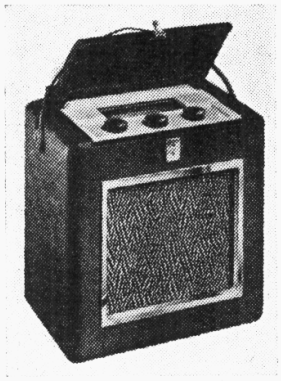
'TRADER' SERVICE SHEET 335

VIDOR 288 AND BURNDEPT 292



The Vidor 288 portable. The Burndept 292 has a similar chassis.

THE Vidor 288 is a 4-valve battery 2-band superhet portable with a self-contained frame aerial and is of the superhet type, using an octode frequency changer, a variable-mu hexode IF amplifier, a double-diode triode and a pentode output valve. A switch for the scale lamps is incorporated in the knob of the wave-change switch.

An identical chassis is fitted in the Burndept 292 but this *Service Sheet* was prepared on a Vidor 288.

CIRCUIT DESCRIPTION

Tuned frame aerial input **L2, C20** (LW), **L1, L2, C20** (MW), **L1, L2** being connected in parallel for MW, to octode valve (**V1, Mullard metallised FC2A**) operating as frequency changer with electron coupling. Oscillator grid coils **L3** (MW), **L4** (LW) are tuned by **C21**; parallel trimming by **C22** (MW), **C23** (LW); series tracking by **C5, C24** (MW), **C6, C25** (LW). Reaction by coils **L5** (MW), **L6** (LW).

Second valve (**V2, Mullard metallised VP2B**) is a variable-mu RF hexode with second and third grids strapped to operate as pentode intermediate frequency amplifier with tuned-primary, tuned-secondary iron-cored transformer couplings **C26, C1, L7, L8, C2, C27** and **C28, C10, L9, L10, C11, C29.**

Intermediate frequency 450 KC/S.

Diode second detector is part of double diode triode valve (**V3, Mazda metalised HL21DD**). Audio frequency component in rectified output is developed across load resistance **R4** and passed via IF filter **C13, R5, C14,** AF coupling condenser **C15** and manual volume control **R6** to CG of triode section, which operates as AF amplifier.

Second diode of **V3,** fed from **V2** anode via **C12,** provides DC potential which is developed across load resistance **R9** and fed back through decoupling circuit as GB to IF valve, giving automatic volume control. Delay voltage is obtained from junction of resistances **R10, R11** which form a potential divider across part of GB section of HT battery, providing also fixed GB for **V2.**

Resistance-capacity coupling by **R7, C16, R12** between **V3** triode and pentode output valve (**V4, Mullard PM22A**). Fixed tone correction by **C17** in anode circuit.

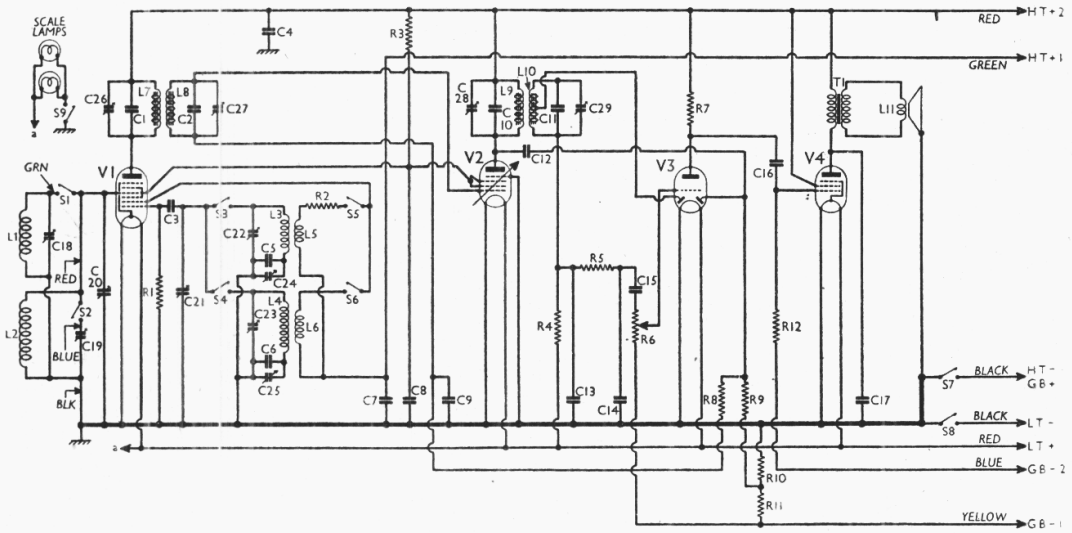
COMPONENTS AND VALUES

	RESISTANCES	Values (ohms)
R1	V1 osc. CG resistance	47,000
R2	Osc. MW reaction stabiliser	1,500
R3	V1, V2 SG's HT feed	27,000
R4	V3 signal diode load	1,000,000
R5	IF stopper	10,000
R6	Manual volume control	500,000
R7	V3 triode anode load	47,000
R8	AVC line decoupling	470,000
R9	V3 AVC diode load	1,000,000
R10	AVC delay voltage potential divider	100,000
R11		100,000
R12	V4 CG resistance	470,000

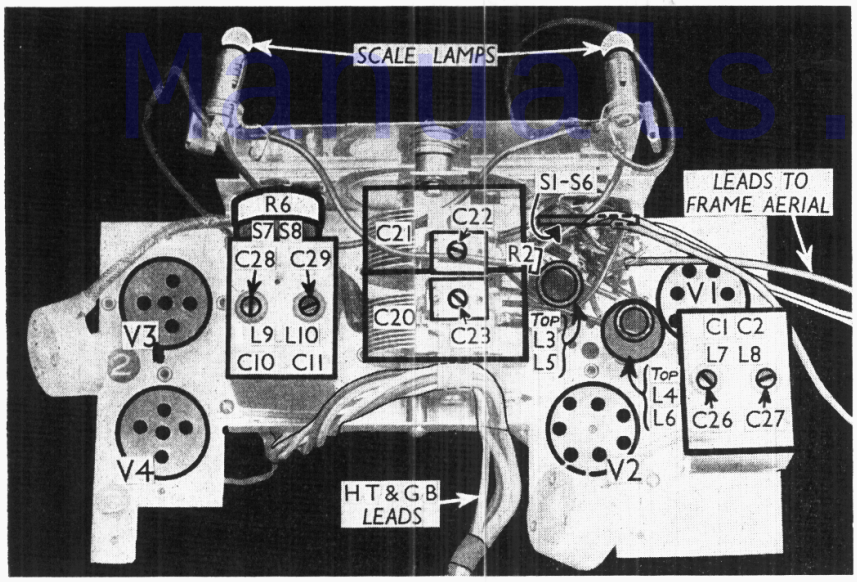
	CONDENSERS	Values (μF)
C1	1st IF trans. pri. fixed trimmer	0·0001
C2	1st IF trans. sec. fixed trimmer	0·0001
C3	V1 osc. CG condenser	0·0002
C4	HT circuit RF by-pass	0·25
C5	Osc. circuit MW fixed tracker	0·0006
C6	Osc. circuit LW fixed tracker	0·00018
C7	V1 osc. anode RF by-pass	0·1
C8	V1, V2 SG's decoupling	0·1
C9	V2 CG decoupling	0·1
C10	2nd IF trans. pri. fixed trimmer	0·0001
C11	2nd IF trans. sec. fixed trimmer	0·0001
C12	Coupling to V3 AVC diode	0·0001
C13, C14	IF by-pass condensers	0·0002, 0·0002
C15	AF coupling to V3 triode	0·01
C16	V3 triode to V4 AF coupling	0·01
C17	Fixed tone corrector	0·002
C18‡	Frame aerial MW trimmer	—
C19‡	Frame aerial LW trimmer	—
C20†	Frame aerial tuning	—
C21†	Oscillator circuit tuning	—
C22‡	Osc. circuit MW trimmer	—
C23‡	Osc. circuit LW trimmer	—
C24‡	Osc. circuit MW tracker	—
C25‡	Osc. circuit LW tracker	—
C26‡	1st IF trans. pri. tuning	—
C27‡	1st IF trans. sec. tuning	—
C28‡	2nd IF trans. pri. tuning	—
C29‡	2nd IF trans. sec. tuning	—

† Variable. ‡ Pre-set.

	OTHER COMPONENTS	Approx. Values (ohms)
L1	MW frame aerial winding	2·25
L2	LW frame aerial winding	25·0
L3	Osc. circuit MW tuning coil	5·0
L4	Osc. circuit LW tuning coil	8·0
L5	Oscillator MW reaction coil	170·0
L6	Oscillator LW reaction coil	2·5
L7, L8	1st IF trans. Pri. / Sec.	5·0, 5·0
L9, L10	2nd IF trans. Pri. / Sec., total	12·0, 5·0
L11	Speaker speech coil	3·0
T1	Speaker input trans. Pri. / Sec.	650·0, 0·3
S1-S6	Waveband switches	—
S7	HT circuit switch ganged	—
S8	LT circuit switch R6	—
S9	Scale lamps switch	—



Circuit diagram of the Vidor 288 and Burndept 292. The connections from frame assembly to chassis are colour-coded.



Plan view of the chassis. **C18** and **C19** are inside the frame aerial assembly.

DISMANTLING THE SET

It should be noted that the chassis, speaker and frame aerial can be removed as a complete assembly, and this should be done before removing the chassis or speaker.

Removing Assembly.—To remove the assembly, first remove the batteries and valves, then the nuts inside the cabinet from the two screws holding the escutcheon to the top of the cabinet. Now remove the three knobs (recessed grub screws), the three round-head wood screws holding the turntable to the bottom of the cabinet and the two studs (with nuts and washers) for the handle.

Next remove the scale lamps, and unsolder the earthing lead for the speaker surround from the point where it is soldered to the earthing lead for the speaker and output transformer.

The chassis, speaker and frame aerial can now be withdrawn as a complete assembly, but care should be taken not to damage the frame aerial. *When replacing*, do not forget to bring through the sub-baffle the earthing lead for the speaker surround.

Removing Chassis.—If it is desired to remove the chassis, proceed as above, then unsolder the speaker and frame aerial leads and remove the two wood fillets from the sides of the cabinet (brads and glue). Then free the panel carrying **C18** and **C19** from the side of the frame assembly (two countersunk-head screws with nuts, lock washers and distance pieces) and push it out of the way. Now free one end of the American cloth at the top of the assembly (brad) and fold it out of the way. Next remove the five countersunk head screws (with nuts and lock washers) holding the chassis to the front of the assembly, when the chassis can be withdrawn from the assembly.

When replacing, connect the frame aerial leads to the panel on the right of the frame as follows:—Black to dual soldering tag on bottom mounting screw; blue to **C19** (lower condenser); green to **C18** (upper condenser); red to the dual soldering tag on the top mounting screw. Connect the speaker leads as follows, noting that the tags on the transformer are numbered: 3, blue; 2, black; 1, red.

Removing Speaker.—To remove the speaker, first remove the chassis as described above, then unsolder the speech coil leads and remove the four countersunk-head screws (with nuts and lock washers) holding the speaker to the sub-baffle. *When replacing*, see that the tags for the speech coil leads are on the right.

VALVE ANALYSIS

Valve	Anode Voltage (V)	Anode Current (mA)	Screen Voltage (V)	Screen Current (mA)
V1 FC2A	105 / Oscillator / 68	1·4 / — / 1·2	50	1·2
V2 VP2B	105	2·4	50	0·8
V3 HL21DD	78	0·3	—	—
V4 PM22A	102	3·2	105	0·5

Valve voltages and currents given in the table above are those measured in our receiver when it was operating with a new HT battery reading 108 V overall, on load. The receiver was tuned to the lowest wavelength on the medium band and the volume control was at maximum, but there was no signal input as the frame connections were shorted.

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

GENERAL NOTES

Switches.—**S1-S6** are the waveband switches, in a single rotary unit at the front of the chassis. This is indicated in our plan chassis view, and shown in detail in the diagram on page IV. The table (page IV) gives the switch positions for the two control settings, starting from fully anti-clockwise. A dash indicates *open*, and **C** *closed*.

S7, S8 are the HT and LT circuit switches, ganged with the volume control **R6,** and indicated in our plan view.

S9 is the scale lamps switch, incorporated in the knob of the waveband switch. It only closes when the small plunger is depressed.

Coils.—**L1, L2** are the frame aerial windings inside the cabinet, with which are associated the trimmers **C18** and **C19.** The frame aerial leads are coloured green, red and black, and are indicated in our circuit diagram, while there is a fourth lead (blue) from **C19** (inside the cabinet) to **S2** on the chassis.

L3, L5 and **L4, L6** are in two unscreened units on the chassis deck, while the IF transformers **L7, L8** and **L9, L10** are also on the chassis deck, and contain their associated fixed and variable trimmers.

Scale Lamps. — These are two MES types, rated at 2·6 V, 0·3 A. They are controlled by **S9,** incorporated in the wavechange switch knob.

Note.—No provision is made for the connection of an external aerial, earth or speaker.

Resistance Coding.—The coding for the resistances in this set differs from usual in that there are three coloured bands, followed by one silver one. To read the resistance, start from the band furthest from the silver end. Thus: yellow, mauve, orange, silver indicates 47,000 Ω.

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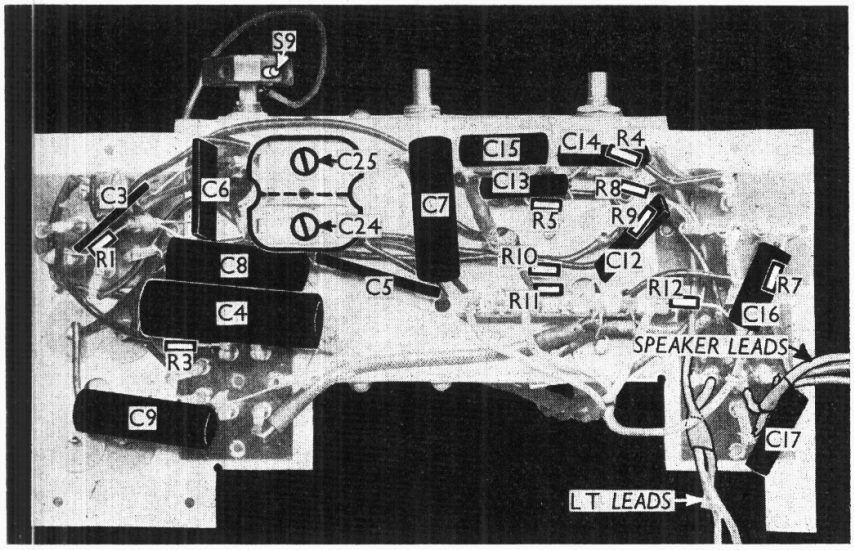


Under-chassis view. **S9,** in the wave-change knob, switches the scale lamps.

VIDOR 288—*Continued*

Resistance Values.—Five of the resistors have values different from those in the makers' diagram. These are **R1, R3, R7, R8** and **R12,** and the differences are not great. The makers' figures are 50,000, 30,000, 50,000, 500,000 and 500,000 Ω respectively.

Batteries.—LT, Vidor 2 V 25 AH celluloid-cased jelly-acid cell. HT and GB, Vidor 108 V dry battery, type 17872. This has colour-coded tapping sockets, to agree with the battery leads. The blue socket is the negative end of the battery. Yellow is 1·5 V positive; black is 3 V positive; green is 72 V positive and red, 108 V positive.

Taking HT—and GB+ (black lead) as zero potential, then GB—2 (blue) is —3 V; GB—1 (yellow) is —1·5 V; HT+1 (green) is +69 V and HT+2 (red) is + 105 V.

CIRCUIT ALIGNMENT

Note.—Aerial, oscillator and IF trimmers can be reached without removing the chassis from the cabinet. If the trackers **C24** and **C25** have to be adjusted, however, the chassis and frame aerial unit must be removed complete.

IF Stages.—Connect signal generator to control grid (top cap) of **V1** and chassis. Short-circuit **C21,** and turn volume control to maximum. Feed in a 450 KC/S signal, and adjust **C26, C27, C28** and **C29** for maximum output. Remove generator and the short-circuit from **C21.**

RF and Oscillator Stages.—Couple signal generator by a length of wire round the outside of the cabinet or across the frame windings (if out of the cabinet).

MW.—Switch set to MW, feed in a 220 m (1,364 KC/S) signal, tune to 220 m on scale, and adjust **C22,** then **C18,** for maximum output. **C18** is the upper one inside the frame.

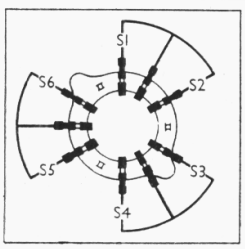
Feed in a 500 m (600 KC/S) signal, tune it in, and adjust **C24** for maximum output, while rocking the gang for optimum results. Return to 220 m, and if calibration is now wrong, adjust pointer to 220 m and re-adjust **C22** and **C18.**

LW.—Switch set to LW and follow the same procedure, trimming with **C23** and **C19** (lower condenser on panel inside frame) at 1,000 m (300 KC/S) and tracking with **C25** at 2,000 m (150 KC/S).

The batteries should be in their correct positions during alignment.

SWITCH TABLE AND DIAGRAM

SWITCH	LW	MW
S1	—	C
S2	C	—
S3	—	C
S4	C	—
S5	—	C
S6	C	—



Switch diagram, looking from the rear, above the chassis deck.

AUTOMATIC TUNING—12

(Continued from page 1)

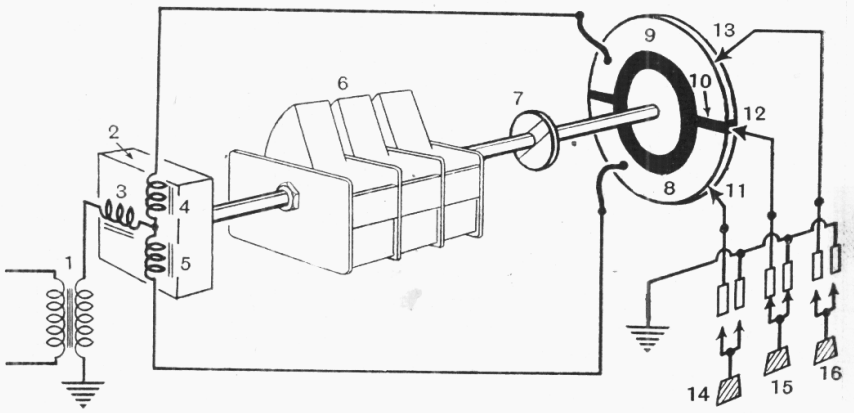


Fig. 2.—Schematic diagram of a single disc "direct-homing" system.

8 to motor windings 5 and 3, through the secondary of 1, and so to earth. The motor then runs, driving the gang and selector disc clockwise until 10 comes under 11, and so breaks the circuit. In Fig 2, contact 12 is in this position, and switch 15 is closed.

If switch 16 is closed (15 opening), the circuit is now via contact 13, segment 9 and motor windings 4 and 3. Since winding 4 instead of 5 is in circuit, the motor now drives the gang anti-clockwise until strip 10 comes under contact 13.

So the system is "direct-homing," and only one selector disc is used. The mechanical layout used by Ekco in the PB199 is shown in Fig 3. Here 1, 2 and 3 are the tuning scale, pointer and gang condenser. The contact clips (5) are mounted on, but insulated from, two semi-circular carrier rails (4), two being used to allow stations on adjacent channels to be selected. 6 represents the leads from each contact clip to the press buttons on the front of the cabinet. 7 (upper arrow) is the insulated strip which breaks the contact of any clip under which it passes with the heavily silvered selector plates (lower arrow). 8 is the motor, and when it is excited its spindle 9 is drawn into a position which engages the clutch, and also closes switches for noise suppression and for cutting out the AFC circuits. When the motor stops, the clutch is released and the switches open.

10 is a pilot lamp to help in selecting stations. The procedure is to press the manual tuning button and also the button which is to be set to the required station. Now tune in the station manually, and adjust the position of the clip corresponding to the depressed selector button until it rests on the insulated strip in the selector disc. This is assisted by the lamp, which glows as long as the clip in question is on the metal selector plate, but goes out when the clip is on the insulation.

The Ekco clips can be removed instantaneously from their rails, interchanged, or replaced in any order. In some of the American sets it was more difficult to interchange the contacts, which were fitted in semi-circular grooves in a flat plate, and were held in position by screws and nuts.

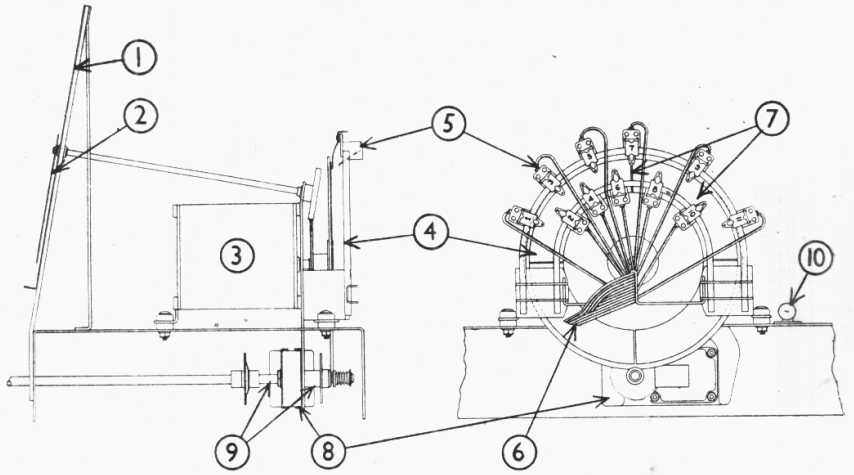


Fig. 3.—Mechanical layout of the Ekco PB199 receiver.