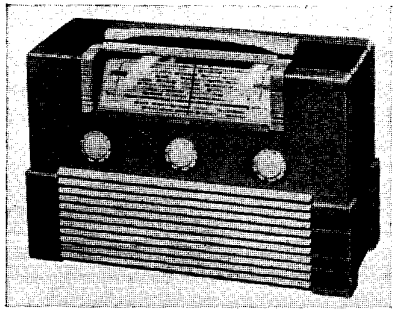
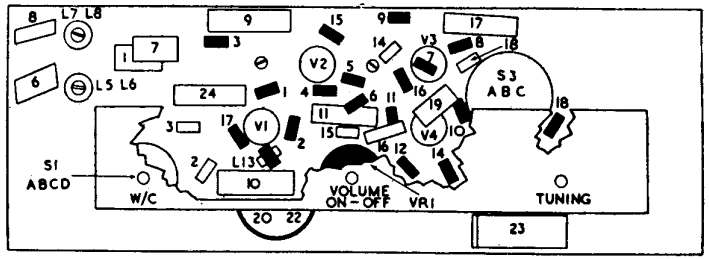
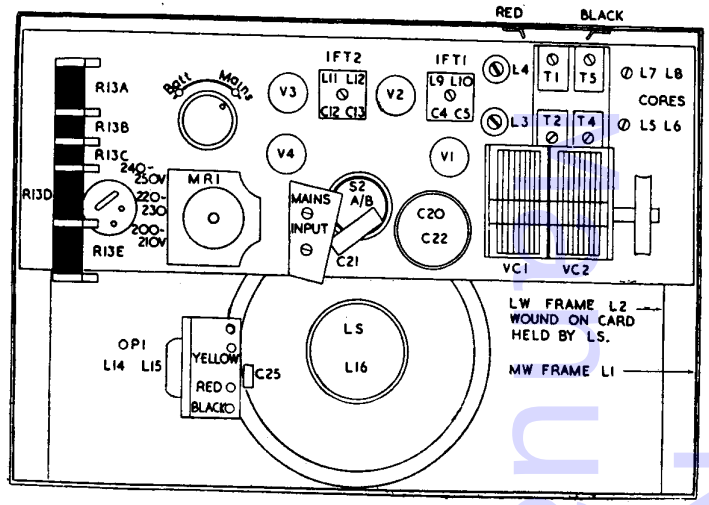
VIDOR CN421

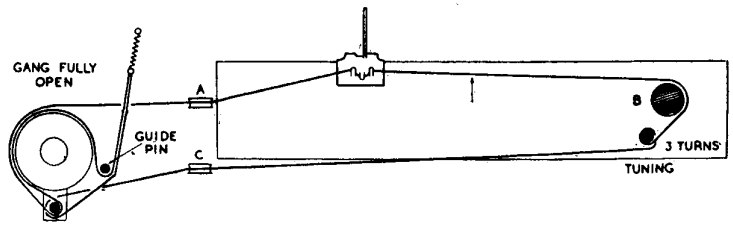
'GALA'

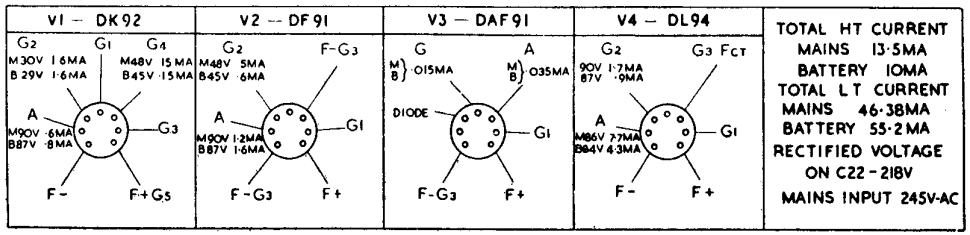


Four-valve two-waveband AC-DC battery portable receiver with self-contained frame aerials. Housed in two-tone fabric-covered cabinet with spring-loaded plastic carrying handle. Suitable for operating from all-dry batteries and 200-250V AC/DC mains. Manufactured by Vidor, Ltd., West Street, Erith, Kent.









CAPACITORS

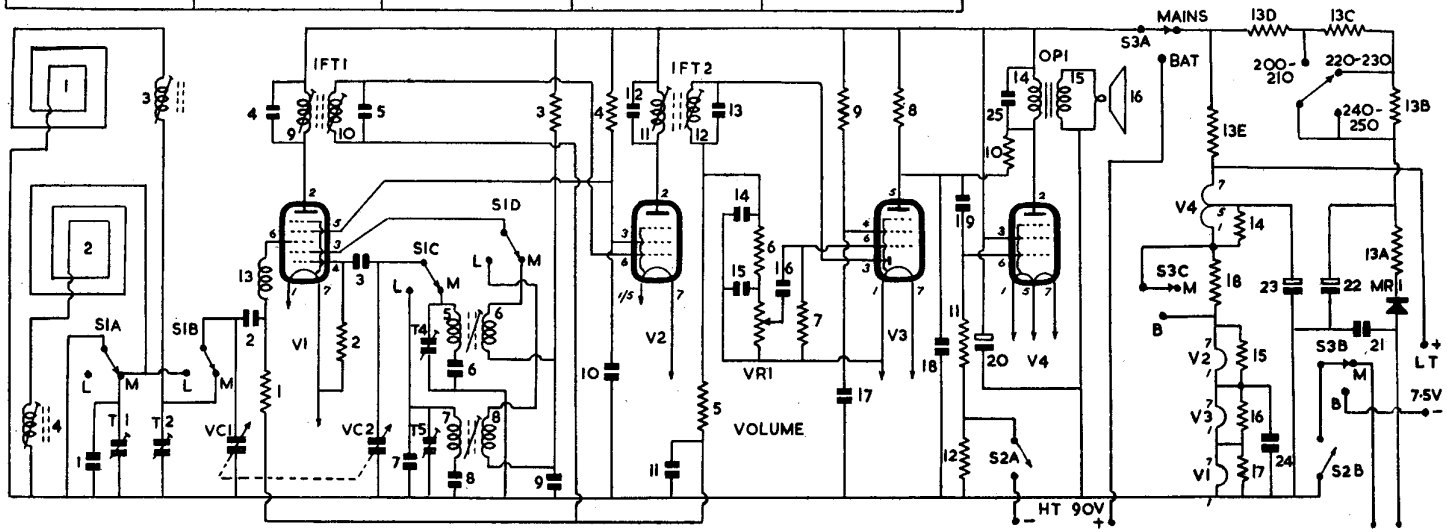
C	Capacity	Type
1	100pF	Silver Mica
2	100pF	Tub Ceramic
3	100pF	Tub Ceramic
4	65pF	Silver Mica
5	65pF	Silver Mica
6	532pF	Silver Mica
7	200pF	Silver Mica
8	280pF	Silver Mica
9	.1	Tubular 350V
10	.1	Tubular 350V
11	.05	Tubular 350V
12	65pF	Silver Mica
13	65pF	Silver Mica
14	100pF	Tub. Ceramic
15	100pF	Tub. Ceramic
16	.001	Tubular 500V
17	.05	Tubular 350V
18	220pF	Tub. Ceramic
19	.01	Tubular 500V
20	32	Electrolytic 275V
21	.01	Tubular 600V AC
22	32	Electrolytic 275V
23	25	Electrolytic 12V
24	.05	Tubular 350V
25	220pF	Tub. Ceramic

RESISTORS

R	Ohms	Watts
1	4.7M	¼
2	27K	¼
3	33K	¼
4	39K	¼
5	2.2M	¼
6	47K	¼
7	4.7M	¼
8	1M	¼
9	4.7M	¼
10	8.2M	¼
11	2.2M	¼
12	220	¼
13A	315	6W
B	365 Tapped	1½
C	365 Dropper	1½
D	1410	6
E	1800	5
14	330	¼
15	150	¼
16	120	¼
17	120	¼
18	10	¼
VR1	1M Log Law Potr. with DP Switch	

INDUCTORS

L	Ohms
1	1.8
2	16.4
3	4.4
4	6.6
5	3.2
6	1.3
7	6.6
8	2.25
9	20.5
10	20.5
11	20.5
12	20.5
13	6.4
14	760
15	.3
16	2.75



AERIAL. The receiver is fitted with separate MW and LW frame aerials, each connected in series with a permeability tuned loading coil. The MW frame L1 is fastened around inside of rear opening of cabinet, whilst the LW frame L2 is located behind fibre panel secured to inside front of cabinet by the loudspeaker and output transformer fixing screws.

On MW band frame L1 in series with loading coil L3 and trimmed by T2 is switched by S1B to aerial tuning capacitor VC1 and coupled by C2 through RF choke L13 to control grid (g3) of heptode frequency changer V1.

In MW position of wavechange switch the LW tuned circuit is shorted to chassis by S1A. On LW band frame L2 in series with loading coil L4 and trimmed by T1 C1, is switched by S1A to VC1 and coupled through C2 L13 to g3 of V1. AVC voltages decoupled by R5 C11 are fed to g3 through R1 L13. Screen (g4) voltage is obtained

VIDOR CN421 'GALA' *Continued*

from R4, decoupling being given by C10. Primary L9 C4 of IFT1 is in the anode circuit.

Oscillator employs g1 and g2 of heptode V1 as a triode connected in a tuned grid series fed anode circuit. The grid coils L5(MW) L7(LW), trimmed by T4 T5-C7 and padded by C6 C8 respectively, are switched by S1c to oscillator tuning capacitor VC2 and coupled by C3 to g1 of V1. Automatic bias for oscillator grid is developed on C3 with R2 as leak. Anode reaction voltages are developed inductively from L6(MW) L8(LW), the appropriate coil being switched in series with HT feed to oscillator anode (g2) by S1D. Oscillator anode voltage is obtained from R3 decoupled by C9.

IF amplifier operates at 475 kc/s. Secondary L10 C5 of IFT1 feeds signal, and AVC voltage decoupled by R5 C11 to g1 of IF amplifier V2. Screen (g2) voltage is obtained in common with that of g4 of V1 from R4 decoupled by C10. Suppressor grid (g3) is internally strapped to negative side of filament. Primary L11 C12 of IFT2 is in the anode circuit.

Signal rectifier. Secondary L12 C13 of IFT2 feeds signal to the single diode anode of V3. Volume control VR1 forms diode load, whilst IF filtering is given by R6 C14 C15.

AVC. The DC component of the rectified signal is decoupled by R5 C11 and fed to control grids of V1 V2 as AVC voltage.

AF amplifier. Rectified signal across volume control VR1 is fed by C16 to g1 of pentode AF amplifier section of V3. Automatic bias for grid is developed on C16 with R7 as leak resistor. Screen (g2) voltage is obtained from R9 decoupled by C17. Suppressor grid (g3) is internally strapped to negative side of filament. R8 is anode load and C18 anode RF bypass capacitor.

Output stage. Signal at anode V3 is fed by C19 to g1 of pentode output amplifier V4. On mains operation the grid is negatively biased by virtue of the filament of V4 being connected at high potential side of LT supply. On battery operation, however, the anode current of V4 is reduced to prolong life of HT battery by increasing negative bias on grid by returning its grid resistor R11 to chassis through R12 in negative HT battery lead. Screen (g2) voltage is obtained direct from HT line, decoupling being given by C20. Suppressor grid (g3) is internally strapped to centre tap of filament.

Audio output at anode V4 is transformer fed by OP1 to a 5in. PM speaker L16. Fixed tone correction is given by C25, while negative feedback from anode is applied through R10 C19 to its grid.

HT of 90V is provided by a Vidor type L5512 battery or alternatively from the mains. Receiver HT line is switched by S3A to either source of supply. HT battery is decoupled by C20, which in addition functions as smoothing capacitor on mains-generated HT. Battery HT negative lead is switched on/off by S2A, which is ganged to S2B and controlled by volume control spindle. When operated from mains supply HT is provided by metal rectifier MR1, which is fed direct from input mains. HT is resistance-capacity smoothed by R13D C20 C22 with R13B and R13C giving voltage adjustment. Reservoir smoothing capacitor C22 should be rated to handle 150mA ripple current. Mains input is filtered by C21.

LT of 7.5V for series connected filaments of V1 to V4 is provided by a Vidor type L5042 LT battery or, if the receiver is operated from the mains, from the rectified and smoothed HT through dropper resistor R13E. Additional smoothing to LT line is given by C23 whilst C24 is RF bypass capacitor. R14 to R17 are current bypass resistors to maintain current voltage across each valve filament. R18, which is connected in series with filament line between V2 and V4, is short-circuited by S3C when mains battery switch is placed in battery position.

S3B switches LT battery negative or mains lead through section S2B of receiver on/off switch to chassis.

As a safety precaution mains connection to receiver is made through a plug attached to inside of hinged rear panel of cabinet and a socket mounted on receiver chassis. Thus, when back of cabinet is opened to give access to batteries, etc., the mains connection to receiver chassis is broken.

Chassis removal. Remove the three push-on type control knobs. Open back of cabinet and disconnect and remove batteries. Unsolder the two leads from MW frame aerial tag panel located at rear of top right-hand side of cabinet, and also unsolder from OP1 the three leads connecting it to receiver. Remove screws holding battery lead cleats to rear panel and undo and remove the four hexagonal nuts (two at each side) which secure receiver chassis to side brackets.

Raise fully the carrying handle and carefully withdraw chassis as far as connecting leads to LW frame aerial (mounted on inside front of cabinet) will permit. Finally unsolder leads from LW frame tag panel—chassis is then free to be removed from cabinet.

Renewal of cord drive. Approximately 40in. of Python Flax, Braided No. 20, is required. Place gang capacitor at minimum capacity. Tie one end of cord securely to spring and then anchor spring to lug projecting on chassis adjacent to L7/8. Keeping spring under tension, take cord under guide pin and back up over drum and around boss attached to plate on drum. Bring cord back round drum and pass it over pulleys A and B—wind three turns in clockwise direction around tuning spindle and pass over pulley C—over and around boss and finally up under guide pin. Pass end of cord through loop on spring and, whilst maintaining tension of cord and spring, tie the knot.

TRIMMING INSTRUCTIONS

Apply signal as stated below	Tune Receiver to	Trim in Order stated for Max. Output
For IF alignment the chassis must be withdrawn from cabinet		
(1) 475 kc/s to g3 of V1 via C2 L13	MW band with gang at minimum	Cores L9, L10 L11 and L12
Pointer alignment with scale—rotate gang capacitor to minimum capacity and adjust pointer carriage to set cursor against righthand end of scale calibration		
(2) 600 kc/s to frame via loosely coupled loop	MW band 500 metres	Core L5, L3
(3) 1.5 mc/s as above...	200 metres	T4, T2. Repeat (2) and (3)
(4) 158 kc/s as above...	LW band 1900 metres	Core L7, L4
(5) 273 kc/s	1100 metres	T5, T1. Repeat (4) and (5)

HOTPOINT 411—*Continued*

The commutator brushes are standard spring-loaded type and have screw-on Bakelite retaining caps.

Both the suction and motor cooling fans are made of nickel-plated pressed steel, the blades being spot-welded. The 2½ in. cooling fan has six blades, and is close to the armature windings. The 4 in. suction fan with seven blades, screws on to the end of the armature shaft (left-hand thread) after the motor housing has been affixed to baffle plate (Fig. 3).

An extension spindle for belt drive transmission to rotary sweeper brush also screws on to armature shaft (Fig. 5).

Sweeper brush spindle has grease-packed ball bearings mounted eccentrically on rectangular plates (Fig. 2). The plates are held in position in the main housing by spring steel clips secured by screws. The edges of both plates are numbered 1, 2, 3, 4; and since, as mentioned above, the bearings are mounted eccentrically on them, by turning the plates in step as the need arises, the brush can be adjusted to compensate for the wearing down of the bristles.

Rubber driving belt couples the rotary brush to motor shaft (extension) positioned some 2 in. above, and at right angles to it. The belt is in the middle of the brush spindle between the two sets of bristles (Fig. 2).

Plastic handle has three-core mains cable fed through a protective rubber grommet at its upper end to a 2A flat-pin socket in its base. The socket accommodates the two-pin plug from motor. All metal parts of the cleaner are earthed via earthing lead of cable which makes contact with the body through a copper strip connecting with the chrome-plated steel stirrup fitted to the bottom end of handle.

The stirrup is attached to the body by two pressed steel brackets with pivots, on which it locates. The brackets are screwed to the backplate carrying motor-fan unit.

A plated steel clip retains the handle in an upright position when the cleaner is not in use.

The Jean cloth bag has an inner sleeve, which prevents the air stream from being choked with dust. Upper end of bag is fitted with a pressed aluminium slide-on clip for emptying purposes, together with a coil spring by which it is suspended from a hook on the handle. Lower end of bag is equipped with a bayonet fitting aluminium sleeve, which goes into outlet nozzle on body.

MAINTENANCE

No special tools are required for dismantling the cleaner.

Lubrication. Motor and rotary brush bearings are grease packed and should not require attention. Apply one spot of oil to wheels very occasionally.

Renewal of motor brushes. These should be replaced when worn down to less than ¼ in. They are the standard ¼ in. spring-loaded type, and can be removed by undoing the knurled and slotted Bakelite retaining caps positioned one on either side of the motor housing.

When new brushes have been fitted, connect machine to mains, switch on and check for satisfactory working. Excessive arcing may be due to a dirty or pitted commutator, and in this case the use of a "Com-Stick" to clean it may be necessary. If commutator is badly pitted it is advisable to return the armature to the manufacturer for overhaul.

Removal of motor and fan unit. Open cover plate on front of machine and lift off belt from motor spindle. Unplug motor supply cable from base of handle. Remove handle stirrup from pivots on back cover plate. Undo the four screws holding back cover plate to main body. Motor-fan assembly will then be free of body (Fig. 3).

Removal of suction fan. Unscrew belt drive spindle in a clockwise direction (lefthand thread) from motor spindle. Fan can then be removed from spindle by unscrewing it clockwise.

Removal of armature. Remove suction fan as described above. Remove commutator brushes. Withdraw the four screws from chrome-plated end cap on motor housing, noting that behind it is a compressed coil spring, a locating cup and a paper washer (Fig. 5).

Undo nut securing end of armature shaft bearing. Take out the six screws attaching motor housing to back plate. As this plate accommodates one of the armature spindle bearings, the armature will remain attached to it when the motor housing is drawn off, therefore great care should be exercised during this operation. Armature spindle and bearing union are a push-fit and no difficulty should be experienced in detaching one from the other.

Removal of field coil and brush assembly. After the armature has been withdrawn, remove the four self-tapping screws securing wheel and foot pedal bracket to motor housing. Remove switch from bracket (one nut fastening) and disconnect leads from it. Detach flat pin-plug from motor supply cable.

Pull out the metal baffle plate from open end of motor housing, and undo screw behind each of the two Bakelite brush retaining caps. The field coil and brush assembly can then be withdrawn from the housing, taking care to ease the leads through the rubber grommets whilst doing so.

Removal of supply socket. Located in base of handle the 2A flat-pin socket can be withdrawn by slackening off the screw on sleeve clamping stirrup to handle, detaching the stirrup and sliding the socket out of the two locating slots.

Replacing brush driving belt. Open front cover and unhook one end of belt from motor spindle. Lift rotary sweeper brush out of its spring steel retaining clips and slip off belt (Fig. 2). New belt can then be fitted by reversing the procedure.

To adjust brush. Brush spindle is mounted on ball bearings located on two rectangular plates. The edges of both plates are numbered 1, 2, 3, 4. The plates fit into spring steel clips, and when the machine is new No. 1 (viewed from underside of cleaner) should be visible. When the bristles wear down the plates should be turned until No. 2 on both is showing. As the brushes become progressively shorter, No. 3 and finally No. 4 should be brought into view. Before these adjustments are carried out, however, the belt should be removed from motor spindle.

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