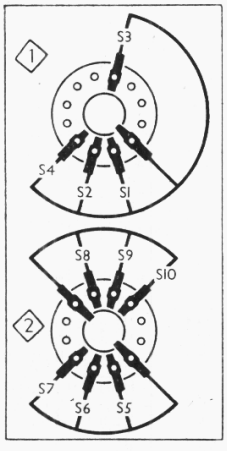
Batteries and Leads.—The H.T. battery is a Vidor type L5039 90 V unit with two sockets only for the positive and negative wander plugs. The L.T. unit is a Vidor large-capacity 1.5 V dry battery, type L5050 with a two-pin socket outlet. The larger pin is positive. The lead colours are indicated in the circuit diagram, but in some cases the L.T. negative lead may be blue, and the H.T. negative lead black.

Chassis Divergencies.—Early models had an 8 pf (0.000008 μF) capacitor in parallel with **L4**, mounted on the metal bracket above **C28**, and **C26** was a Mullard type concentric trimmer mounted above the gang.

Our sample was a model 360 A. In the 360, the frame aerial assembly was differently arranged, and was similar to that in the "Riviera" model 351 (*Service Sheet* 781). The dismantling instructions are modified accordingly.



Plan view of the chassis. The frame aerial connections **1, 2, 3** just above the tuning gang are on a tag strip mounted on the M.W. and L.W. frame assembly. **V1** has a close-fitting shield.



Diagrams of the two waveband switch units, drawn as seen from the rear (below). The associated table is on the left, in the next column.

CIRCUIT ALIGNMENT

Before carrying out these operations the complete receiver must be removed from the carrying case and assembled on the bench.

I.F. Stages.—Connect signal generator, via an 0.0001 μF capacitor in the "live" lead, to control grid (pin 6) of **V1** and chassis. Switch set to L.W., tune to 2,000 m on scale, turn volume control to maximum, short-circuit **C29** (location reference C2), and feed in a 456 kc/s (657.8 m) signal. Adjust the cores of **L13, L12, L11** and **L10** (B3, F3) for maximum output, progressively attenuating the input as the circuits are aligned to avoid A.V.C. action. Finally, remove short-circuit from **C29** and disconnect signal generator leads from receiver.

R.F. and Oscillator Stages.—For these operations the batteries must be in their normal positions in the assembly, and the signal generator leads should be secured on the bench, close to the assembly. With the gang at maximum capacitance the pointer should be horizontal and coincident with the high wavelength ends of the three scales.

S.W.—Switch set to S.W., tune to 17 m on scale, feed in a 17 m (17.64 Mc/s) signal, and adjust **C26** (D3) for maximum output. Tune to 50 m on scale, feed in a 50 m (6.0 Mc/s) signal, and adjust the core of **L4** (E2) for maximum output whilst rocking the gang. Repeat the 17 m and 50 m adjustments.

M.W.—Switch set to M.W., tune to 200 m on scale, feed in a 200 m (1,500 kc/s) signal, and adjust **C30** (D2) for maximum output. Tune to 550 m on scale, feed in a 550 m (545.4 kc/s) signal, and adjust the core of **L5** (D3) for maximum output. Repeat the 200 m and 550 m adjustments.

L.W.—Switch set to L.W., tune to 1,000 m on scale, feed in a 1,000 m (300 kc/s) signal, and adjust **C31** (D2) and **C27** (D3) for maximum output. Tune to 2,000 m on scale, feed in a 2,000 m (150 kc/s) signal, and adjust the core of **L6** (C3) for maximum output. Repeat the 1,000 m and 2,000 m adjustments.

DISMANTLING THE SET

The chassis, speaker and S.W. frame aerial should be removed from the carrying case as a complete assembly, but before this can be done the M.W. and L.W. frame aerial must be removed.

Removing M.W. and L.W. Frame Aerial.—Remove batteries and lay the carrying case, face downward, on a felt pad;

unsolder the three rubber covered leads from the tag panel at the top of the frame assembly and the systoflex covered lead from the external aerial connection on the right-hand side of the frame;

remove the 4BA nut (with lock washer) securing a vertical metal bracket from the chassis to the left-hand side of the frame, and the 6BA nut (with lock washer) securing a similar bracket mounted on the first I.F. transformer to the right-hand side of the frame;

loosen the 4BA nut of the clamp securing the bottom of the frame to the carrying case and lift out the frame aerial assembly, taking care not to damage the windings.

Removing Chassis Assembly.—Remove the M.W. and L.W. frame aerials as previously described;

remove the 4BA screw (with nut, lock washer and metal clamp) securing the bottom edge of the assembly to the carrying case;

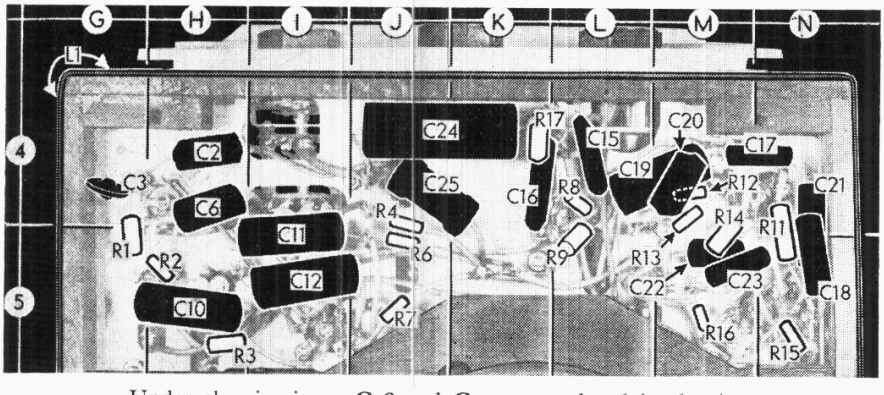
if the two carrying handle studs (with one nut and washer each) are now removed, the complete assembly may be withdrawn from the case.

When replacing, resolder the frame aerial leads as follows, numbering the three tags on the connecting panel from left to right when viewed from the rear: 1, red; 2, long green rubber covered lead; 3, short green rubber covered lead. The stiff green systoflex covered lead goes to the external aerial connecting tag.

Removing Speaker.—Remove batteries and unsolder the two leads from tags on the speaker input transformer connecting panel;

remove the three 4BA nuts (with washers) securing the speaker to the sub-baffle.

When replacing, the transformer should point to the bottom left-hand corner of the carrying case, and a black earthing lead must be fitted beneath the left-hand fixing nut.



Under-chassis view. **C18** and **C21** are enclosed in sleeving.

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