EKCO SERVICE DATA

MODEL MBP99

MODEL MBP99, the Stroller, is a four valve transportable, superheterodyne receiver for operation from either AC/DC mains or LT and HT batteries.

Utilising built-in frame aerials, this receiver offers free tuning on SW, MW and LW bands.

An external aerial will only be necessary for extended range or in areas of low field strength.

Approximately 5000 receivers were issued fitted with SW and MW frame aerials and a LW loading coil, while subsequent receivers have SW, MW and LW frame aerials.

The cabinet is finished in grey grained leatherette with the escutcheon, knobs and grille in mottled plastic.

There are four controls ; one each side of the cabinet and one each side of the tuning scale. From left to right these are : Mains/battery switch, Volume ON/OFF, Tuning, Wavechange switch.

MAINS OPERATION. As is customary with AC/DC receivers, the chassis is alive to one side of the mains and care must therefore be exercised when handling an exposed chassis that is connected to the mains supply.

As a precautionary measure, check that the chassis is connected to the 'earthed' side of A.C. mains by connecting, with insulated wire, a neon lamp between chassis and an earth. If the lamp glows, reverse the mains plug.

VALVES.

V1	DK91	— frequency changer.
V2	DF91	— IF amplifier.
V3	DAF91	— demodulator, AVC, LF amplifier.
V4	DL94	— LF amplifier.

All valves are MULLARD and have B7G bases.

NOTES on filament circuits.

In a few very early models R4, 680 ohms resistor, shunts the filament of V1 and it is recommended that this is re-positioned to connect between pin 1 of V4 and chassis. At the same time, the value of R18, 680 ohms, should be increased to 1000 ohms.

CAUTION. When on mains operation, valves should not be removed from their sockets while the supply is on as C35 becomes charged to a fairly high potential which causes a heavy surge through the filament circuits when the valve(s) are replaced. This may result in burnt-out filaments.

WAVE RANGES.

SW.	19.3 to 51.8 metres.
MW.	194 to 550 metres.
LW.	1000 to 2000 metres.

INTERMEDIATE FREQUENCY. S — 455 Kc/s or N — 460 Kc/s. The IF transformers will tune to either frequency.

The letter S or N is printed in bold type on the back (inside) of the receiver.

LOUD-SPEAKER IMPEDANCE. 3 ohms at 400 cps.

CONSUMPTION.

A.C. mains	—	129 ma at 225 volts input.
D.C. mains	—	67 ma at 230 volts input.
7.5V LT	—	47 ma.
90V HT	—	13 ma.

BATTERIES. 7.5V LT. Ever Ready Alldry 31.
90V HT. (3-pin plug and socket.) Ever Ready Batrymax B107, or 90V HT. (Separate single plugs.) Drydex H1146.

NOTE. When fitting the 3-pin type HT battery, the plug and socket connection must be kept near to the cabinet side—not centre—due to the possibility of short circuit by the back cover latch bar.

CIRCUIT DETAILS. Circuit diagram A.

Aerial coupling. On SW, aerial signals pass via the series condenser C2 to the selector switch and then capacitively coupled to the SW frame aerial by C3.

For MW, signals are choke coupled to the tap of the MW frame aerial, the choke being shunted by a damping resistor R1.

On LW, signals are inductively coupled via the LW loading coil which is used in series with the MW frame aerial. Shunt trimmers are provided on each waveband for alignment, the grid circuits being tuned by C8 section of the gang.

Oscillator circuits. These are the conventional HF transformer type with shunt and/or series padding. The grid coils are tuned by C9 gang section.

Frequency changer. Selector switches connect the appropriate grid and oscillator coils to the pentagrid frequency changer V1, to reproduce the signal at the I.F.

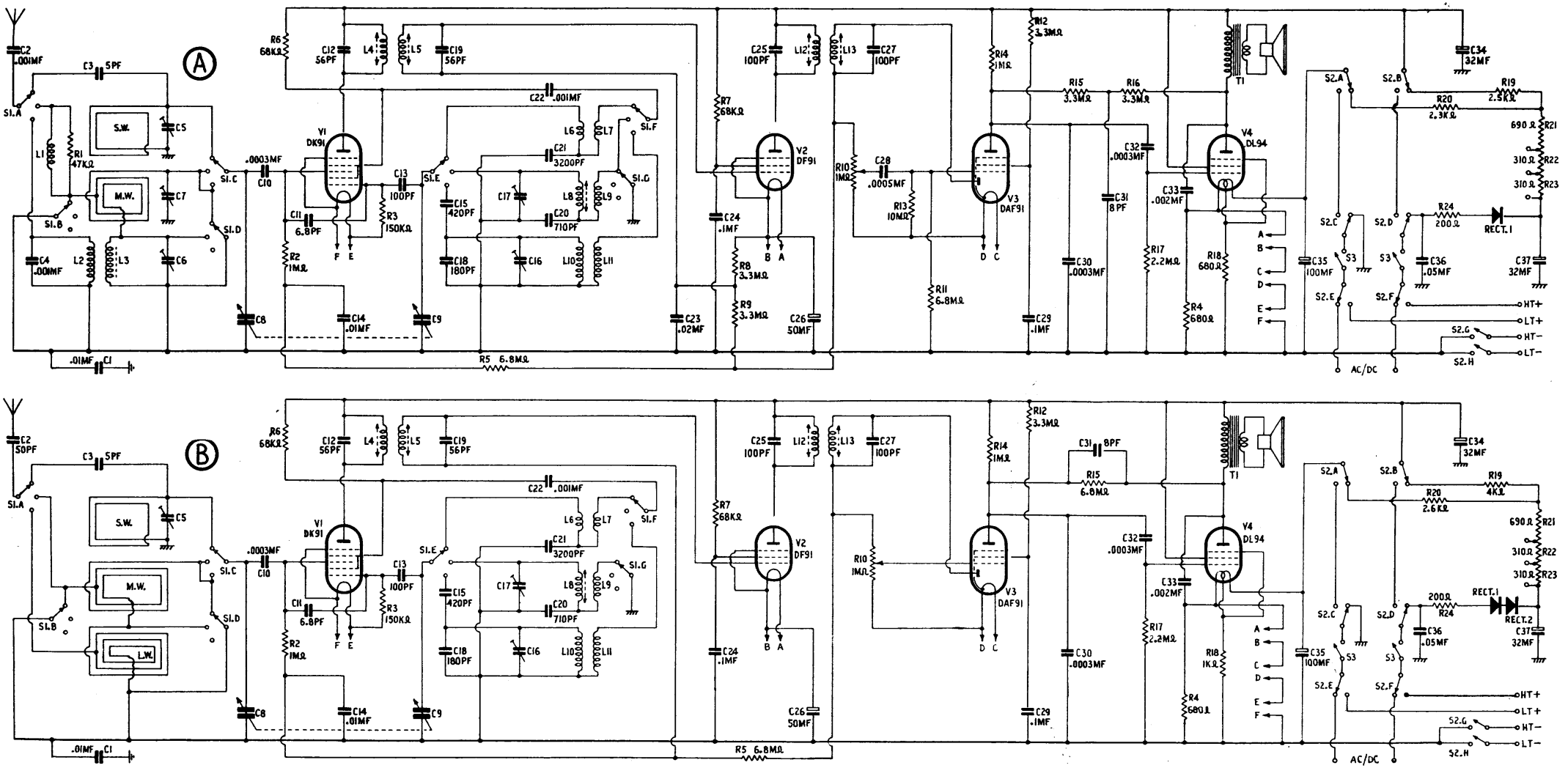
C11 is a SW neutralising condenser.

I F amplifier. The output from V1 anode is transformer coupled by IFT1 to V2, amplified, then coupled by IFT2 to the diode of V3 for demodulation.

LF AMPLIFIER. From the volume control, which forms the diode load, the LF signal is applied to V3 pentode grid. The amplified anode output is RC coupled to V4, amplified and then transformer coupled to the loud-speaker.

Selective negative feed-back from anode to grid of V4 is effected by R16, R15, C30, C31.

AVC. Part of the rectified signal is applied across R9, R8 to develop AVC voltage which is filtered and fed to the grids of V1 and V2.



CIRCUIT DIAGRAM

CIRCUIT DETAILS. Circuit diagram B.

The SW aerial circuit remains unaltered.

On MW, the aerial connects via the protective condenser C2 direct to the tap of the MW frame aerial.

For LW, the loading coil is replaced by a third frame aerial which is used in series with the MW frame aerial.

The MW and LW shunt trimmers are no longer used.

The remainder of the circuit remains unaltered except for re-arranged AVC, volume control and selective feed-back circuits, details of which are shown in circuit diagram B.

MAINS/BATTERY SWITCHING. This comprises a double chain of switches with the double pole ON/OFF switch to break each chain. For 'battery operation', HT and LT negatives are switched to chassis while LT positive and HT positive are switched respectively to the filament and HT lines. Both sides of the mains are completely isolated.

For 'mains operation', all four battery leads are isolated. One side of the mains is switched to chassis, while the other side is connected via the surge limiter R24 to the half-wave metal rectifier, the uni-directional output of which is passed through the mains adjusting resistor.

At this point the supply passes to :—

(*a*) the filament circuit via R20, additional smoothing being provided by C35 and C26 to ensure hum-free reproduction.

(*b*) via R19 to the HT line, smoothed by C34.

METAL RECTIFIER. Circuits A and B show the use of a single or double metal rectifier, with the points of difference clearly shown in the chassis diagrams.

In the case of the single rectifier, R19 should be 2500 ohms and R20 2300 ohms.

For the double rectifier. these values are changed to R19 4000 ohms and R20 2600 ohms.

Where a replacement rectifier is to be fitted. the values of R19 and R20 must be checked to ensure they are correct for the rectifier being fitted.

CHASSIS REMOVAL. Remove the lower back cover by releasing the internal lever.

Disconnect and remove the batteries, if any.

Remove the two 6BA screws securing the upper back cover at the lower corners. This section contains the frame aerials and has short connecting leads to chassis, so do not attempt to pull clear, but lay aside to permit access to the chassis and knobs.

Remove the four control knobs.

Remove the under chassis cover, in some cases held by two 4BA screws.

To remove the chassis, first remove the two 4BA screws securing the two rear wing pieces to the cabinet.

Then the two 4BA screws at the ends of the cursor traverse, and the 4BA screw underneath the chassis approximately front centre. The chassis, together with the frame aerials, can then be drawn clear to the extent of the speaker leads.

DRIVE CORD/WIRE DETAILS. The cord and wire drive is used on the majority of the sets produced, but late models use an all cord drive. Earlier models may be converted to the all cord drive, if required, when replacement becomes necessary. Full instructions are given in the diagrams.

CURSOR ADJUSTMENT. With the gang fully meshed, the line on the cursor should coincide with the datum line at the low frequency ends of the scale.

To adjust, simply slide the cursor along the cord to the correct setting.

The cursor position should always be checked before re-calibration is attempted.

I F ALIGNMENT. Switch to MW and fully mesh the gang. Connect output meter across the speaker tags.

Inject 455 Kc/s (or 460 Kc/s) via a 0.1 mfd condenser to pin 6 of V1 and adjust the IFT cores in the following order for maximum output : 2nd IFT upper and lower, then 1st IFT upper and lower.

CALIBRATION. Check cursor to datum line.

Set the frame aerials in a position approximating correct relationship to chassis as when fitted to cabinet.

Switch to SW.

Tune to and inject 14 Mc/s to aerial socket, then adjust C5 for maximum output.

Check calibration at 6 Mc/s.

Switch to MW.

Tune to and inject 1200 Kc/s, then adjust C17 for calibration and C7 (if fitted) for maximum output.

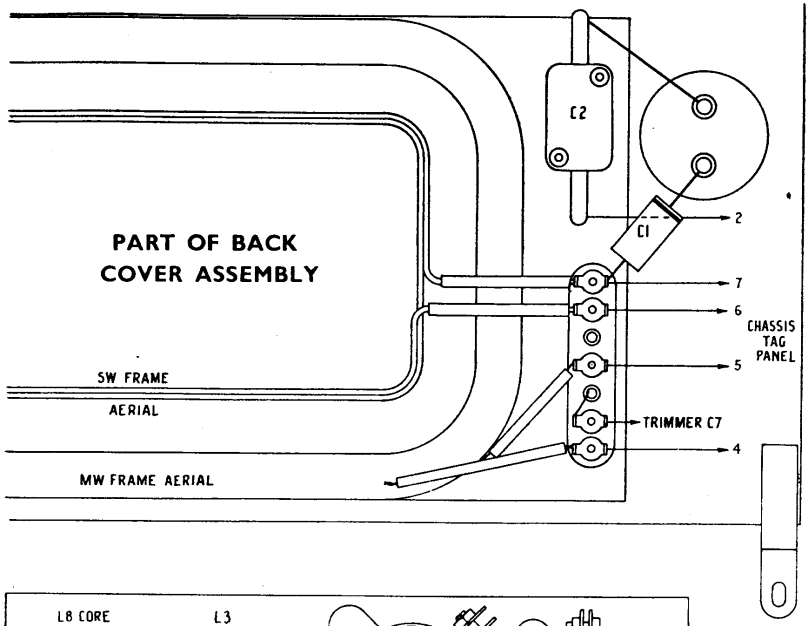
Tune to and inject 600 Kc/s then adjust L8 core.

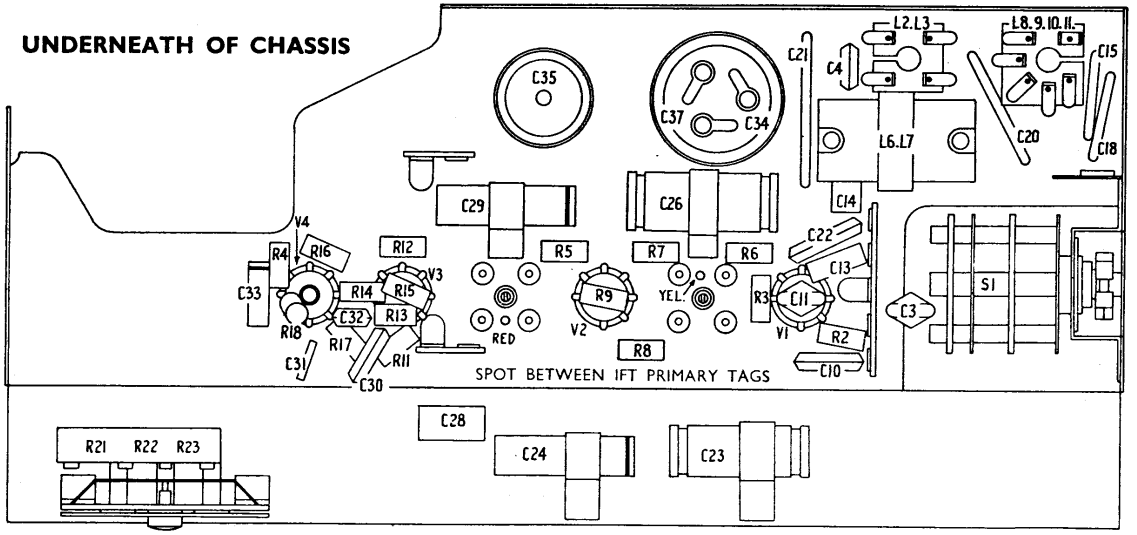
Repeat these adjustments if necessary.

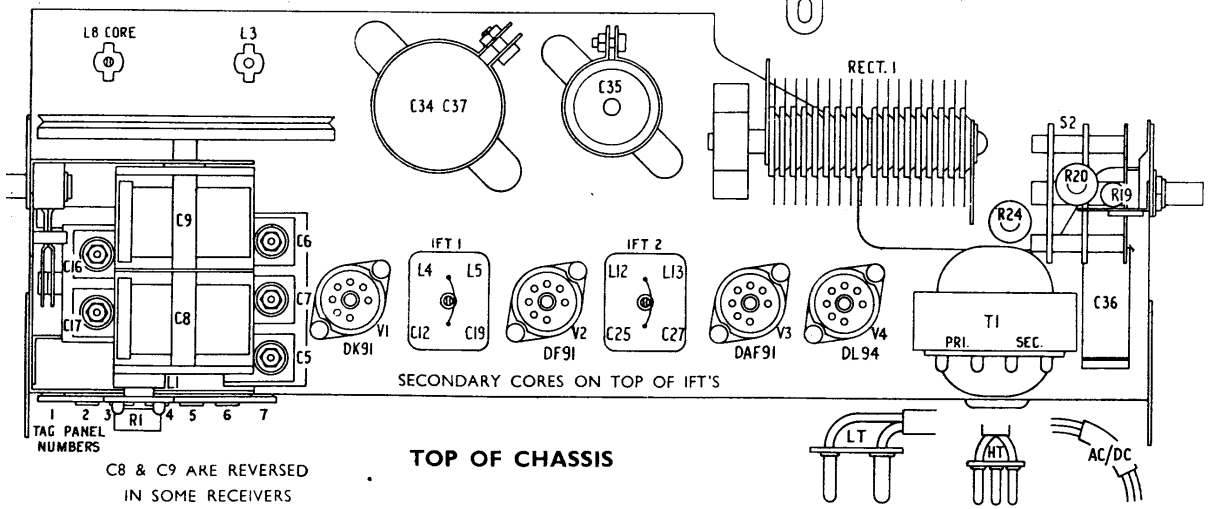
Switch to LW.

Tune to and inject 250 Kc/s then adjust C16 for calibration and C6 (if fitted) for maximum output.

Check calibration at 150 Kc/s.

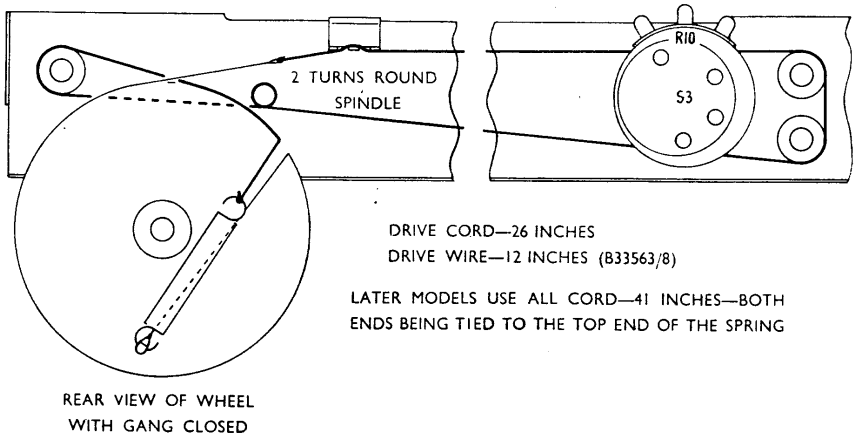






C8 & C9 ARE REVERSED
IN SOME RECEIVERS

TOP OF CHASSIS



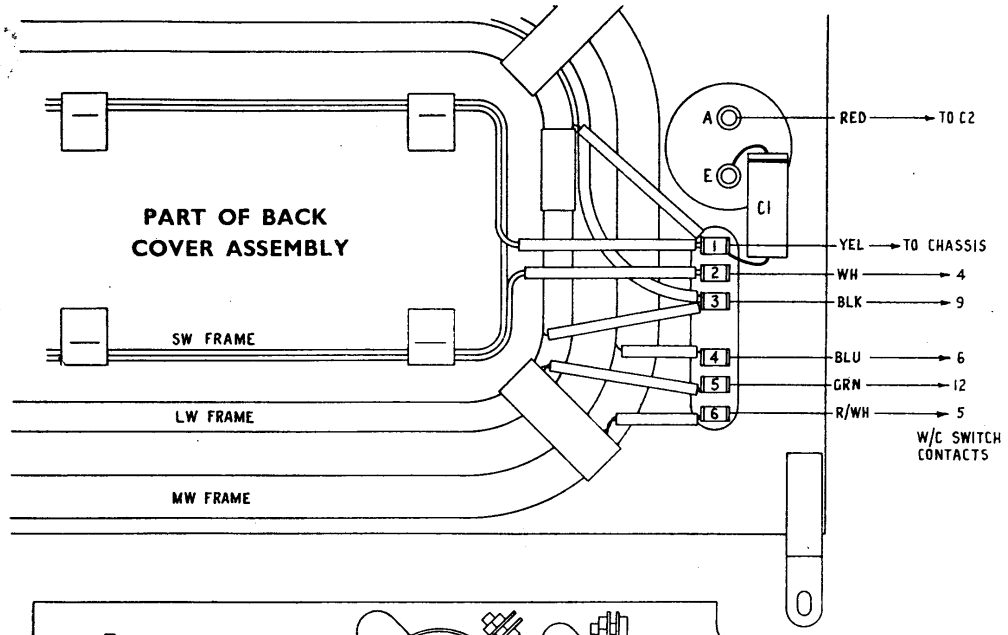
DRIVE CORD—26 INCHES
DRIVE WIRE—12 INCHES (B33563/8)

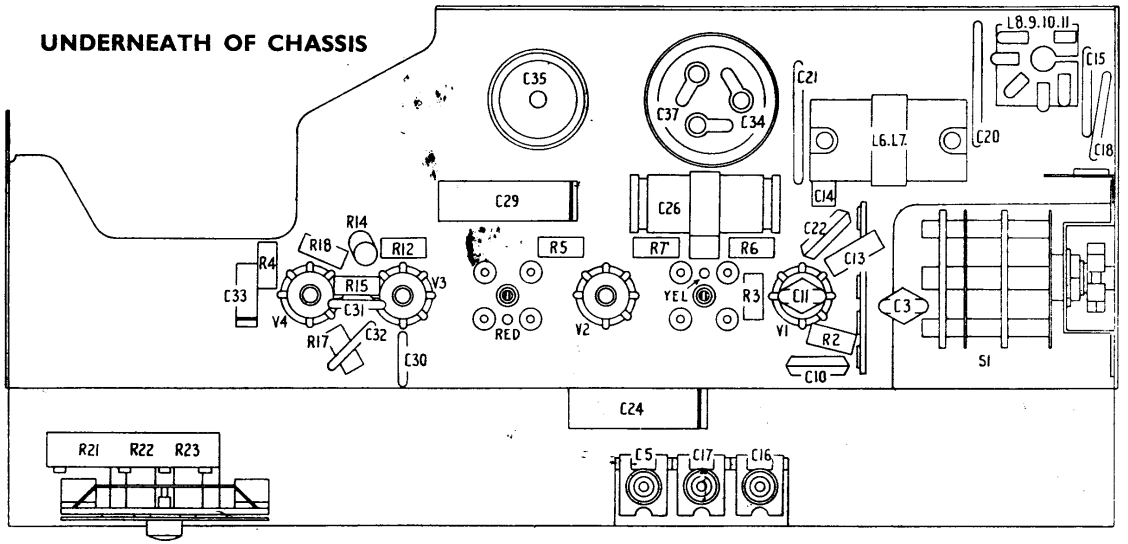
LATER MODELS USE ALL CORD—41 INCHES—BOTH ENDS BEING TIED TO THE TOP END OF THE SPRING

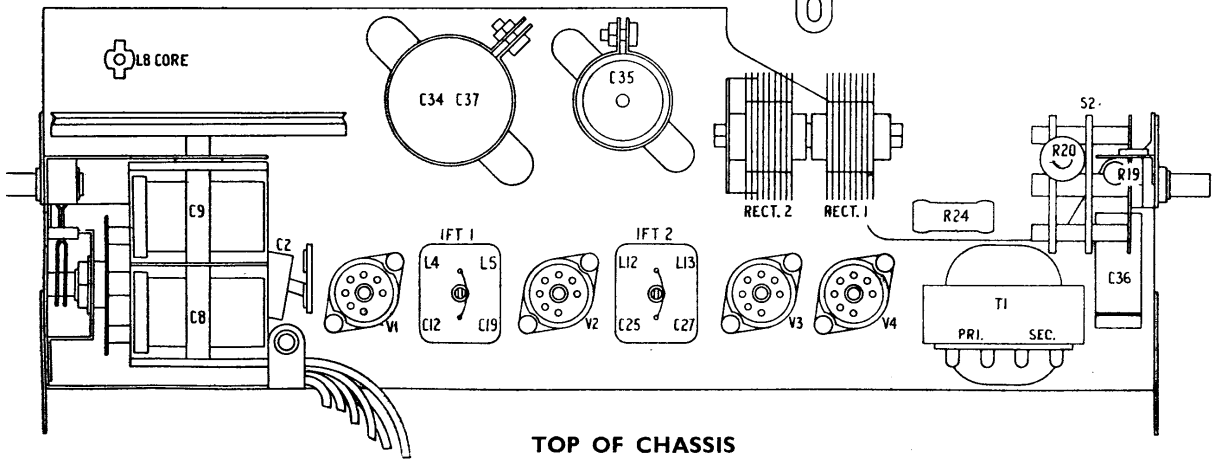
REAR VIEW OF WHEEL
WITH GANG CLOSED

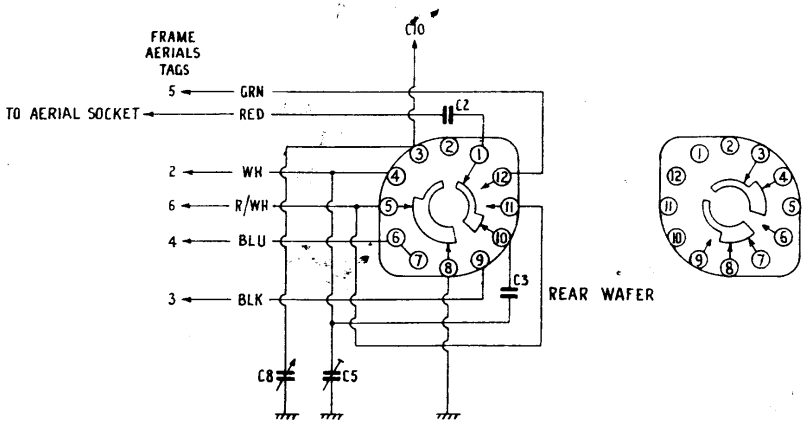
DRIVE CORD/WIRE DETAILS

CHASSIS DETAILS FOR DIAGRAM A

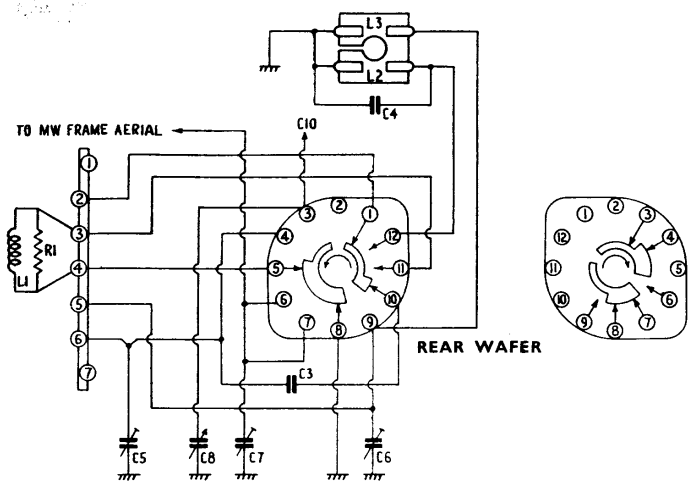




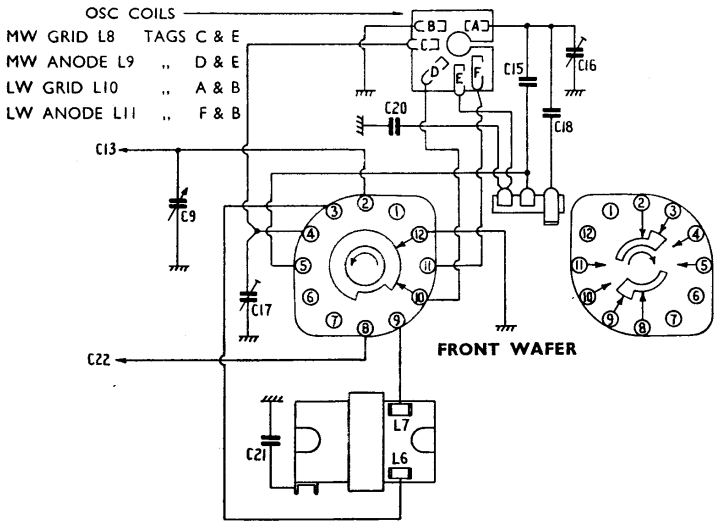


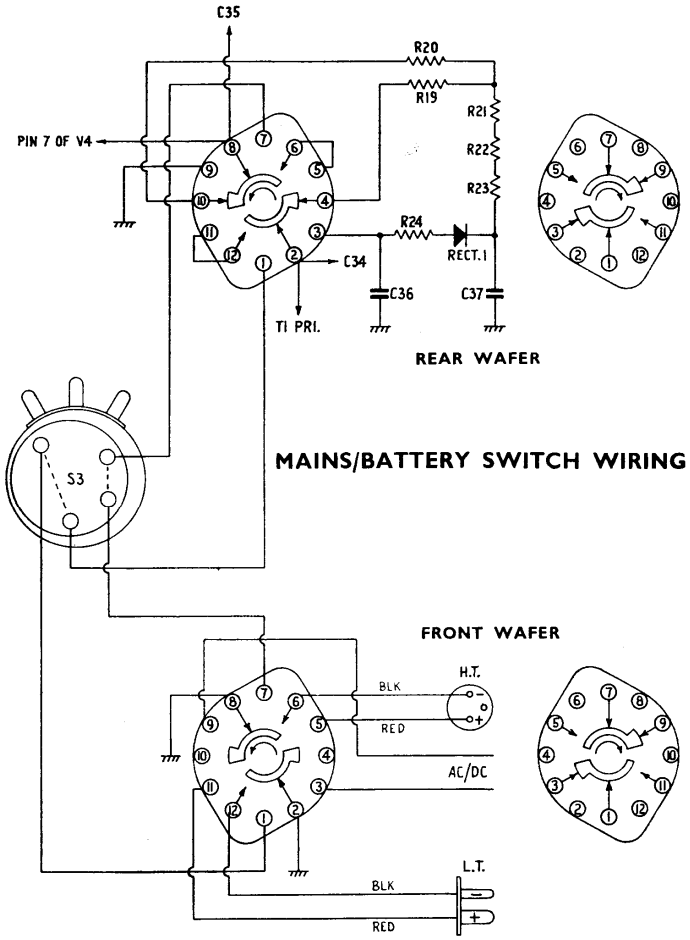


CHASSIS DETAILS FOR DIAGRAM B



WAVECHANGE SWITCH WIRING





MAINS/BATTERY SWITCH WIRING

VOLTAGE AND CURRENT DATA

Valve	Anode		Screen		Volts Across Filament
	Volts	M.A.	Volts	M.A.	
MIXER	88	0.4	—	—	
1 OSC.	22.3	0.8			1.55
2	88	0.75	31.5	0.5	1.45
3	1.2	0.05	0.3	0.05	1.50
4	84	7.9	88	1.65	3.00

Readings taken with 1000 ohms/volt meter.

230 volts D.C. input.

Set tuned to 1000 Kc/s. No signal input.

NOTE. Voltages for V3 are given as a guide only, as meter resistance causes inaccurate readings.

D.C. RESISTANCE OF WINDINGS

Winding	Ohms	Winding	Ohms	Winding	Ohms
SW Frame	*	L4	34.0	L10	6.5
MW Frame	0.7	L5	34.0	L11	3.2
LW Frame	6.3	L6	*	L12	14.5
L1	19.0	L7	8.0	L13	14.5
L2	31.0	L8	2.5	T1 PRI	700
L3	20.0	L9	1.5	T1 SEC	*

* Less than 1 ohm.

SERVICE DEPT., E. K. COLE Ltd.,
Somerton Works, Arterial Road,
Southend-on-Sea
'Phone: Southend 2296
Head Office: Ekco Works, Southend-on-Sea

SCOTTISH SERVICE DEPOT:
26, India Street,
Glasgow, C.2.
'Phone: Central 2012

NORTHERN SERVICE DEPOT:
55, Whitworth Street,
Manchester, 1
'Phone: Central 6711/2

MIDLAND SERVICE DEPOT:
11, Brook Street,
Birmingham, 3
'Phone: Central 2505/6