MARCONIPHONE "296"

Circuit.—First is a band-pass aerial tuner with special suppressor coupling coils. Bias for the tetrode section of the detector-oscillator (V1), MX40 is obtained partly from the A.V.C. line and partly from the fixed cathode bias resistor common to the oscillator section.

The oscillator-tuned coil is in the grid circuit, and coupling to the I.F. valve is by a band-pass I.F. transformer (I.F. frequency, 125 kc.).

The I.F. valve, VMS4B (met), (V2), is biased by A.V.C. and a resistance in the cathode lead. In addition, a variable resistance, VR1, is connected in series with the cathode resistance to increase the bias on the valve and the delay action of the A.V.C. diode. The control is at the back of the instrument, and a push-pull switch to short circuit it is on the same spindle as the volume control.

Coupling to the second detector is by a second I.F. transformer, in which a tapping is provided on the primary for the A.V.C. diode, and on the secondary for the rectifier diode anode.

The second detector and L.F. valve, MHD4, (met), (V3), operates with the rectified D.C. component of the I.F. signal on the grid of the triode section, and provides amplified A.V.C. with the voltage drop across R12. The load on the diode anode forms the grid leak of the triode, and volume is controlled by a potentiometer, VR2, across the A.C. output of the diode. Coupling to the output valve is by parallel-fed transformer, with a special I.F. trap. As usual, both anode and grid circuits are decoupled.

The output valve, PX4 (V4), is a triode. A variable condenser, VC4, is connected between the grid and chassis to form a tone control.

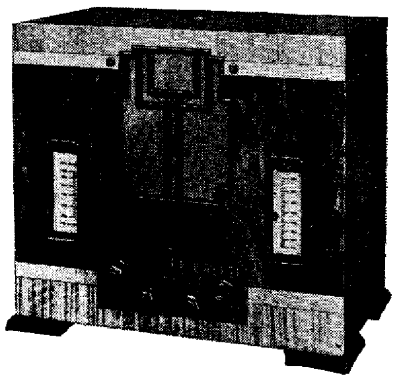
Mains equipment consists of transformer, a full-wave, U12, rectifier, and the speaker field in the negative H.T. lead, with 8 mfd. electrolytic for smoothing. Bias the PX4 (V4) is provided by the voltage

(*Continued on opposite page.*)

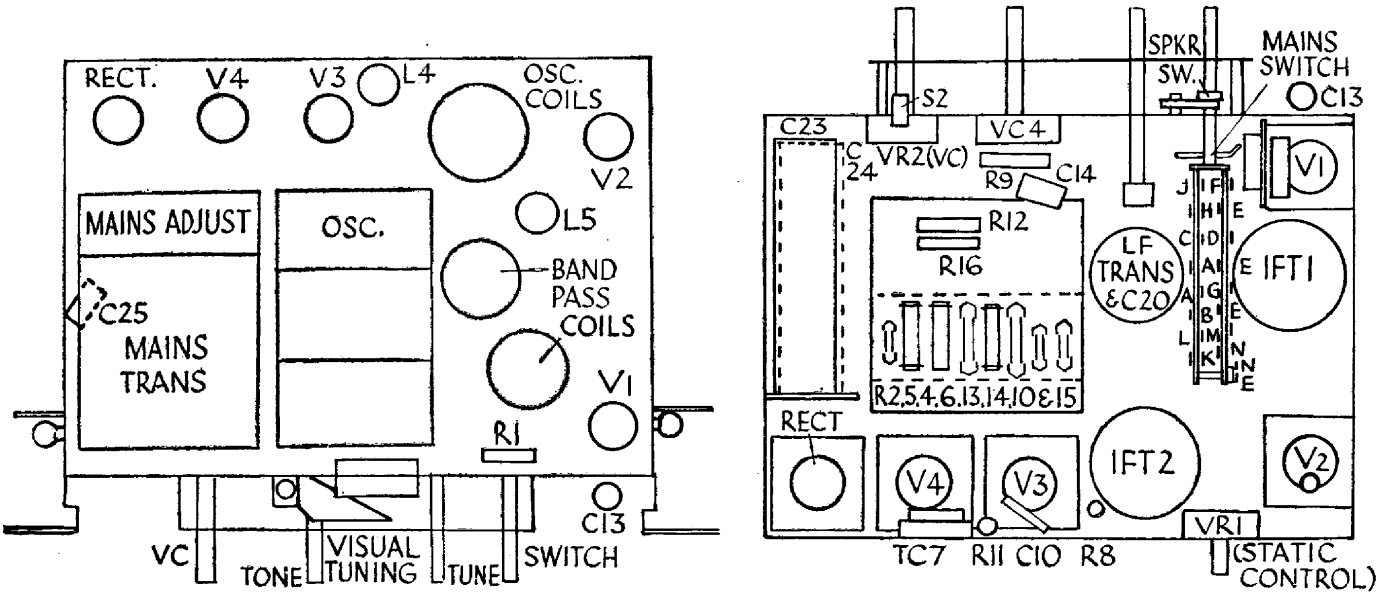
VALVE READINGS

VC max, no signal and static suppressor knob in.

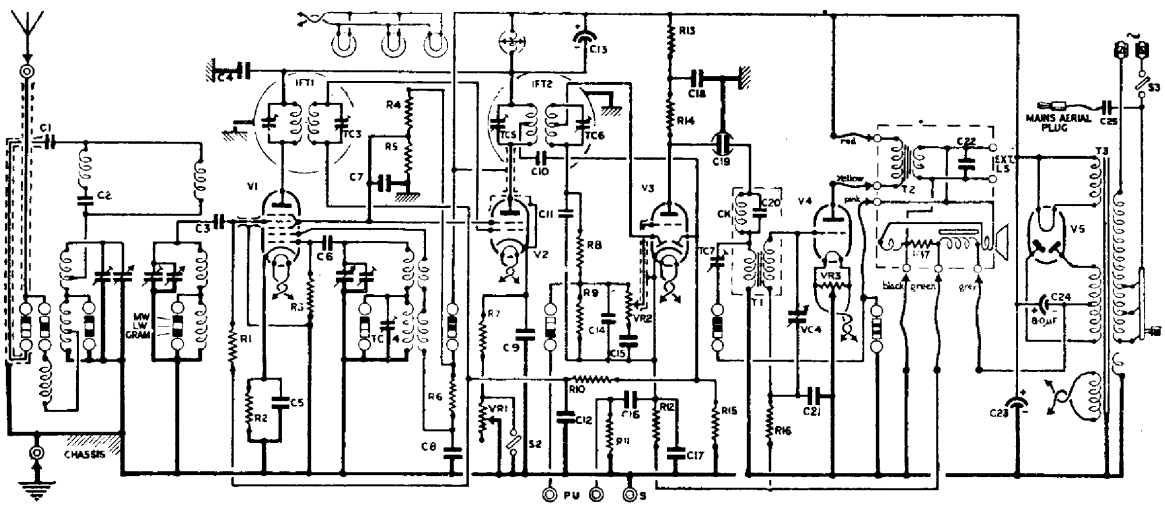
V.	Type.	Electrode.	Volts.	M.A.
1	MX40 ...	anode ...	200	1
		screen ...	70	—
		osc. anode	90	2
2	VMS4B met. ...	anode ...	200	3
		screen ...	70	—
3	MHD4 ...	anode ...	70	1.7
4	PX4	anode ...	210	43



A visual tuning indicator set in a small escutcheon is a distinguishing feature of the "296" five-valve mains superhet by the Marconiphone Co., Ltd.



The above and below deck arrangement of components in the Marconiphone "296" are shown in these two diagrams. If a condenser defect occurs in the block resistance and condenser unit it should be replaced entire.



A heptode detector-oscillator providing electronic "mixing" and enabling the application of the A.V.C. voltage to the first detector is a feature of the Marconiphone "296" five-valve superhet.

MARCONIPHONE "296" RECEIVER (Cont.)

drop across the resistance, R17, in series with the speaker field.

Special Notes.—The external speaker must be of low impedance. A switch cuts out the speaker as the control is turned, and a condenser, C22, forms an artificial load on the secondary to prevent damage to the output valve.

The visual tuning device is in the anode circuit of V2, and is shunted by a 25 mfd. electrolytic condenser (C13). As usual, a hum-dinger is employed across the filament winding.

Quick Tests.—Between the labelled terminals on speaker transformer and chassis (volume control maximum and noise suppressor knob in) :—

Green, 32 v. negative, bias for V5.
Yellow, 210 v. positive, V4 anode.
Red, 215 v. positive, H.T.+ smoothed.
Grey, 140 v. negative.
Yellow and red are primary of output transformer.
Grey and green are speaker field.
Full unsmoothed H.T. between red and grey.

Removing Chassis.—Remove panel and perforated cover at back. Release speaker cable from spring clips. Remove screws which fix dial brackets to front of cabinet. Take off knobs (self-threading grub screws which come loose when knob is off). Remove four holding screws underneath and lift chassis out.

General Notes.—The visual tuning indicator consists of a meter movement controlling a beam of light projected through a slit in the container of a pilot lamp at the side of the device. The pilot lamp can be reached without taking out the chassis by removing the grating on the base of the cabinet, slacking the two screws holding the bracket, and sliding it to the front.

To adjust the noise suppressor, use a fairly good aerial, and with volume control at maximum tune away from a signal and adjust knob at rear. Turning clockwise increases the delay bias and prevents the reception of stations weaker than the static.

As in the 274, the resistances and condensers are mounted as one unit, which should be replaced entire if any defect develops in the condenser bank. The condensers are :—C4, 7, 8, 9, 12, 15, 16, 17, 18, 19 and 21.

The colour code for wiring is :—Black, earth; white, cathode; red H.T.+; green, grid; blue, pick-up; brown, heaters; pink, speaker; purple, aerial; orange, mains; yellow, anode; yellow with red tracer, screening grid; grey, H.T.—; green with black tracer, low potential end of grid circuit not connected to earth; green with white tracer, C.T. of tuning coil.

Replacing Chassis.—Lay chassis inside cabinet, replace four holding screws underneath, clip speaker cable, replace screws holding dials and replace the knobs.

CONDENSERS

C.	Purpose.	Mfd.
1	Aerial coupling to suppressor coils	.0005
2	Tuning suppressor coil L4	.002
3	V1 grid condenser	.0003
4	Decoupling H.T. to V1 and V2	1
5	V1 cathode	.1
6	V1 osc. grid	.0001
7	Decoupling V1 and V2 screens	1
8	Decoupling V1 osc. anode	.1
9	V2 cathode	.1
10	Feed to A.V.C. anode	.00005
11	H.F. by-pass from rect. diode anode	.0002
12	Decoupling A.V.C.	.1
13	Across tuning indicator	25 el.
14	H.F. by-pass	.0001
15	In series with V.C.	.5
16	Series with P.U. lead	1
17	V3 cathode	3
18	V3 anode decoupling	2
19	Filter coupling to L.F. transformer	.1
20	Tuning correction filter	.001
21	Decoupling V4 grid	.5
22	Artificial load on L. S. trans.	.7
23	H.T. smoothing	8 el.
24	H.T. smoothing	8 el.
25	Mains aerial	.0003

RESISTANCES

R.	Purpose.	Ohms.
1	V1 grid leak	1 meg.
2	V1 cathode bias	1,000
3	V1 osc. grid leak	50,000
4	Part of screen ptr.	23,000
5	Part of screen ptr.	23,000
6	Part of screen ptr.	50,000
7	Fixed cathode bias V2	230
8	H.F. stopper in L.F. feed from diode	50,000
9	Diode load and V3 grid leak	.23 meg.
10	Decoupling A.V.C.	1 meg.
11	Across P.U. leads	100,000
12	V3 cathode for amplified A.V.C.	23,000
13	V3 anode decoupling	23,000
14	L.F. coupling V3	50,000
15	A.V.C. diode anode load	.5 meg.
16	V4 grid decoupling	.23 meg.
17	Bias resist for V4 and A.V.C.	500
—	L.S. field	2,000
—	P. of output transformer	50
—	P. of L.F. transformer	750
—	S. of L.F. transformer	8,000