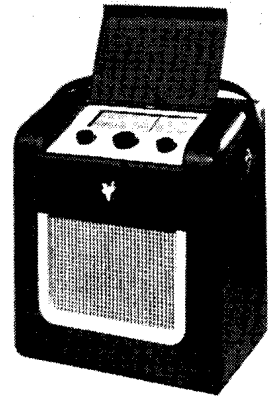


"TRADER" SERVICE SHEET
957

VIDOR 393

Portable A.C. Superhet



A PORTABLE receiver designed to operate only from A.C. mains of 200-250 V, 40-100 c/s, the Vidor 393 is one of the "Riviera" range of models, with a carrying strap and a hinged lid over the control panel, in which a switch operates automatically. Release date and original price: October, 1949; £15 11s 5d, plus purchase tax.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L1, C29** (S.W.) and **L2, L3, L4, C29** (M.W. and L.W.) On M.W., **L2** and **L3** are connected in parallel, and **L4** is in series with them; on L.W., **L3** and **L4** are in series, and **L2** is out of circuit. On S.W. only, provision is made for the connection of an external aerial. First valve (**V1, Brimar 6BE6**) is a heptode operating as frequency changer with electron coupling.

Second valve (**V2, Brimar 6BA6**) is a variable-mu R.F. pentode operating as intermediate frequency amplifier.

Intermediate frequency 475 kc/s.

The diode signal detector is part of double diode triode valve (**V3, Brimar 6AT6**).

Second diode of **V3**, fed via **C17** from **V2** anode, provides D.C. potential which is developed across **R16** and fed back through decoupling circuit to I.F. valve only, giving automatic gain control.

Resistance-capacitance coupling by **R15, C22** and **R17** between **V3** triode and the pentode output valve (**V4, Brimar 6AM5**). Fixed tone correction by **C23** in anode circuit. A proportion of the speech voltage in **T1** secondary circuit is fed back via the potential divider **R18, R14** in inverse phase to **V3** cathode circuit.

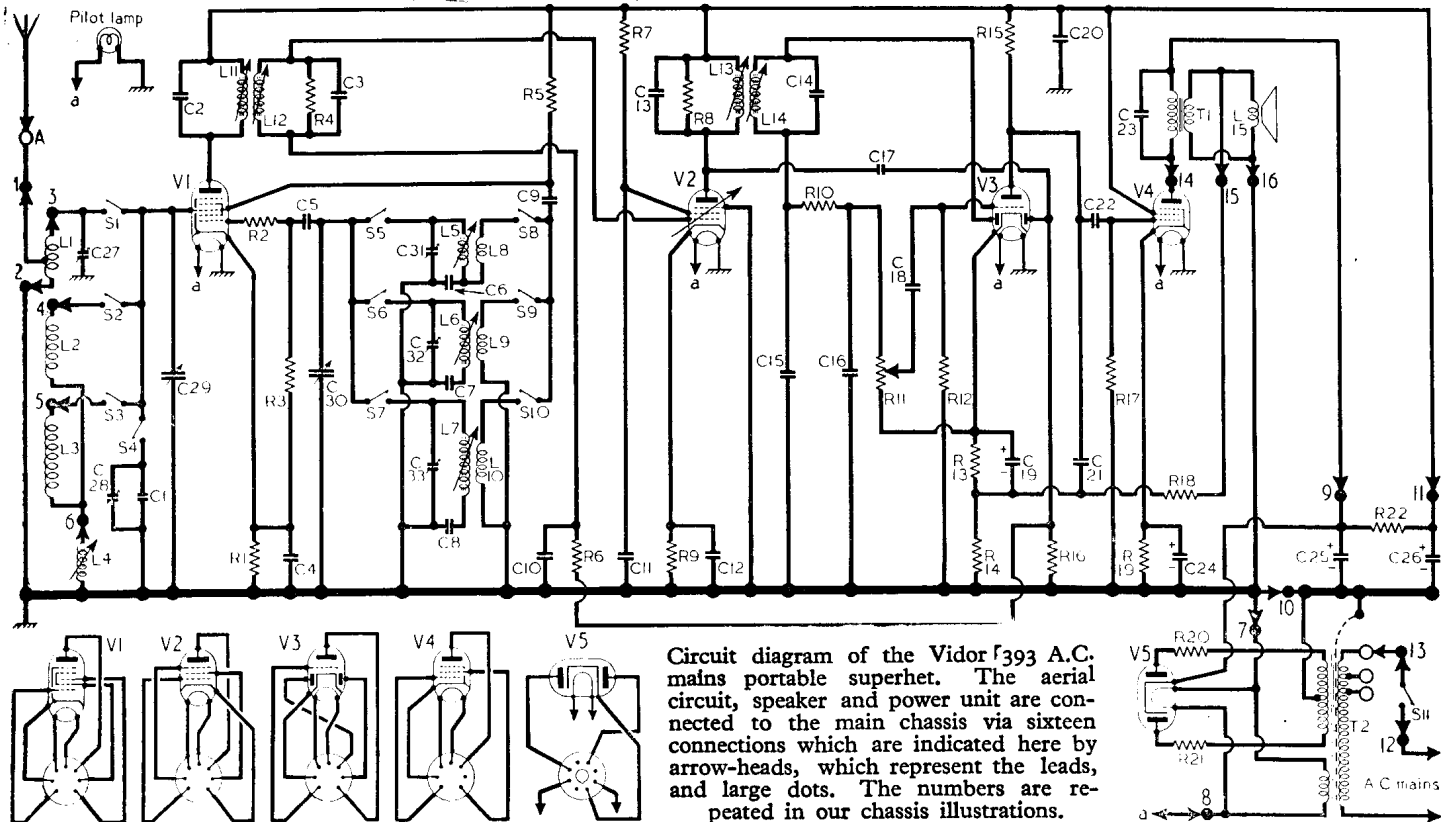
H.T. current is supplied by I.H.C. full-wave rectifying valve (**V5, Brimar 6X5GT**) whose heater is energized from the same secondary winding on **T2** as the other valves.

COMPONENTS AND VALUES

| CAPACITORS | | Values | Locations |
|------------|-----------------------|---------|-----------|
| C1 | L.W. fixed trimmer | 15pF | B2 |
| C2 | 1st I.F. transformer | 150pF | C2 |
| C3 | tuning ... | 150pF | C2 |
| C4 | V1 cath. by-pass ... | 0.1μF | D3 |
| C5 | V1 osc. C.G. ... | 100pF | E3 |
| C6 | Osc. S.W. tracker... | 0.005μF | B2 |
| C7 | Osc. M.W. tracker | 635pF | B2 |
| C8 | Osc. L.W. tracker... | 230pF | F4 |
| C9 | Osc. coupling ... | 0.01μF | E3 |
| C10 | A.G.C. decoupling | 0.1μF | D4 |
| C11 | V2 S.G. decoup. ... | 0.1μF | F3 |
| C12 | V2 cath. by-pass ... | 0.1μF | F4 |
| C13 | 2nd I.F. trans- | 150pF | A2 |
| C14 | former tuning ... | 300pF | A2 |
| C15 | I.F. by-p'sses | 100pF | G3 |
| C16 | I.F. by-p'sses | 100pF | G3 |
| C17 | A.G.C. coupling ... | 50pF | G4 |
| C18 | A.F. coupling ... | 0.002μF | H3 |
| C19* | V3 cath. by-pass... | 50μF | F3 |
| C20 | H.T. R.F. by-pass | 0.1μF | G4 |
| C21 | I.F. by-pass ... | 300pF | G3 |
| C22 | A.F. coupling ... | 0.01μF | H4 |
| C23 | Tone corrector ... | 0.002μF | H4 |
| C24* | V4 cath. by-pass ... | 25μF | F4 |
| C25* | H.T. smoothing ... | 40μF | J5 |
| C26* | H.T. smoothing ... | 40μF | J5 |
| C27† | S.W. aerial trim. ... | 40pF | C1 |
| C28† | L.W. aerial trim. ... | 80pF | B2 |
| C29† | Aerial tuning ... | \$532pF | B1 |
| C30† | Oscillator tuning ... | \$532pF | B1 |
| C31† | S.W. osc. trim. ... | 30pF | C2 |
| C32† | M.W. osc. trim. ... | 80pF | B1 |
| C33† | L.W. osc. trim. ... | 240pF | B1 |

| RESISTORS | | Values | Locations |
|-----------|------------------------|--------|-----------|
| R1 | V1 G.B. ... | 150Ω | D3 |
| R2 | Osc. grid stopper ... | 47Ω | D3 |
| R3 | Osc. grid resistor ... | 22kΩ | D3 |
| R4 | I.F. shunt ... | 150kΩ | D4 |
| R5 | Osc. H.T. feed ... | 18kΩ | F3 |
| R6† | A.G.C. decoupling | 1MΩ | G3 |
| R7† | V2 S.G. feed ... | 33kΩ | F3 |
| R8 | I.F. shunt ... | 100kΩ | G4 |
| R9 | V2 G.B. ... | 100Ω | F4 |
| R10 | I.F. stopper ... | 100kΩ | G3 |
| R11 | Volume control ... | 1MΩ | A1 |
| R12 | V3 C.G. resistor ... | 1MΩ | G3 |
| R13 | V3 G.B. ... | 3.3kΩ | F3 |
| R14 | Neg. feedback ... | 47Ω | G3 |
| R15 | V3 anode load ... | 270kΩ | G3 |
| R16 | A.G.C. diode load... | 470kΩ | H4 |
| R17 | V4 C.G. resistor ... | 680kΩ | H4 |
| R18 | Neg. feedback ... | 100Ω | G4 |
| R19 | V4 G.B. ... | 750Ω | F4 |
| R20 | V4 G.B. ... | 220Ω | K5 |
| R21 | V4 G.B. ... | 220Ω | K5 |
| R22 | H.T. smoothing ... | 1kΩ | J5 |

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



Circuit diagram of the Vidor 393 A.C. mains portable superhet. The aerial circuit, speaker and power unit are connected to the main chassis via sixteen connections which are indicated here by arrow-heads, which represent the leads, and large dots. The numbers are repeated in our chassis illustrations.

| OTHER COMPONENTS | | Approx. Values (ohms) | Locations |
|------------------|-------------------------------------|-------------------------|-----------|
| L1 | Frame aerial windings | Very low | — |
| L2 | | 1.7 | — |
| L3 | | 19.0 | — |
| L4 | | 1.6 | B2 |
| L5 | | Very low | C2 |
| L6 | M.W. Osc. tuning coil | 1.4 | B2 |
| L7 | | L.W. Osc. tuning coil | 3.5 |
| L8 | S.W. Osc. reaction coil | Very low | C2 |
| L9 | | M.W. Osc. reaction coil | 0.5 |
| L10 | L.W. Osc. reaction coil | 0.8 | B2 |
| L11 | 1st I.F. trans. | Pri. 4.8 | C2 |
| L12 | | Sec. 4.8 | C2 |
| L13 | 2nd I.F. trans. | Pri. 5.1 | A2 |
| L14 | | Sec. 3.6 | A2 |
| L15 | Speech coil | 2.8 | — |
| T1 | Output trans. | Pri. 660.0 | — |
| | | Sec. 0.3 | — |
| T2 | Mains H.T. total trans. 6.3 V. htr. | 67.0 | — |
| | | 740.0 | K5 |
| S1-S10 | Waveband switches | — | C2 |
| S11 | Mains switch | — | C1 |

GENERAL NOTES

Switches.—S1-S10 are the waveband switches, ganged in two rotary units on the chassis deck. These are indicated in our rear view of the chassis, where arrows show the direction in which they are viewed in the diagrams beside it. The table below gives the switch positions for the three control settings, starting from the fully anti-clockwise position of the control. A dash indicates open, and **C**, closed.

S11 is the mains switch, operated by a spring-loaded plunger which is depressed when the lid is closed, opening the switch to switch off the receiver.

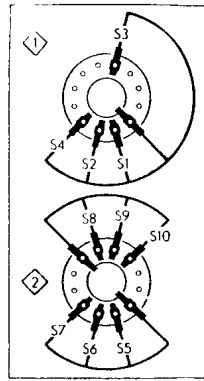
Pilot Lamp.—This is an Osram lamp, with a small clear spherical bulb and an M.E.S. base, rated at 6.5 V, 0.3 A.

Interconnecting Leads.—The four units comprising the complete receiver (aerial, chassis, power and speaker units) are interconnected by sixteen connecting leads which are numbered and shown with arrow-heads in our circuit diagram, the numbers being repeated in the chassis illustrations. 1-6 are the aerial connections, 7-13 are the power unit connections, including one from the speaker, and 14-16 are the remaining speaker connections.

Drive Cord Replacement.—The tuning drive is a friction device, but a cord is used for the cursor drive. It is very straightforward, and its course can be seen in our rear chassis view. About 30 inches of cord is required, and it goes down under the drum from each side, then round it until it meets the slot, when it enters the drum.

CIRCUIT ALIGNMENT

I.F. Stages.—It is advisable to remove the chassis from the carrying case for these adjustments. Connect signal generator via a 0.001 μ F capacitor to control grid (pin 7) of V1 and chassis. Switch set to L.W., tune to 2,000 m on scale, turn the volume control to maximum, and short-circuit C30. Feed in a 475 kc/s (631.6 m) signal, and adjust the cores of L14, L13, L12 and L11 (location references A2, C2) for maximum output, reducing the input as the circuits come into line. Then remove the short-circuit from C30 and disconnect signal generator leads.

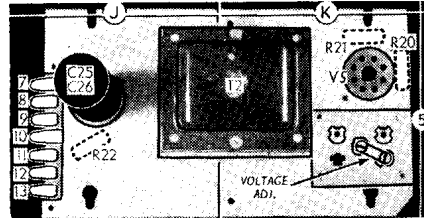


Diagrams of the waveband switch units (above). Below is the associated switch table.

| 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 | — | — |

R.F. and Oscillator Stages.—These operations are best performed with the chassis in its case. Connect signal generator leads to a few turns of wire pinned to the bench near the receiver. With the gang at minimum capacitance, the cursor should cover the low wavelength ends of the scales.

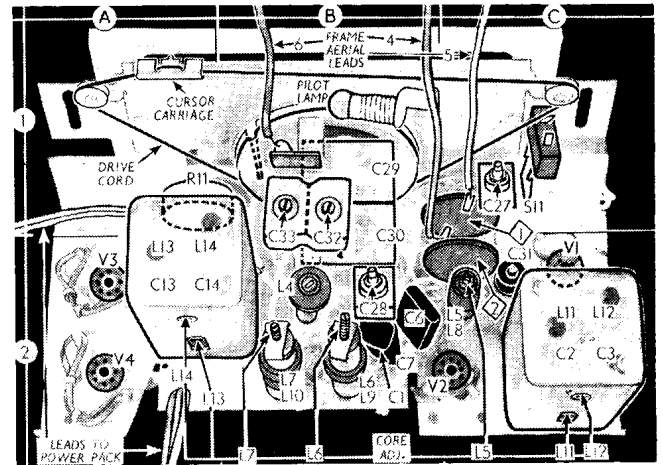
S.W.—Switch set to S.W., tune to 17 m on scale, feed in a 17 m (17.64 Mc/s) signal and



Plan view of the power unit.

adjust C31 (C2) and C27 (C1) for maximum output. (If no output can be obtained, connect signal generator leads via a 0.0002 μ F capacitor directly to the S.W. aerial). Tune to 50 m on scale, feed in a 50 m (6 Mc/s) signal, and adjust the core of L5 (C2) for maximum output while rocking the gang for optimum results. Repeat these adjustments until no improvement can be obtained, then seal C31 with wax.

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 C32 (B1) for maximum output. Feed in a 550 m (545.4 kc/s) signal, tune it in, and adjust



Rear view of the chassis, in which the tuning drive cord is shown.

the cores of L4 and L6 (B2) for maximum output while rocking the gang. Repeat these 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 C33 (B1) and C28 (B2) for maximum output. Feed in a 2,000 m (150 kc/s) signal, tune it in, and adjust the core of L7 (B2) for maximum output while rocking the gang. Repeat these adjustments.

Finally, fit the back cover in position, and readjust L4 at 550 m and C28 at 1,000 m, inserting the trimmer tool through the hole in the back cover.

DISMANTLING THE SET

Removing Power Unit.—Remove the central wood screw near the rear edge of the unit, and slacken the wood screws either side of it, when the unit can be drawn slightly rearwards and lifted out to the extent of its connecting leads.

If the leads have been unsoldered, they should be connected as indicated by the numbered connections in our circuit diagram and our photograph of the unit.

Removing Receiver Chassis.—First remove the power unit, then unsolder from the tags at the top edge of the back cover the three leads from chassis and the yellow aerial lead from the locking-screw bracket at the top of the carrying case;

remove two 4BA nuts (with large plain washers), holding the sub-baffle, from the bottom corners of the carrying case;

remove two 4BA nuts (with lock-washers) and two wood screws (with plain washers) holding the scale assembly to the sloping roof of the case.

If the top of the chassis is now tilted backwards, the complete assembly, with speaker and S.W. frame aerial, can be lifted out of the case.

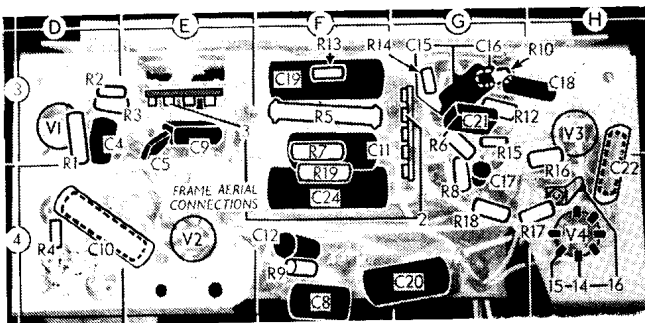
To separate chassis from sub-baffle, unsolder from the front (underside) of the chassis, now exposed, the two S.W. frame leads and the three speaker leads, numbered 1, 2 and 14, 15, 16 in our circuit diagram and front view of the chassis.

VALVE ANALYSIS

Valve voltages and currents given in the table below are those measured in our receiver when it was operating on mains of 235 V, using the 240-250 V tapping. The receiver was tuned to the highest wavelength on the M.W. band, and the volume control was at maximum, but there was no signal input. Voltages, except cathode readings, were measured on the 400 V scale of a Model 7 Avometer, chassis being the negative connection.

| Valve | Anode | | Screen | | Cathode |
|-------|-------|------|--------|-----|---------|
| | V | mA | V | mA | |
| 6BE6 | 210 | 1.5 | 80 | 7.5 | 1.3 |
| 6BA6 | 210 | 8.7 | 100 | 3.2 | 1.3 |
| 6AT6 | 75 | 0.3 | — | — | 0.9 |
| 6AM5 | 225 | 13.0 | 210 | 1.7 | 10.0 |
| 6X5GT | 220† | — | — | — | 235.0 |

† Each anode A.C.



Front face of the chassis, in which two of the frame aerial connections are shown. The speaker connections 14, 15, 16 are seen at bottom right.