

TRADER SERVICE SHEETS

RECEIVER SERIES
(NUMBER EIGHT)

THE chassis embodied in the Marconiphone Model 262 A.C. table console receiver is also fitted in the model 286 radio-gram, so that the following information applies in most respects to both instruments. A 4-valve (plus rectifier) super-heterodyne receiving circuit is employed, and as far as the general design is concerned, it is quite straightforward. Features of interest are the special image suppressors and the triple-action tone control circuits.

MARCONIPHONE Model 262

5-VALVE (INC. RECT.) SUPERHET

FOR A.C. MAINS

CIRCUIT DESCRIPTION

One aerial connection by way of input volume control **R19**, coupling condenser **C1**, and special coupling coil **L1**, to inductively coupled band-pass input filter. Primary **L2**, **L3** tuned by **C21**; secondary **L5**, **L6** tuned by **C23**. Preset condenser **C25** and coupling coil **L4** form image suppressors which effectively eliminate second channel interference on both wave-bands. First valve (**V1**, Marconi MS4B) functions as combined oscillator and first detector. Oscillator grid coils **L9**, **L10** tuned by **C28**; coupling coils **L7**, **L8** in catode circuit. Single variable- μ I.F. amplifier (**V2**, Marconi metallised VMS4) with tuned-primary, tuned-secondary transformer couplings **L11**, **L12** and **L13**, **L14**. I.F. 125KC. Pre-detector volume control by means of **R18** (ganged with aerial potentiometer **R19**) which varies G.B. applied to I.F. valve. Triode second detector (**V3**, Marconi metallised MH4) working on power grid system with **C7** and **R7**. Provision for connection of gramophone pick-up in grid circuit; G.B. obtained by means of catode resistance **R13**. Switch **S5** breaks **V1** S.G. circuit on gramophone, preventing radio break-through. **V3** coupled to I.H.C. output pentode (**V4**, Marconi MPT4) by special resistance-capacity fed auto-transformer **T1**. Variable tone control condenser **C33** in grid circuit works in conjunction with condenser **C10** and

filter **C15**, **L16** to give controlled compensation at both ends of the audio-frequency range. Usual fixed tone compensating condenser **C17** in anode circuit of **V4**.

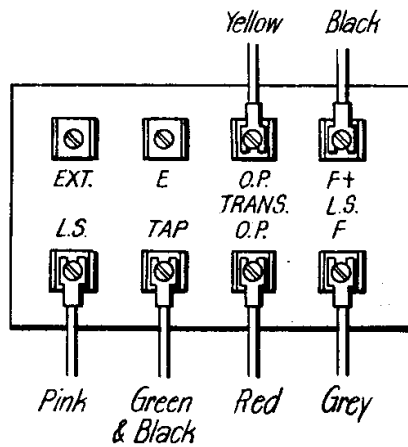
H.T. current supplied by full-wave valve rectifier (**V5**, Marconi U12). Smoothing by means of tapped speaker field **L18** in H.T. negative lead and condensers **C18**, **C19**. Tapping on field provides G.B. for **V4**.

the millboard back (3 large slotted screws) and the wooden strip behind the back of the chassis (2 large slotted screws). Remove 4 screws holding chassis to bottom of cabinet. Release 6-way cable running to speaker, from the spring clips holding it to side of cabinet. Chassis may now be withdrawn sufficiently for most service requirements. To remove it entirely, release multiple cable from its connections to the speaker by loosening screws holding the tags. When replacing, the colour coded wires are connected as shown on the diagram in Col. 2.

Removing speaker. Remove 4 nuts holding speaker to sub-baffle. Do not attempt to remove cross-headed ornamental screws on front of cabinet.

DISMANTLING THE SET

Removing Chassis.—This is quite a simple matter. First remove the four control knobs (set screws). Then remove



Connections to the speaker terminal panel.

COMPONENTS AND VALUES

Reference	Description	Value (Ohms)
R1	V1 grid resistance	2,000,000
R2	V1 and V2 anode decoupling	5,000
R3	V1 and V2 S.G.'s pot. divider	35,000
R4		23,000
R5	V2 fixed G.B. resistance	350
R7	V3 grid resistance	1,000,000
R8	V3 grid decoupling (pick-up only)	1,000,000
R9	V3 anode decoupling	10,000
R10	V3 anode resistance	10,000
R11		23,000
R13	V3 G.B. resistance	500
R14	V4 aux. grid decoupling	10,000
R16	V4 grid H.F. stopper	250,000
R17	V4 grid decoupling	250,000
R18	Radio volume control (ganged)	18,000
R19		25,200
R20	Hum neutralising potenti.	50

(Continued overlap)

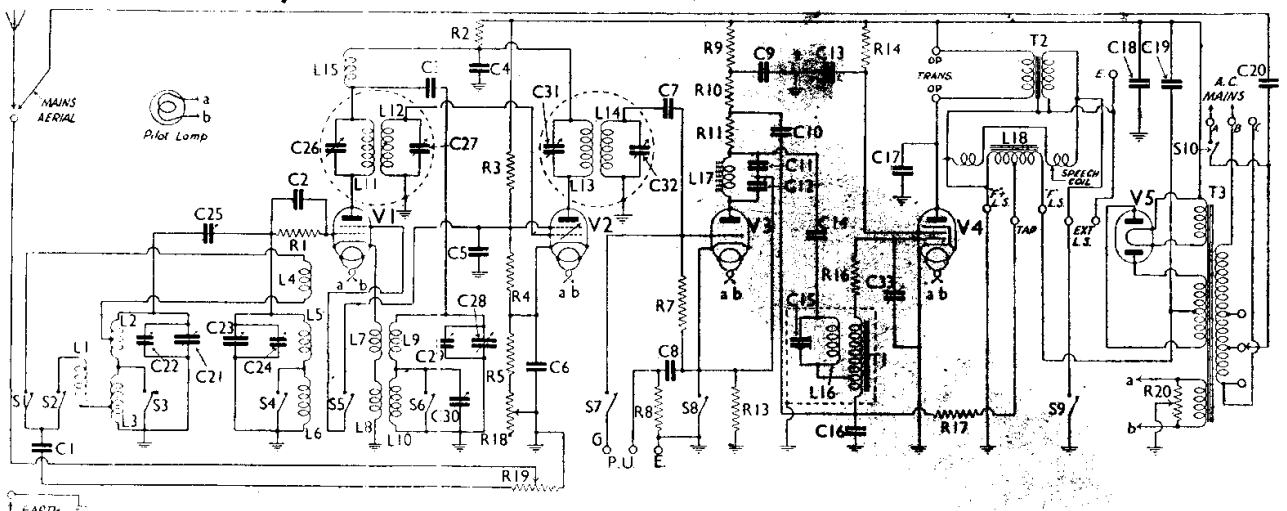


Fig. 1.—The circuit of the Marconiphone Model 262 (A.C.) Dotted enclosures indicate screening cans. In some chassis L17 is replaced by a 10,000 Ω resistance. The mains input terminal panel connections may also differ slightly from those shown above.

MARCONIPHONE MODEL 262
(contd.)

Condensers		Value (μ F)
C1	Aerial coupling condenser	0.0005
C2	V1 grid condenser	0.00005
C3	V1 oscillator coupling	0.0001
C4*	V1 and V2 anodes decoupling	1.0
C5*	V1 and V2 S.G.'s by-pass	1.0
C6*	V2 cathode by-pass	0.1
C7	V2 grid condenser	0.00005
C8*	V2 grid decoupling (pick-up only)	1.0
C9*	V2 anode decoupling	1.0
C10*	Part of bass compensation circuit	2.0
C11	V2 anode H.F. by-pass con-	0.002
C12	densers	0.002
C13*	V4 aux. grid by-pass	1.0
C14*	L.F. coupling to T1	0.1
C15	Part of choke-capacity filter in T1	0.0003
C16*	V4 grid decoupling	2.0
C17	V4 tone compensator (anode)	0.002
C18*	Smoothing condensers	2.0
C19*	Smoothing condensers	5.0
C20	Mains aerial condenser	0.0003
C21	Band-pass pri. tuning	—
C22	Band-pass pri. pre-set trimmer	—
C23	Band-pass sec. tuning	—
C24	Band-pass sec. pre-set trimmer	—
C25	Image suppressor condenser (pre-set)	—
C26	1st I.F. pri. tuning (pre-set)	—
C27	1st I.F. sec. tuning (pre-set)	—
C28	Oscillator tuning	—
C29	Oscillator trimming (pre-set)	—
C30	Oscillator L.W. trimmer (pre-set)	—
C31	2nd I.F. pri. tuning (pre-set)	—
C32	2nd I.F. sec. tuning (pre-set)	—
C33	Variable tone control condenser	0.00065

* In condenser block.

Components		Value (ohms)
L1	Aerial filter coil	72.0
L2	Band-pass primary	3.5
L3		13.0
L4	Image suppressor coil	0.1
L5	Band-pass secondary	3.5
L6		13.0
L7	Oscillator coupling coils	0.25
L8		0.5

Components (contd.)		Value (ohms)	
L9	Oscillator tuning coils	5.0	
L10		5.0	
L11	1st I.F. transformer	100.0	
L12		100.0	
L13	2nd I.F. transformer	100.0	
L14		100.0	
L15	V1 anode H.F. choke	95.0	
L16	Filter choke in T1	—	
L17*	V3 anode H.F. choke	240.0	
L18	Speakerfield (tapped)	2000.0 250.0	
T1	L.F. auto-transformer, total wind- ing	4000.0 750.0	
T2	Speaker input transformer	2.0 29.2 0.1	
T3	Mains transformer	0.15 720.0	
S1-S4	Wave-band switches (ganged)	—	
S5		Radio-gram. change-over switches (ganged)	—
S6			—
S7			—
S8	—		
S9	Speaker muting switch	—	
S10	Q.M.B. mains switch	—	

* Some sets have a 10,000 Ω resistance in place of L17.

VALVE ANALYSIS

The readings below are as measured with an Avometer. Voltage readings are obtained on the 1,200 V scale, between the points indicated and chassis. The set must be switched for radio reception, and readings are taken with no signal input. Where two values are shown, the first is with the volume control at minimum and the second with the control at maximum. All readings are subject to 10 per cent. variation either way.

Total H.T. current (including speaker field), meter inserted at F+ on speaker transformer, 50 mA.

Total H.T. voltage, main H.T. feeder to chassis, 240 V.

Voltage drop across speaker field (F to F+), 115 V.

Valve	Anode Volts	An. Curr. (mA)	Screen Volts	Scr. Curr. (mA)	
V1	MS4B	200-180	4.0-2.0	120-70	1.0-0.1
V2	VMS4	220-190	0.1-5.5	120-70	0.1-2.4
V3	MH4	75	2.8	—	—
V4	MPT4	220	30	175	6
V5	Ur2	—	25*	—	—

* Each anode.

GENERAL NOTES

Switches.—All the switches, S1 to S10 are ganged, and they are indicated in Fig. 2. The first nine perform the wave-changing and radio-gramophone switching, S10 being the mains on-off switch, of the Q.M.B. type, operated by a cam disc. Of the first nine switches, S9 is a special muting switch, which short-circuits the speaker speech coil during the movement of the switch knob to each new position. As each different position is reached, the contacts of S9 open. This prevents noise during the switching operation. The various switch positions are shown in the table below.

Switch	Switch Position		
	M.W.	L.W.	GRAM.
S1	Closed	Open	Open
S2	Open	Closed	Open
S3	Closed	Open	Open
S4	Closed	Open	Closed
S5	Closed	Closed	Open
S6	Closed	Open	Closed
S7	Open	Open	Closed
S8	Closed	Closed	Open
S9*	Open	Open	Open

* Muting switch. Closes between marked switch positions.

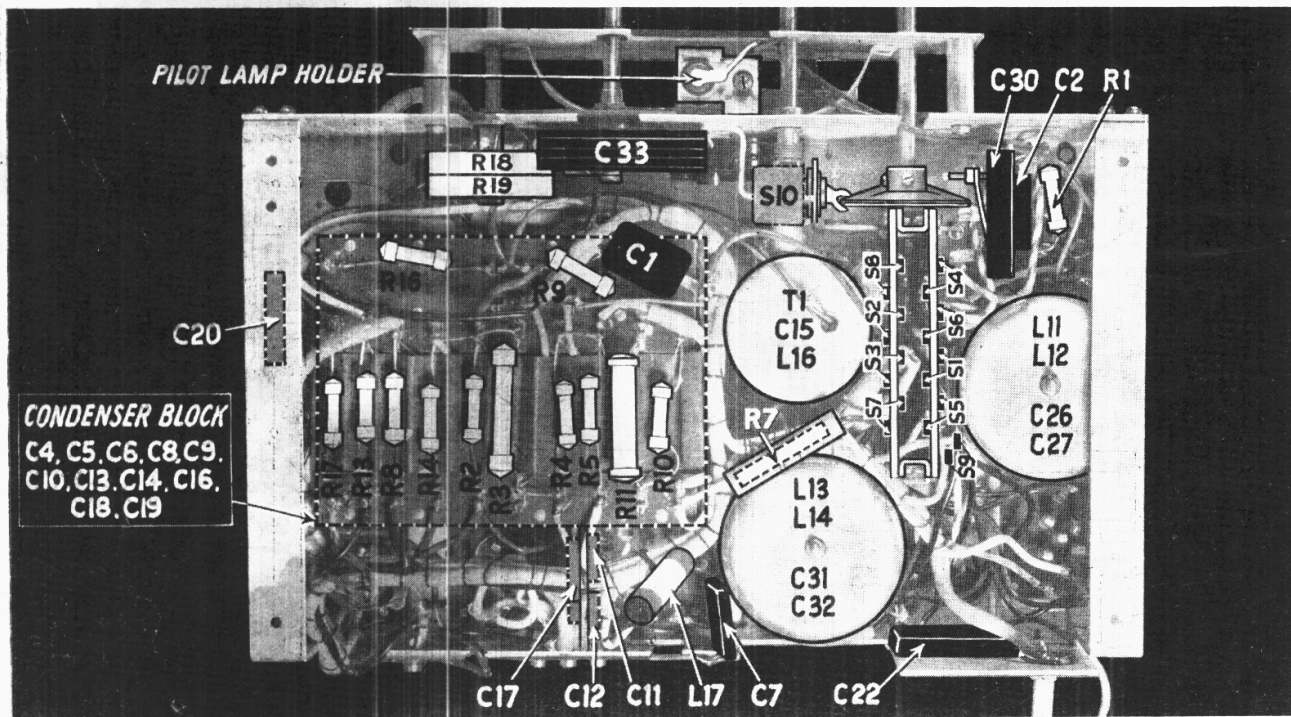


Fig. 2.—Under-chassis view. The condenser block beneath the resistance panel is shown by dotted lines, and its connections are shown in the sketch on the opposite page. R7 is enclosed in spaghetti sleeving. The two contacts of each of the switches S1 to S9 are indicated by arrows.

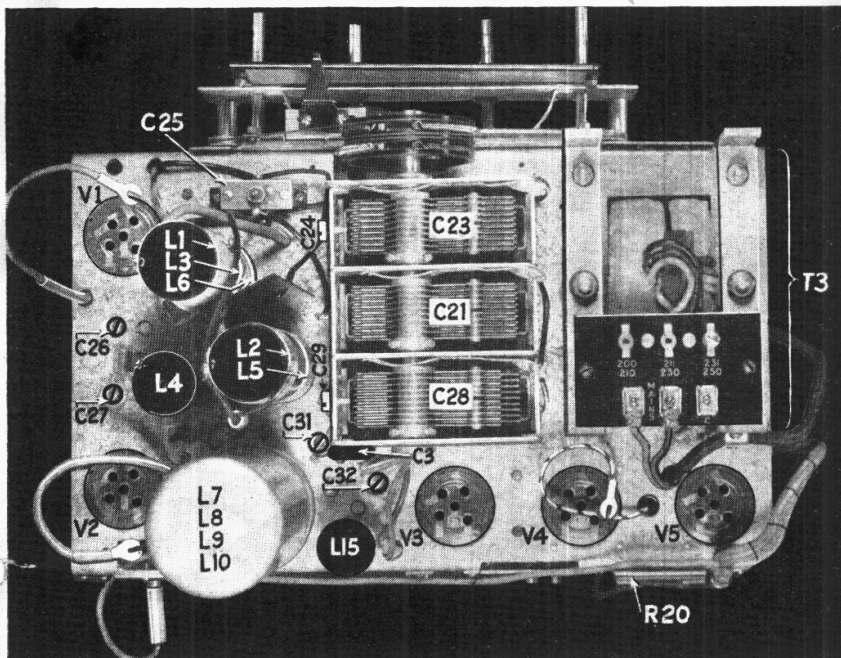


Fig. 3.—Plan view of chassis. The valves have been removed. The shielding can containing L7, L8, L9 and L10 can be unscrewed.

Wiring Colour Code.—Black, earth; White, cathode; Red, H.T. +; Green, grid; Blue, pick-up; Brown, heaters; Pink, speaker; Purple, aerial; Orange, mains; Yellow, anode; and Yellow and Red, screen of S.G. valve; Grey, H.T.—; Green and Black, bottom of grid circuit, not to earth; Green and White, mid-position of tuning coil.

Condenser C25.—This has a very small capacity. Its wiring should not be disarranged, otherwise it may not be possible to obtain complete suppression of images, owing to inability to adjust C25 to the optimum value.

Adjusting I.F. Transformers.—A calibrated modulated oscillator is necessary for this, together with an output meter, which may be a 0.3 V A.C. voltmeter connected across the extra L.S. terminals. First short the cathode of V1 to chassis, and loosely couple the output of oscillator to the grid leads associated with C25. Adjustments should be made for

maximum deflection of the A.C. output meter. First set oscillator to 128 KC. Trim C26 and C31. Next alter oscillator to 123 KC. Trim C27. Finally, adjust oscillator to 125.5 KC. Trim C32. Always regang H.F. circuits after above operations.

Ganging H.F. circuits.—This may be done on a broadcast signal, but a modulated oscillator is better. An output meter must be used (see above). Couple oscillator to aerial lead-in, or to aerial socket via a dummy aerial. First, unscrew C25 several turns. Set oscillator to 210 metres (or receive station). Screw C24 right up. Adjust C29 for maximum deflection. Adjust C22 (at back of chassis) for maximum deflection. Unscrew C24 for maximum deflection. If receiver is "dead" below 240 metres, C24 has been unscrewed too far. Now set oscillator to 1,000 metres (or receive station). Adjust C33 for maximum deflection. Any disarrange-

ment of wiring of tuned circuits will throw the set out of gang. Always adjust image suppressor after re-ganging.

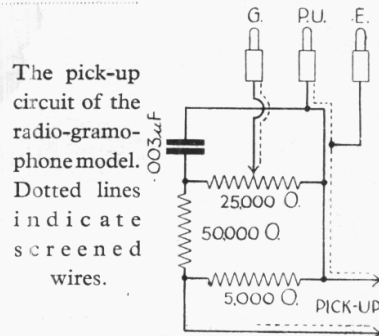
Adjusting Image Suppressors.—Powerful local stations sometimes cause an "image" at another point on the scale, whose frequency is equal to that of the local minus twice the intermediate frequency of the set.

Receive a powerful local signal and tune the set to the image point. If this is below 350 metres, adjust C25 with a non-metallic screwdriver for minimum signals. If the image is above 350 metres, adjust L4 (by its slotted fixing bracket) for minimum signals. If a modulated oscillator is employed, adjust C25 on the image of a 250 metre signal (at 315 metres) and L4 on the image of a 350 metre signal (at 496 metres). These adjustments are slightly inter-dependent.

Valves.—Use only the glass types specified. Catkins may produce instability unless the set has been specially ganged and adjusted.

Adjusting Wavelength Indicator.—First, accurately tune in a station at top of medium waveband. Switch off (remove MH4 valve if chassis is in cabinet), and slacken off cheese-head screw on the back of the cord drive drum. Carefully hold moving vanes of tuning condensers, and move the tuner knob until the pointer indicates accurately the wavelength of the station being received. Re-tighten the cheese-head screw and check up indication again.

Pilot Lamp.—This may be replaced



without removing chassis from cabinet. Remove the perforated metal plate from underside of base of cabinet. Slacken round-head screw holding lamp bracket assembly and slide bracket to one side and lift over screw-head. Replace lamp (a 6 V type must be used), screw in firmly and fix with wax.

Pick-up.—This may be permanently connected to the sockets. An extra socket is provided for earthing the screened leads. The volume control in the set does not work on "Gram," and an external volume control for the pick-up is necessary. For the Marconiphone Model 19 pick-up, a series resistance of 2,000 O and a 1,000-1,500 O volume control may be employed.

Radiogramophone, Model 286.—This has a chassis identical with that of Model 262. The motor is connected to terminals A and B on T3, or to the two marked "Motor." The pick-up circuit is shown in the separate diagram above. The pick-up and earthing plugs fit into the chassis sockets marked P.U. and E. The grid socket is indicated.

Diagrammatic sketch of the condenser block, in the same position as indicated in Fig. 2. The tags connected to condensers are numbered.

