'TRADER' SERVICE SHEET

199

VIDOR 269 AND BURNDEPT 271

TWO short-wave bands are covered by the Vidor 269 3-valve (plus rectifier) A.C./D.C. receiver, the actual ranges being 13.5-48.5 metres (referred to below as S.W.1) and 75-210 metres (S.W.2). The receiver is adjustable for mains of 200-250 V (50-100 C/S in the case of A.C.).

An identical chassis is fitted in the Burndept 271.

CIRCUIT DESCRIPTION

There are two alternative aerial connections—**A1** direct and **A2** via a pre-set condenser **C19**—to the coupling coils **L1** (S.W.1), **L3** (S.W.2) and **L5** (M.W. and L.W.). On S.W.1 and S.W.2, coupling is to a single-tuned circuit **L2, L4, C27**, while on M.W. and L.W., coupling is to an inductively coupled band-pass filter, the primary of which (**L6, L7**) is tuned by **C22** and the secondary (**L8, L9**) by **C27**.

The first valve (**V1, Mazda metallised VP1321**) is a variable-mu pentode R.F. amplifier, with gain control **R2** in S.G. potentiometer circuit varying the G.B. applied. Tuned-anode coupling by **L11, L13** (S.W.1 and S.W.2), **L15, L16** (M.W. and L.W.) and **C32** to R.F. pentode detector (**V2, Mullard metallised SP13C**) operating on grid leak system with **C6** and **R8**.

Reaction is applied from the anode by **L10, L12** (S.W.1 and S.W.2), and **L14** with series resistance **R5** (M.W. and L.W.) and controlled by **C28.** R.F. filtering is provided by **C8, C9, C10** and **R11.**

V2 is resistance-capacity coupled by **R10, C11** and **R13** to pentode output valve (**V3, Mullard Pen36C**). **R14** is a grid stopper, and **C14** gives fixed tone correction.

H.T. current is supplied by an I.H.C. half-wave rectifier (**V4, Brimar 1D5**). Smoothing by speaker field coil (**L19**) and dry electrolytic condensers **C15, C16.** The valve heaters are connected in series together with the two scale lamps and a tapped ballast resistance **R16** across the mains supply.

The chokes **L20, L21** and the condenser **C17** form a filter for the suppression of mains-borne interference.

DISMANTLING THE SET

A detachable bottom is fitted to the cabinet and upon removal (four countersunk-head wood screws) gives access to the components beneath the chassis.

Removing Chassis.—If it should be necessary to remove the chassis from the cabinet, remove the four control knobs (recessed grub screws) and the four bolts (with washers) holding it to the bottom of the cabinet. The chassis can now be withdrawn to the extent of the leads.

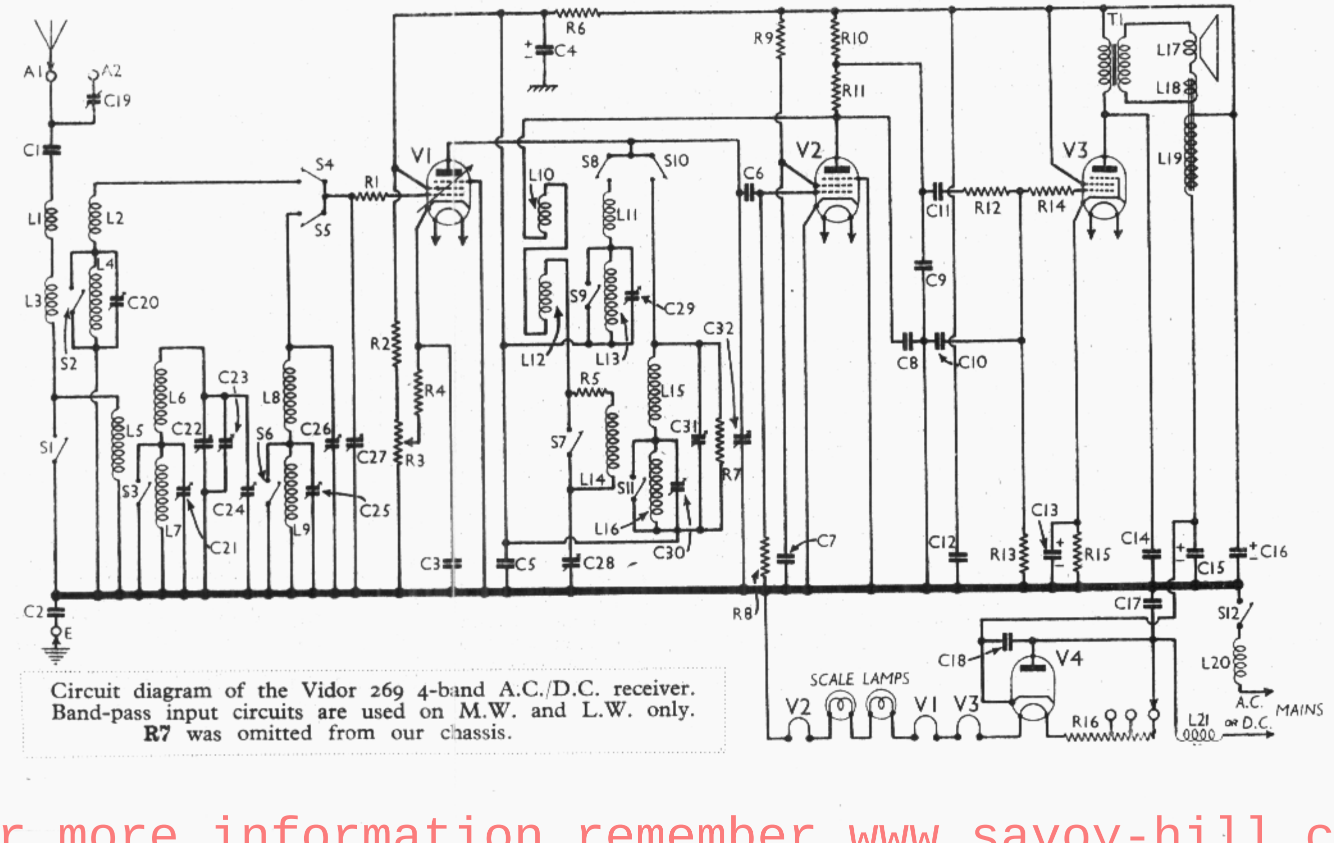
To free the chassis entirely, unsolder the speaker leads and, when replacing, connect them as follows:—F, red; 1, blue; 2, green; 3 and F joined together, black.

Removing Speaker. — Unsolder the leads and remove the nuts and lock washers from the four screws holding it to the sub-baffle. When replacing, see that the transformer is on the left and connect the leads from the chassis as above and the leads from the electrolytic condenser as follows:—Yellow, F; black, 2; red, F and 3 joined together.

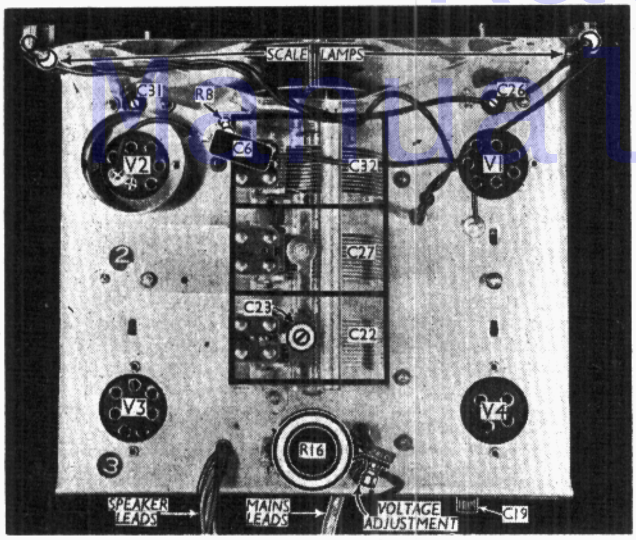
COMPONENTS AND VALUES

	CONDENSERS	Values (μF)
C1	Aerial series condenser ..	0·0005
C2	Earth blocking condenser ..	0·02
C3	V1 cathode by-pass	0·1
C4*	V1 S.G. and anode reservoir ..	8·0
C5	V1 S.G. and anode R.F. by-pass	0·25
C6	V2 C.G. condenser	0·0001
C7	V2 S.G. by-pass	0·1
C8	Parts of V2 to V3 R.F. filter circuit ..	0·00005
C9		0·0005
C10		0·0002
C11	A.F. coupling to V3	0·01
C12	H.T. line by-pass	0·5
C13*	V3 cathode by-pass	25·0
C14	Fixed tone corrector	0·005
C15*	H.T. smoothing ..	16·0
C16*		24·0
C17	Mains circuit R.F. by-pass ..	0·01
C18	V4 anode-cathode by-pass ..	0·02
C19‡	A2 aerial series condenser ..	—
C20‡	Aerial circuit trimmer (S.W.2)	0·00003
C21‡	Band-pass pri. trimmer (L.W.)	0·00003
C22†	Band-pass pri. tuning (M.W. and L.W.)	—
C23‡	Band-pass pri. trimmer ..	—
C24‡	Band-pass pri. extra trimmer	0·00003
C25‡	Band-pass sec. trimmer (L.W.)	0·00003
C26‡	Band-pass sec. trimmer (M.W. and L.W.)	0·00006
C27†	Band-pass sec. and grid circ. (S.W. 1 and S.W. 2) tuning	—
C28†	Reaction control	0·0005
C29‡	V1 anode circ. trimmer (S.W.2)	0·00003
C30‡	V1 anode circ. trimmer (L.W.)	0·00003
C31‡	V1 anode circ. trimmer (M.W. and L.W.)	0·00006
C32†	V1 anode circuit tuning ..	—

* Electrolytic. † Variable. ‡ Pre-set.



Circuit diagram of the Vidor 269 4-band A.C./D.C. receiver. Band-pass input circuits are used on M.W. and L.W. only. **R7** was omitted from our chassis.



Plan view of the chassis. **C26** and **C31** are adjusted through holes in the chassis. **R16** is the heater circuit ballast resistance, tapped for different mains voltages.

	RESISTANCES	Values (ohms)
R1	V1 C.G. stabiliser	100
R2	V1 gain control, variable ..	10,000
R3	Part V1 cathode circ. potr. ..	50,000
R4	V1 gain control fixed min. ..	150
R5	Series reaction (M.W. and L.W.)	500
R6	V1 S.G. and anode H.T. feed	5,000
R7	V1 tuned anode circ. shunt (M.W. and L.W.)	50,000*
R8	V2 C.G. resistance	1,000,000
R9	V2 S.G. H.T. feed	750,000
R10	V2 anode load	250,000
R11	Parts of V2 to V3 R.F.	50,000
R12	filter	50,000
R13	V3 C.G. resistance	250,000
R14	V3 grid R.F. stopper	100,000
R15	V3 cathode resistance.. ..	150
R16	Heater circuit ballast, total	700

* Not in our chassis.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	Aerial coupling coil (S.W.1) ..	0·15
L2	Aerial tuning coil (S.W.1) ..	Very low
L3	Aerial coupling coil (S.W.2) ..	0·35
L4	Aerial tuning coil (S.W.1) ..	1·2
L5	Aerial coupling coil (M.W. and L.W.)	3·7
L6	Band-pass primary coils	4·5
L7	(M.W. and L.W.)	19·5
L8	Band-pass secondary coils	4·5
L9	(M.W. and L.W.) ..	19·5
L10	Reaction coil (S.W.1) ..	0·15
L11	V1 anode tuning coil (S.W.1)	Very low
L12	Reaction coil (S.W.2) ..	0·35
L13	V1 anode tuning coil (S.W.2)	1·2
L14	Reaction coil (M.W. and L.W.)	2·8
L15	V1 anode tuning coil (M.W.)	4·5
L16	V1 anode tuning coil (L.W.) ..	19·5
L17	Speaker speech coil	1·8
L18	Hum neutralising coil.. ..	0·1
L19	Speaker field coil	820·0
L20	Mains filter chokes ..	6·2
L21		6·2
T1	Speaker input trans. Pri. ..	670·0
	Sec. ..	0·5
S1-11	Waveband switches	—
S12	Mains switch, ganged R3 ..	—

VALVE ANALYSIS

Valve voltages and currents given in the table (col. 2), are those measured in our receiver when it was operating on mains of 230 V, using the 220-240 V tapping on the mains resistance. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but the reaction control was at minimum. There was no signal input.

Voltages were measured on the 1,200 V scale of an Avometer, chassis being negative.

If **V2** should become unstable when its anode current is being measured, it can be stabilised by connecting a non-inductive condenser of about 0·1 μF from anode to chassis.

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 VP1321	150	6·5	150	1·8
V2 SP13C	25	0·5	30	0·2
V3 Pen36C	170	45·0	200	7·8
V4 1D5† ..	—	—	—	—

† Cathode to chassis, 260V D.C.

GENERAL NOTES

Switches.—**S1-S11** are the waveband switches, in a single unit beneath the chassis, which is shown in our under-chassis view, with the individual switches indicated. The table (col. 3) gives the switch positions for the various control settings.

It should be noted that the control knob can be continuously rotated and, if it is removed, the ranges will have to be identified by the switch positions, as there are no markings on the knob apart from a white dot. S.W.1 is the lowest wavelength range.

Switch	S.W.1	S.W.2	M.W.	L.W.
S1	C	C	O	O
S2	C	O	O	O
S3	O	O	C	O
S4	C	C	O	O
S5	O	O	C	C
S6	O	O	C	O
S7	C	C	O	O
S8	C	C	O	O
S9	C	O	O	O
S10	O	O	C	C
S11	O	O	C	O

S12 is the mains switch, ganged with the gain control, **R3.**

Coils.—These are all on tubular formers, unscreened and mounted beneath the chassis. **L5-L9** and **L14-16** are mounted horizontally and their positions are clearly shown, while **L1-L4** and **L10-L13** are on two formers mounted vertically. **L1** is wound between the turns of **L2,** and **L3** is wound over **L4. L10** is between the turns of **L11,** and **L12** is over **L13.**

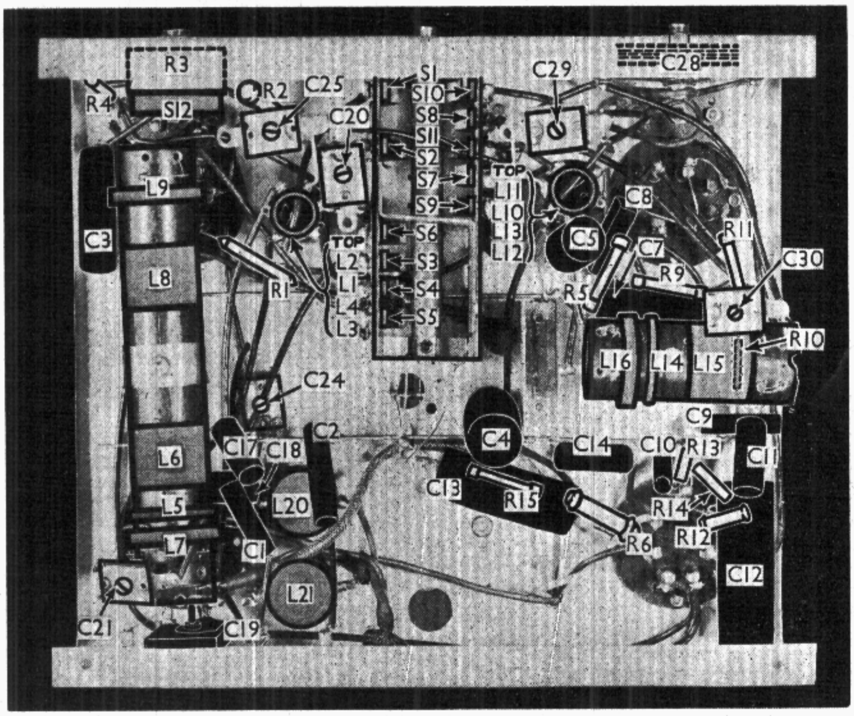
L20 and **L21** are filter chokes in the mains input circuit.

External Speaker.—No provision is made for using an extension speaker, but a low resistance type (2O) could be connected across the secondary of the internal speaker transformer **T1.**

Scale Lamps.—These are two M.E.S. types rated at 6 V, 0·3 A.

Trimmers.—**C26** and **C31** are adjusted through rubber bushed holes near the front of the chassis deck. With the exception of **C23,** which is on the ganged

Continued overleaf



Under-chassis view. All the switches are clearly indicated.

MAINTENANCE PROBLEMS

Curing Hum in Pilot U355

WE have had several Pilot U355 models, which all had a very pronounced mains hum. We returned one as faulty, but the hum was not cured, so I tackled it myself.

I found that the hum is quite easily cured by connecting a fairly large condenser (I used a 10 μF Dubilier 3016) across the cathode of the 75 double-diode triode and chassis.

We wrote to Pilot about the trouble and they replied that they would look into it, but I have heard no more.—G. C. BARKER, RUSHDEN.

Set Crackled when Switched Off!

I CAME across a curious fault in a McMichael suitcase portable the other day. It had a very nasty crackle, even when switched off and the L.T. battery taken out. On further testing it was found that the crackle was still there with all valves removed, with the exception of the output valve.

It was found that there was a small by-pass condenser between the anode of the output valve and earth. This had a slight leak and was the cause of the trouble.—ROBERT C. BELL, AMBLESIDE, WESTMORLAND.

Unusual Electrical Interference

AN unusual case of electrical interference, as described by the customer, was that on switching on the kitchen light a continuous loud crackle was set up in the receiver. This would seem to indicate a simple fault in the wiring to this particular light, but for the fact that the interference would continue after the light was switched off.

I accordingly paid a visit but found that this trouble could actually be brought on by switching on any of several lights in the house.

What looked like being a long and troublesome search was quite quickly ended by accident. While in the kitchen with the light out, I happened to glance up at the fuse board and discerned a tiny spark. This was caused by a loose contact in one of the fuses.

Apparently the momentary surge of current occasioned by switching on a light set this loose contact sparking, which continued for varying periods, quite independently of subsequent switching.—E. WHEELER, PARKSTONE, DORSET.

60 mA Oscillator Anode Current

WEAK results were given by an A.C./D.C. superhet of uncertain make which used an X30, W30, D41, N31, U30 and barretter.

It was found that the N31 was down but on replacing it with another, the set refused to work at all. Emission tests showed that the oscillator section of the X31 was taking 60 mA, but when the old N31 was replaced the emission dropped to normal.

Subsequently it was discovered that in the new N31 the heater was centre-tapped and brought out to a pin on the base, whereas the old valve had no such tap, the pin concerned being blank.

The wiring was then checked and the oscillator grid was found to be connected to this pin, which was used as a bearer. Consequently, when the new valve was used, the grid was connected to the mains through the heaters and was receiving an extremely high positive bias.—E. C. CHALKE, SALISBURY, WILTS.

H.F. Instability in Ekco AC85

I FOUND a difficult case of intermittent H.F. instability in an Ekco AC85, which would work normally at times and then burst into uncontrollable oscillation, apparently without reason.

The H.F. decoupling resistances and condensers were carefully tested and the frequency changer and I.F. valves were substituted, without improvement. The instability could be provoked by tapping the chassis, and physical distortion of components was therefore resorted to. In this way it was found that when the small screen on the top of the coil assembly between the first two valves was moved a fraction of an inch, it touched the frame of the variable condenser and instability resulted. Although both these components were connected directly to chassis apparently small H.F. voltages were developed when the two were in contact, causing unwanted coupling.

The condenser was moved as far as the screws would allow and the screen was bound with insulating tape to avoid the possibility of their touching again.

Weak Signals Due to Speaker Short

AN Ultra 22 which was giving only very weak signals was dismantled and turned upside down on the bench for test purposes. All voltages were normal and when an aerial was attached it behaved quite normally.

When it was placed upright on the bench again the fault returned. It was then turned over while it was actually working, and it was found suddenly to start working normally when the chassis had been turned to an angle of about 45 degrees, and by rocking it either way it could be made to go on and off.

A careful examination revealed that the speaker field coil was loose in the "pot" and when the chassis was upright the coil dropped a fraction of an inch, causing the lead out wires to short circuit to the "pot."

I had a similar case some time ago when a metal shrouded intervalve transformer caused the trouble. As the chassis was moved the transformer bobbin moved inside the shroud and the primary became short-circuited to the chassis.—L. W. JOHNSON, TWICKENHAM, MIDDLESEX.

Faulty Rectifier Blows Valves

WE were called out to service a Philips 840U and found that the heaters of the Pen26 and VP13A were blown. To find the cause, two new valves were fitted and the set connected to the D.C. mains with reverse polarity and left on for about two minutes. At the end of this time the rectifier was tested for a short between cathode and heater on an Avometer, and this was found to be present.

This fault did not show up when the valve was cold, but on reaching working temperature the insulation failed and put the rectified voltage across the heaters, the curious part in this case being that it only blew the last two valves.

After replacing the valves we fitted a fuse plug to the set and should the same thing happen again the fuses will, we hope, save the customer the expense he had this time.—J. R. WAITE, ISLEWORTH, MIDDLESEX.

VIDOR 269—*Continued*

condenser, all the remaining trimmers are accessible from underneath the chassis.

Chassis Divergency.—**R7** may not occur in some chassis. It is shown in our circuit diagram but not in the chassis pictures. When present, it will be across **C31.**

Condensers C15, C16.—These are two dry electrolytics in a single carton, attached by a metal strap to the cabinet. The connections go to the speaker transformer, as described under "Removing Speaker." The black lead is the common negative, the yellow the positive of **C15** (16μF) and the red the positive of **C16** (24μF).

CIRCUIT ALIGNMENT

Switch the receiver to M.W., tune to 250 m. on the scale, and inject a 250 m. signal into the **A2** and **E** sockets, with **C19** near its maximum. With the gain control at maximum and the reaction control well advanced, adjust **C31** for maximum output. Next adjust **C26** in the same manner.

C23 will probably be screwed up fully, but if it is not, adjust it for maximum output. If it is already at maximum adjust **C24**. Reaction should be kept advanced to a point just short of oscillation.

Now switch the receiver to L.W., tune to 1,000 m. on the scale, inject a 1,000 m. signal and adjust **C30, C25, C21** for maximum output, keeping reaction advanced as before.

Next switch the set to the S.W.2 band (range 2), tune to 75 m. on the scale, feed in a 75 m. signal and adjust **C29** and **C20** for maximum output, with reaction as previously.

No separate trimmers are provided for the S.W.1 band, but slight adjustments may be made by alterations in the leads to the control grid and anode of **V1** relative to the rest of the under-chassis wiring.