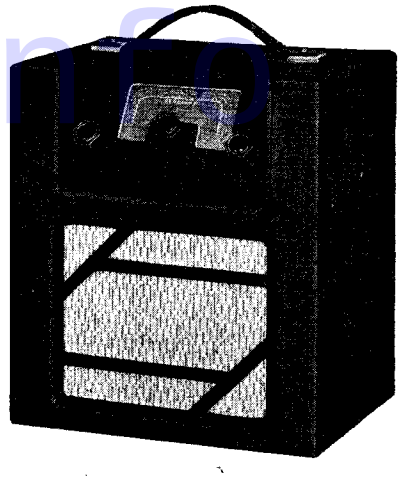
AERODYNE 296 PORTABLE



The 296, a neat battery portable, is made by Aerodyne, Ltd., Platina Street, London, E.C.2.

CIRCUIT.—The input to the grid of V1, an H.F. pentode operating as an amplifier, is effected by self-contained frame aerials that constitute the grid coils. Provision is made whereby an external aerial may be connected, the coupling condenser being C1.

It will be noticed from the circuit drawing that the medium wave frame aerial is used in series with an additional frame aerial when the receiver is operating on the long-wave band.

V1 is tuned anode coupled to V2, a triode valve operating as a grid leak detector. A set of reaction windings are incorporated in the anode coil can and feed back, obtained from the anode of V2 in the usual manner, is controlled by a variable condenser.

V2 is coupled to V3, an output pentode, *via* a resistance-capacity coupled transformer. The coupling arrangements also include an H.F. filter consisting of a choke with bypass condensers.

The speaker transformer in the anode circuit of V3 has a pentode compensator condenser across the primary. Bias for V3 is obtained by means of a resistance, shunted by a large capacity condenser, connected between H.T. negative and L.T. negative.

Battery equipment consists of a Three Star 2-volt 20 a.h. jelly-acid accumulator, type UJ3, and a Drydex H1049 108 volts H.T. battery of standard capacity. No grid bias battery is needed.

Chassis Removal.—Remove the back of cabinet and the control knobs. Remove the valves, the two wood screws securing the dial to the front (inside the cabinet) and the eight wood screws securing the four angle brackets that keep the frame aerial structure in position.

The chassis can then be completely withdrawn from the cabinet, together with the frame aerial structure as a complete unit and is free to extent of the loud speaker leads.

If it be desired to remove the chassis from the frame aerial structure, remove the three leads from the chassis to the tags on the frame aerial supports and also the four nuts securing the chassis to the woodwork. The chassis is then free.

When replacing the leads connect the blue lead from the wavechange switch to the tag nearest the front (inside of the receiver) near the wavechange switch and the black lead emerging from the rubber grommet to the tag nearest to the back.

On the left-hand side (looking from the back) the black lead from the E terminal of the external A. and E. panel goes to a tag secured by one of the chassis securing nuts, whilst the black lead from the gang goes to the tag (next to the hole in the side of the cabinet) to which a black lead is already connected.

Special Notes.—An insulating panel on the side of the cabinet marked A. and E. enables an external aerial and earth system to be connected to the receiver.

In our particular chassis R4 was found to have a value of 380 ohms and also a 3,000 ohms resistance was connected between the screen electrode of V1 and the H.T. line, whilst R1 was found to have a value of 100,000 ohms.

C12 is located inside the can housing the anode and reaction coils, whilst C1,

RESISTANCES

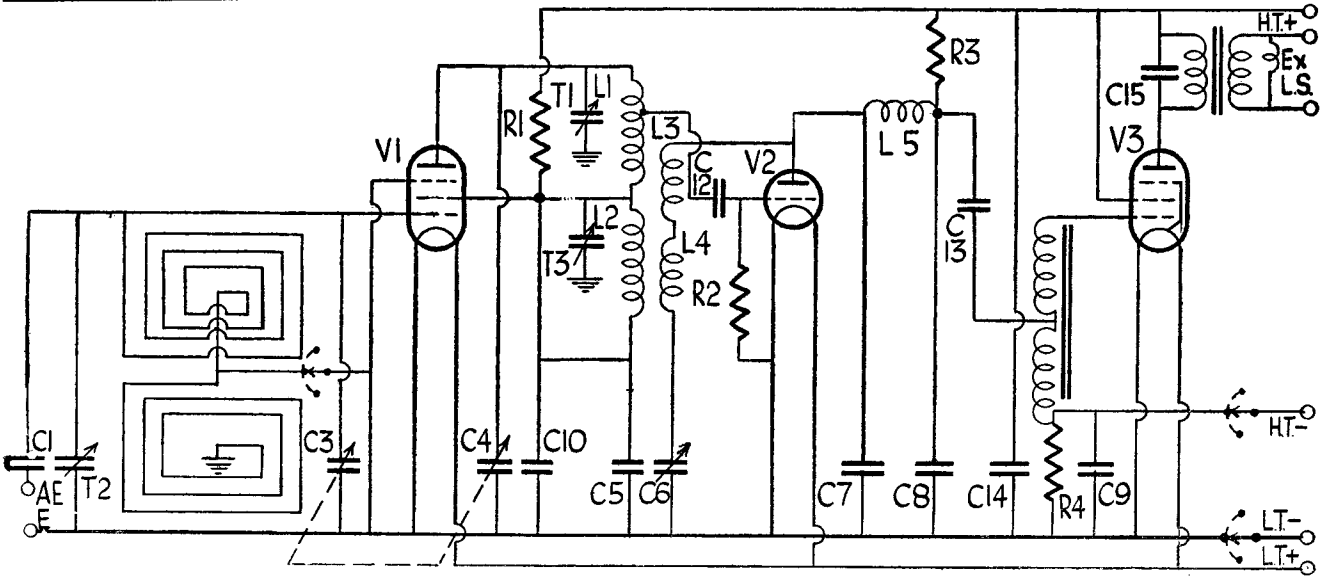
R.	Purpose.	Ohms.
1	V1 screen and anode decoupling.	3,000
2	V2 grid leak	1 meg.
3	V2 anode load	40,000
4	V3 bias resistor	340

CONDENSERS

C.	Purpose.	Mfds.
1	External aerial coupling ..	.00003
5	V1 anode and screen decoupling (part).	2
7	H.F. bypass	.0005
8	H.F. bypass	.001
9	V3 bias resistor shunt ..	25
10	V1 anode and screen decoupling (part).	.1
12	V2 grid	.0003
13	L.F. coupling	.1
14	H.T. reservoir	8
15	Pentode compensator ..	.002

WINDINGS (D.C. Resistances)

Winding.	Ohms.	Winding.	Ohms.
M.W. frame ..	1	Inter. valve trans. prim.	1,170
L.W. frame ..	10	Inter. valve trans. sec. ..	3,600
L1	1	Output trans. prim.. ..	650
L2	13		
L3+L4 ..	2		
L5	210		



The circuit of the 296 is a simple, conventional arrangement using series frame aerials and a grid leak triode detector. Bias is "automatic."

the external aerial coupling condenser, is inside the frame aerial structure near the A. and E. panel.

Alignment Notes

Connect an output meter across the primary of the speaker transformer—i.e., the two blue leads on the speaker panel. Connect the output of an oscillator to a coil of a few turns and bring the coil near enough to the frame aerials to obtain a sufficiently reliable signal. Failing this, connect the service oscillator to the external A. and E. sockets *via* a dummy aerial. All alignment operations must be carried out with the chassis in the cabinet.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kc.) and adjust T1 and T2 for maximum response. T2 will be found near the external A. and E. sockets and is accessible from the outside of the cabinet.

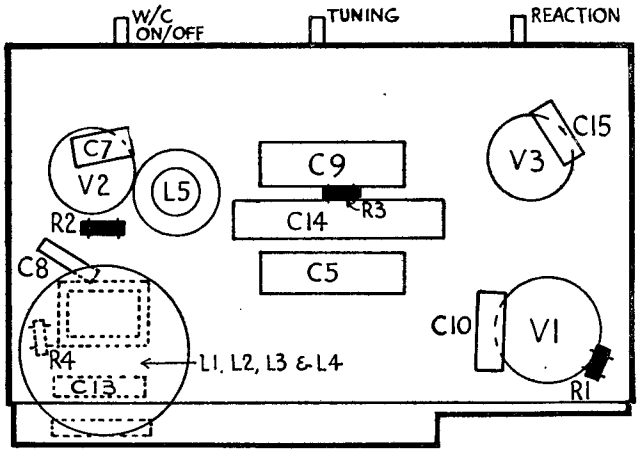
Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T3 for maximum.

This completes alignment operations for this receiver on the bench, but if it is desired to use the receiver exclusively in conjunction with an external aerial and earth, T2 may be adjusted for maximum response with the aerial and earth system connected.

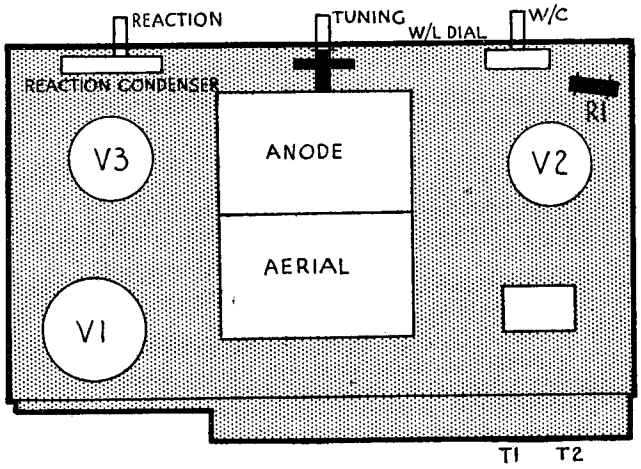
VALVE READINGS

No signal. Volume maximum. M.W. min. cap. New batteries.

V.	Type.	Electrode.	Volts.	Ma
	All Mullard.			
1	SP2 (7) ..	Anode ..	90	1.8
		Screen ..	90	.7
2	PM2 HL (4) ..	Anode ..	50	1
3	PM22A (5) ..	Anode ..	102	4.4
		Screen ..	102	1



Practical details of the simple 296 chassis are given by this drawing. T2 and T1 are at the back of the chassis, T2 being on the left looking from the rear. For C9, A.H. Hunt provide a replacement, unit 2918, 1s. 9d.



Right, the top "deck" chassis diagram of the Aerodyne model 296 reveals the simple, orderly lines on which the set is built.

REMEMBER THESE HUM HINTS

WHEN hum becomes objectionable in a receiver, first discover whether it is tuneable—that is, comes in on station carriers. If so it is due to radio frequencies in the mains section, and a condenser to chassis from one side of the mains to earth should be tried. If there is already a condenser in this position, test it for O.C.

If the hum is not the modulation type, measure the resistance of the field or smoothing choke—in case turns are shorting—and connect a good electrolytic across those in the set.

Other causes may be: Long grid wire near mains wire, L.F. transformer core needing earthing, humdinger across heater out of adjustment or cathode-to-heater leak in a valve.

Aerodyne 296 on Test

MODEL 296.—Standard model for battery operation, requiring a Drydex 108-volt H.T. battery, type H1049, and a Three Star 2-volt accumulator, type UJ3, of the jelly-acid type. Price, £5 19s. 6d.

DESCRIPTION.—Three-valve, two-band, battery-operated portable.

FEATURES.—Leatherette covered, midget portable receiver with carrying strap. Full-vision scale calibrated in metres and station names. Combined wave selection and master switch with separate controls for reaction and tuning. Self-contained frame aerials with sockets on side of cabinet for connecting an external aerial and earth.

LOADING.—H.T., 8.9 ma.; L.T., .44 amp.

Selectivity and Sensitivity

MEDIUM WAVES (200-550 metres).—Good gain for the valve combination used, giving a useful number of stations in daylight and many more at night. Directional properties enable very good selectivity to be obtained with easy separation.

LONG WAVES (800-2,000 metres).—Performance similar to medium waves with the main stations easily received and adequate selectivity.

Acoustic Output

Fairly well balanced tone with reasonable volume sufficient for a small room. There is a certain amount of crispness and the general tone is pleasing, with no undue colouration on speech.

COSSOR MODEL 6864

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lator to obtain definite peaks in the output meter.

Long Waves.—Tune set and oscillator to 1,000 metres (300 kc.) and adjust T5, T6 and T7 in that order for maximum response.

Tune set and oscillator to 522 metres (160 kc.) and adjust P1 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

Medium Waves.—Tune set and oscillator to 214 metres (1,400 kc.) and adjust T8, T9 and T10 in that order for maximum.

Tune set and oscillator to 522 metres (575 kc.) and adjust P2 for maximum, simultaneously rocking the gang.

Repeat both operations until no further improvement results.

S.W. Band 2.—Tune set and oscillator to 43 metres (7 mc.), and adjust T11, T12 and T13 in that order for maximum.

Tune set and oscillator to 100 metres (3 mc.) and adjust P3 for maximum, simultaneously rocking the gang.

Repeat until no further improvement results.

S.W. Band 1.—Tune set and oscillator to 15 metres (20 mc.), and adjust T14, T15 and T16 in that order for maximum response.

Tune set and oscillator to 33 metres (9 mc.) and adjust P4 for maximum. If the calibration at 33 metres is very much out, then the wrong peak of T14 is being used.

Repeat until no further improvement results

Replacement Condensers

Exact replacement condensers for the 6864 are available from A. H. Hunt, Ltd., Garratt Lane, Wandsworth, London, S.W.18. These are: For the block containing C29 and C30, unit 3693, 6s. 9d.; for C22, unit 3642, 2s.; and for either C19 or C26, 2918, 1s. 9d.