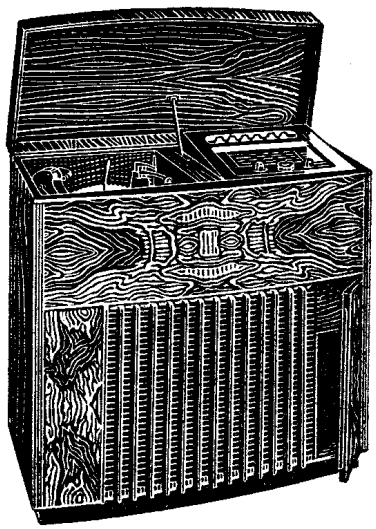
DYNATRON



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General Service Information Ext. 20.
Component Orders Ext. 21.

CONTENTS

INTRODUCTION

The ' Berkeley ' series of radiogramophones incorporate the following Dynatron Hi-Fi chassis:

RG16SA—TC16CS Pre-amplifier and tone control unit.
T10A A.M./F.M. Tuner Unit.
LF15CS Power Amplifier.

RG16ST—As above but with the addition of a second channel amplifier LF16CS.
Conversion Kit No. 6 is available for converting RG16SA models to provide stereo reproduction. Full instructions are included with each kit.

This manual describes each unit separately, giving general description, circuit description, technical and test specifications, in that order.

All circuit and component layout diagrams are included at the rear of the manual.

REMOVAL OF UNITS FROM CABINET

TC16—Pre-amplifier and Tone Control Unit

(1) Unplug all leads. Remove the two securing screws and withdraw unit from rear of cabinet.

(2) To replace the unit, reverse the above procedure.

LF15 & LF16—Power Amplifiers

(1) Disconnect all associated cables.

(2) Remove two screws securing clamp to chassis flange.

(3) Withdraw unit from the cabinet.

(4) To replace unit, reverse the above procedure.

T10A—A.M./F.M. Tuner Unit

(1) Remove the TC16 and LF16 as described previously.

(2) The tuner unit is supported by four clamps, two at the sides, two at the rear. Remove clamps and lower unit gently, so that the dial faces the rear of the cabinet. Remove A.M. and F.M. aerial cables from unit.

(3) Withdraw unit from cabinet. To replace unit, reverse the above procedure.

Motor Assembly

(1) Remove four screws securing unit to motor board. Disconnect pick-up and mains lead.

(2) Lift unit from motor board.

(3) To replace unit, reverse the above procedure.

REPLACING PISTON LID STAY

(1) Remove TC16 unit as described previously.

(2) Unscrew bracket located inside cabinet lid; unscrew bracket from piston rod.

(3) Remove lead connected to piston unit.

(4) Remove four screws holding piston unit to cabinet and withdraw it from the cabinet.

(5) To refit unit, reverse the above procedure.

TC16 TONE CONTROL UNIT GENERAL DESCRIPTION

The TC16 is a high performance unit comprising identical twin pre-amplifiers with a comprehensive control system. The inputs, selected by a plug and socket arrangement, may be from either a magnetic (100K load) or crystal/ceramic pick-up, a radio tuner unit or a tape deck; each input is duplicated for stereophonic reproduction.

The controls are, from left to right, Mains/System Switch, Volume, Balance, Treble, Bass and Selector Switch. The tone controls employ closely-matched ganged potentiometers; the System Switch is used to switch off the mains supply and to select either stereo or mono operation, the latter position coupling the two amplifiers in parallel. The mains switch is a double-pole type intended for the remote control of the power amplifier which provides H.T. and heater supplies to the TC16.

Pick-up equalisation is achieved for various recording characteristics by use of selective negative feedback.

Two recording sockets are provided, with outputs independent of the volume control for convenience in monitoring.

CIRCUIT DESCRIPTION

The various inputs to the twin channel pre-amplifiers are fed via their appropriate matching networks, into the control grids of V1 and V3; low-noise, voltage amplifying pentodes.

Record and tape equalisation is obtained by switching in negative feedback networks suitable for the input characteristics required.

The outputs from V1 and V3 are passed via a ganged volume control, to the grids of V2a and V4a which form tone correction stages; bass and treble control being obtained by means of a composite R.C. network which gives independent increase and decrease of bass and treble response.

The outputs of V2a and V4a are fed to a balance control which adjusts the output of one channel with respect to the other, to ensure correct stereo balance. The outputs from the balance control networks are injected into the control grids of V2b and V4b which comprise the final amplifying stages incorporating negative feedback to obtain a low output impedance.

The A.F. outputs from the anodes of V2b and V4b are fed to co-axial output sockets at the rear of the unit.

The **dual** position of the **system** control switch couples the outputs from the grids V2a and V4a when monaural operation is required.

Outputs from the anodes of V1 and V3 are fed to the **record** output sockets.

TECHNICAL SPECIFICATION

Input Sensitivity (for 1 volt output)

Pick-up:	Magnetic head 5 mV. Crystal head 200 mV
Radio:	100 mV (input resistance of 0·5M).
Tape:	6 mV (input resistance of 0·1M)
Equalization:	78 r.p.m. (old recording characteristics) 78 r.p.m. (ffrr and L.P. (R1AA or BS1928/55).
Recording Output:	50 mV (suitable load 0·5—2·0M).
Bass Control:	±15·0 dB at 60 c/s referred to 1·0 kc/s.
Treble Control:	+9·0 dB and —19·0 dB at 10 kc/s referred to 1·0 kc/s.
Rumble Filter:	12·0 dB per octave below 50 c/s.
Balance Control:	10·0 dB variation between channels.
Frequency Response:	60 to 15 kc/s.
Cross-Talk:	Better than 35·0 dB.
Power Supply:	250V at 5·0 mA, 6·3V at 2·5A.
Valves:	2×EF86 (low-noise pentodes, first stages). 2×ECC83 (twin triodes, tone control and output stages).

TEST SPECIFICATION

Test Equipment Required:

A.F. Oscillator.	AVO Model 7.
Output Meter.	Power Amplifiers LF15 and LF16.

Voltage Measurements:

Refer to circuit diagram.

Bass Control

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Balance** control at mid-position.

(3) **Treble** control at mid-position.

(4) **Selector** switch to **Radio.**

Method of Measurement:

(1) Inject a 1 kc/s signal into the **Radio** socket and adjust the input to produce 2·0 watts output from LF15 or LF16 amplifiers.

(2) Turn the **Bass** control to minimum; the output should fall by 22·0 dB±2·0 dB. These checks should be made on both channels.

Treble Control

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Balance** and **Bass** controls at mid-position.

(3) **Selector** switch to **Radio.**

(4) **Treble** control at maximum.

Method of Measurement:

(1) Inject a 10 kc/s signal into the **Radio** socket and adjust the input to produce 2·0 watts output from LF15 or LF16 amplifiers.

(2) Turn the **Treble** control to minimum, the output should fall by 30 dB±2·0 dB.
These checks should be made on both channels.

Gramophone Frequency Response

Magnetic Pick-up

Conditions of Measurement:

(1) **Pick-up Selector** link in **Magnetic** position.

(2) **Tone** and **Balance** controls at mid-position.

(3) **Volume** control at maximum.

(4) **Selector** switch to appropriate gramophone position.

Method of Measurement:

(1) Inject a 1 kc/s signal into the 'A' pick-up input socket and adjust the input to produce 100 mW output from a LF15 amplifier; this is now referred to as 0 dB.

(2) Repeat test on ' B ' pick-up input socket, measuring the output from a LF16 amplifier.

Selector Position	50 c/s	200 c/s	5 kc/s	10 kc/s
78	+5·0 dB	+5·0 dB	—2·0 dB	— 4.0 dB
78 ffrr	+5·0 dB	+5·0 dB	—7·0 dB	—1·20 dB
L.P.	+7·0 dB	+8·0 dB	—9·0 dB	—1·50 dB
Limits ±2·0 dB				

Tape Input Frequency Response

Conditions of Measurement:

(1) **Tone** and **Balance** controls at mid-position.

(2) **Volume** control at maximum.

(3) **Selector** switch to **Tape.**

Method of Measurement:

(1) Inject a 1 kc/s signal into 'A' channel **Tape** input socket and adjust the input to produce 100 mW output from a LF15 amplifier; this is now referred to as 0 dB.

(2) Repeat tests injecting signal into ' B ' channel **Tape** input socket and measure the output from a LF16 amplifier.

	50 c/s	200 c/s	5 kc/s	10 kc/s
	+11·0 dB	+12·0 dB	—8·0 dB	—10·0 dB
Limit	±2.0 dB			

Radio Input Frequency Response

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Balance** and **Tone** controls at mid-position.

(3) **Selector** switch to **Radio.**

Method of Measurement:

(1) Inject a 1 kc/s signal into the **Radio** 'A' channel input socket and adjust the input to produce 100 mW output from a LF15 amplifier; this is now referred to as 0 dB.

(2) Repeat tests injecting signal into **Radio** ' B ' channel input socket and measure the output from a LF15 amplifier.

	50 c/s	200 c/s	5 kc/s	10 kc/s
	—9·0 dB	—1·0 dB	—1·0 dB	—3·0 dB
Limits	±2·0 dB			

Sensitivity

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Tone** controls at mid-position.

(3) **Pick-up Selector** link in **Magnetic** position.

(4) **System** switch to **Stereo.**

Method of Measurement:

(1) Inject a 1 kc/s signal into the appropriate **'A'** channel socket, adjust the input to produce 10 watts output from an LF15 amplifier.

(2) Repeat tests injecting signal into ' B ' channel socket.

Gramophone

Magnetic	Radio	Tape
5·0 mV	140 mV	8·0 mV

Check all **Gram** positions on **Selector** switch.
Limits ±3 dB.

Record Output

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Tone** and **Balance** controls at mid-position.

(3) **System** switch to **Stereo.**

(4) **Selector** switch to **Radio.**

Method of Measurement:

(1) Inject a 1 kc/s signal into the 'A' radio socket and adjust the input to produce 10 watts output from a LF15 amplifier.

(2) Repeat the above test injecting a signal into the ' B ' radio socket.

Balance Control

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Tone** control at mid-position.

(3) **Selector** switch to **Radio.**

(4) **Balance** control fully clockwise.

Method of Measurement:

(1) Inject a 1 kc/s signal into 'A' radio socket and adjust the input to give 1 watt output from a LF15 amplifier.

(2) Turn the **Balance** control fully anti-clockwise; the output should fall 10 dB.
Repeat the test injecting the signal into the ' B ' radio socket.

Turn the **Balance** control fully clockwise; the output should fall by 10 dB.
Limit ±2·0 dB.

Cross-Talk

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Tone** and **Balance** controls at mid-position.

(3) **System** switch to **Stereo.**

Method of Measurement:

(1) Inject an A.F. signal at frequencies of 250 c/s, 1 k/cs and 10 kc/s into the 'A' sockets of **Radio** or **Pick-up** and **Tape** inputs.

(2) Adjust the input to give 1 watt output from a LF15 amplifier. Measure the output from a LF16 amplifier.

(3) Break-through should be better than —30 dB on all inputs.

(4) Repeat tests injecting A.F. signals into channel ' B ' sockets and measure the output on a LF15 amplifier.

Hum and Noise

Conditions of Measurement:

(1) **Volume** control at maximum.

(2) **Tone** and **Balance** controls at mid-position.

(3) **System** switch to **Stereo.**

Method of Measurement:

With all inputs disconnected, measure the output on both channels using LF15 and LF16 amplifiers with a 15 ohm non-inductive load.

Radio: Better than –55 dB below 10 watts.

Tape: Better than —50 dB below 10 watts.

Gram: Better than –55 dB below 10 watts.

LF15 POWER AMPLIFIER

GENERAL DESCRIPTION

The LF15 is a high quality 10 watt amplifier designed for monaural reproduction and is controlled by the TC16 pre-amplifier.

On Berkeley RG16/SA models the LF15 provides power to the pre-amplifier radio tuner unit, gramophone motor and 6·3V for gramophone compartment illumination.

On RG16ST models the LF15 also supplies mains power to the second channel amplifier LF16.

All voltage outlets are clearly marked on the chassis plate.

CIRCUIT DESCRIPTION

The A.F. input from the pre-amplifier is fed via input socket SK.1 to the grid of V1, a double triode, operating as a self-balancing paraphase amplifier, which provides push-pull output to the grids of a pair of EL84 power pentodes, connected for ultra-linear operation. Independent cathode biasing is employed for best results.

Overall negative feedback is fed from the secondary of the output transformer to the cathode of the first triode input stage. The output transformer secondary winding is tapped at 15 and 3·75 ohms for speaker matching. Full-wave rectification is employed, the H.T. being resistance-capacity smoothed; the tuner and pre-amplifier power supplies are independently filtered and fed to their appropriate output sockets.

AUXILIARY POWER OUTLETS

Mains
A 3-pin mains socket for gramophone or tape deck operation.

Lamps
A 3-pin socket providing 6·3V at 0·6A.

Pre-Amplifier
An 8-pin octal socket. Outputs are clearly marked on amplifier chassis plate. The 6·3V heater supply is balanced to earth.

Tuner Unit
A 5-pin socket. Outputs are clearly marked on the chassis plate. The 6·3V heater supply is not connected to earth.

Fuses

Double-pole mains fuses (1·5 amp) and an H.T. fuse (250 mA) are fitted. When the LF15 is being used in conjunction with the LF16, the 1·5 amp Mains fuses should be replaced by 3·0 amp fuses. These fuses are supplied with the LF16 amplifier.

Always ensure that the amplifier is completely disconnected from the mains supply before attempting to replace fuses.

TECHNICAL SPECIFICATION

Voltage Measurements:	Refer to circuit diagram.
Power Output:	10 watts.
Frequency Response:	From 15-30,000 c/s response is flat within 1·0 dB referred to 1,000 c/s (measured at 5 watts output).
Circuit Input Impedance:	500K ohms.
Sensitivity:	10 watts output for 1 volt input.
Hum and Noise:	80 dB below 10 watts.
Mains Supply:	200-250 volts A.C. 40-80 c/s.
Power Consumption:	85 watts.
Valves:	1×ECC83. 2×EL84. 1×EZ81.
Fuses:	Mains 2×1·5 amp uprated at 3·0 amps when the unit is used in conjunction with the LF16. H.T. 250 mA.
Dimensions (Outer Cover):	7⅜″ high, 11¾″ wide, 5½″ deep.
Weight:	16 lb. (approximately).

LF16 POWER AMPLIFIER
GENERAL DESCRIPTION

The LF16 provides second channel amplification for RG16ST models. It is identical to the LF15 in all respects except that it has no auxiliary power outlets. This unit receives its mains supply via the LF15 amplifier.

Refer to circuit diagram for voltage readings.

A.M./F.M. TUNER UNIT TYPE T10A
GENERAL DESCRIPTION

The Dynatron T10A 'Ether Pathfinder' is a high quality A.M./F.M. waveband, 9-valve tuner unit.

The waveband switch selects long, medium, two short wavebands, and a V.H.F./F.M. band. The tuning of stations is facilitated by means of a visual indicator.

The T10A incorporates a variable selectivity control which can be adjusted to give a narrow bandwidth when receiving distant stations thus reducing interference to a minimum. The selectivity control operates on the A.M. wavebands only.

CIRCUIT DESCRIPTION

A.M. Radio

Input to the tuner unit is via aerial socket SK1 and thence to the grid of the R.F. Amplifier V1, via one of the tuned R.F. transformers L1-L4, selected by the waveband switch. The transformers are tuned to the required frequency by one section (CV1) of a three-ganged tuning condenser.

The amplified signal from V1 is then fed to the grid of V2, the frequency changer, via R.F. transformers L5-L8, the waveband switch and section CV2 of the tuning condenser.

The triode section of V2 operates as the local oscillator with tuned transformers L9-L12, waveband switch and section CV3 of the tuning condenser forming the anode circuit.

The I.F. output at 473 kc/s from V2 is fed via the A.M./F.M. switch and transformer IFT1 to the first I.F. amplifier V3. The output from V3 is fed from transformer IFT2 to the grid of the second R.F. amplifier V4.

Selectivity switch S2 enables the mutual inductance coupling of transformers IFT1 and IFT2 to be selected in four pre-determined steps.

The output from the anode of V4 is fed via transformer IFT3 to V6, the first section of which functions as a detector.

The audio signal developed across R31 and R32 passes via a frequency compensating network and the A.M./F.M. section of the waveband switch SW1/H to the audio output plug PL4. The D.C. component of the detected signal is applied as the controlling voltage to the grid of the visual tuning indicator V7.

The I.F. output from V4 is also applied to the second section of V6 where it is rectified, producing a negative D.C. voltage proportional to the strength of the received signal. This voltage is fed to the control grids of V1, V2 and V3, to provide a.g.c.

A small delay is provided for the a.g.c. diode by means of R10, R3, R4 and MR1, to prevent the operation of the a.g.c. until the received signal reaches a pre-determined level, thus maintaining the full sensitivity of the receiver for small input signals.

V.H.F./F.M. Radio

Input to the unit is via aerial socket SK2, thence to the grid of V301, an R.F. amplifier the output of which is fed to the grid of V302A, one half of which functions as an additive mixer. V302B is the local oscillator whose output is combined with the mixer stage to produce an I.F. of 10·70 Mc/s.

The I.F. signal is fed to the grid of V1, which is converted into an I.F. amplifier when the F.M. position of the wave-change switch is selected. This also couples I.F. transformers L21 and L22 to the grid of the second I.F. amplifier V2.

During F.M. operation, the triode oscillator section of V2 is rendered inoperative by the removal of its H.T. supply.

The output from the V2 is coupled via transformer IFT4 to V3 the third I.F. amplifier, whose output is applied via IFT5 to V4 the fourth I.F. amplifier and limiter stage.

The frequency modulated I.F. output of V4 is fed via IFT6 to V5, functioning as a ratio detector, the audio output of which is fed to plug PL4.

In order to achieve sharp visual tuning, a negative potential, which varies in proportion with the received signal, is fed from the grid of limiter valve V5, and applied to a full-wave metal rectifier, where it combines with the D.C. output voltage of the ratio detector.

If the set is on tune, the output from the ratio detector is zero, and the voltage from the limiter grid is at its maximum negative value. Consequently the bias to the tuning indicator V7 will also be of maximum negative potential, and the tuning eye will be closed.

If the set is off-tuned either side of the carrier the ratio detector and bridge rectifier combination will produce a positive voltage. This will tend to cancel the negative voltage produced at the limiter grid, thus reducing the bias voltage on the grid of the tuning indicator, causing the 'eye' to open. This system provides a very sensitive and accurate indication of the correct tuning point.

TECHNICAL SPECIFICATION

Waveband Sensitivity

(Sensitivity measurements are taken at optimum strength for 10 dB signal-to-noise ratio).

Waveband	Metres	Frequency	Sensitivity
S.W.1	13—48	20·0—7·0 Mc/s	1·75—10 μV
S.W.2	48—160	6·0—2·0 Mc/s	3·0 —4·4 μV
M.W.	185—575	1500—600 kc/s	6·0 —4·0 μV
L.W.	800—2000	300—150 kc/s	12·0 —6·0 μV
F.M.	3·4—2·7	88—108 Mc/s	2 μV

Inputs: A.M. and F.M. 70 ohms unbalanced.

Audio Output: Approximately 0·1V R.M.S. at 30% modulation.

Selectivity: Variable—four positions giving bandwidths of Sharp 5 kc/s, Broad 1 10 kc/s, Broad 2 15 kc/s, Local 20 kc/s.

I.F.: A.M. 473 kc/s, F.M. 10·70 Mc/s.

I.F. Rejection: Greater than 50 dB.

Bandwidth: F.M. I.F. ±100 kc/s.
Discriminator ±175 kc/s.

Power Consumption: 250—300V at 50 mA.

Valves:
3×EF89— R.F. amplifier, I.F. amplifiers and limiter.
1×ECH81—A.M. mixer.
2×EB91— F.M. detector, A.M. detector and a.g.c. rectifier.
1×EF80— F.M. R.F. stage.
1×ECC85—Oscillator mixer.
1×EM80— Tuning indicator.

Lamps: Four dial lamps 6·3V at 0·3A.

Dimensions: Height 8¾", Width 14", Depth 10⅝".

Weight: 14¾ lb.

TEST SPECIFICATION

STATIC VOLTAGES

Measured with Taylor/Windsor Model 77A or Avo
H.T. 300V.

Pins	1	2	3	4	5	6	7	8	9
V1	—	—	1·1	—	—	—	280	205	—
V2	185	—	2·0	—	—	280	—	130	—
V3	—	—	6·13	—	—	—	280	250	—
V4	—	—	10	—	—	—	280	210	—
V301	—	—	—	—	—	—	210	180	—
V302	60	—	—	—	—	90	—	—	—
V7	—	—	—	—	—	—	60	—	300

Test Gear Required

Wobbulator covering 10·70 Mc/s±250 kc/s, with Crystal marker.

Wobbulator covering 473 kc/s±50 kc/s with Crystal marker.

Standard signal generator.

Valve voltmeter.

C.R.O.

I.F. Alignment—473 kc/s

(1) Connect the Wobbulator to pin 2 of V2. Set to 473 kc/s.

(2) Set waveband switch to SW2. Selectivity control to 'Sharp'.

(3) Tune receiver to a spot free from spurious responses. Connect C.R.O. at junction of R31/R32 and earth.

(4) Align the 473 kc/s I.F. transformers to display selectivity curves on the C.R.O. To obtain the correct selectivity shapes, peak all the tuned 473 kc/s circuits for maximum response or output at 473 kc/s on the sharp position. When 'broadening out' adjust the secondary coil of IFT3 to obtain a symmetrical shape.

I.F. Sensitivity

(1) Connect signal generator output between pin 2 of V2 and earth. Set wave-change switch to SW2. Gang closed.

(2) Connect output meter (V/V) across tuner output, PL4. Adjust the input to produce an output level of 0·5V.

SW2		M.W.	
1. 5 kc/s	2·5 mV	1. 5 kc/s	10·0 mV
2. 10 kc/s	1·0 mV	2. 10 kc/s	6·5 mV
3. 15 kc/s	550 μV	3. 15 kc/s	3·0 mV
4. 20 kc/s	350 μV	4. 20 kc/s	1·5 mV

(3) Turn waveband switch to M.W., check that the sensitivity is as above to give output of 0·5V.

NOTE: During alignment the waveband switch should be turned from S.W.2 to M.W.; there should be no change of symmetry or shape, only a decrease in sensitivity.

I.F. Alignment—F.M.

(1) Connect wobbulator, set to 10·70 Mc/s between pin 2 of V2 and earth. Connect oscilloscope between junction of R22/R54 and earth. Set waveband switch to F.M.

(2) Align IFT3 and IFT4 to give a band-pass curve ±100 kc/s, to −3 dB points, accurately centred about 10·70 Mc/s (beat available from 10·70 Mc/s marker).

(3) Reconnect wobbulator between pin 7 of V302A and earth. Align the I.F. transformer on the F.M. sub-unit.

Discriminator Alignment

(1) Connect a wobbulator set to 10·70 Mc/s between pin 2 of V2 and earth. Connect oscilloscope between junction of R27/C39 and earth.

(2) Align DT1 to produce an 'S' shaped response curve on oscilloscope. The shape should be straight, the positive and negative peaks being equally balanced about the base (zero) line.

(3) It is advisable to compare the I.F. response curve with that of the discriminator curve. It is then possible to ensure that the peaks of the discriminator are equally displaced from centre frequency with relation to the I.F. pass-band shape.

I.F. Sensitivity—F.M.

(1) Connect a signal generator set to 10·70 Mc/s between pin 2 of V2 and earth. Connect V/V across tuner unit output.

(2) Check that the input from the generator is not greater than 3·5 mV in order to produce an output reading of 1V.

A.M. Alignment

(1) Connect a signal generator, modulated at 30% 400 c/s to V2, pin 2. Connect V/V to tuner output plug, or use the tuning indicator and adjust as follows for maximum indication.

Band	Set	Generator Setting	Adjust
M.W.	500 m 350 m 200 m	600 kc/s 850 kc/s 1500 kc/s	CP10/11 L10 Repeat CP13 Repeat
L.W.	2000 m 1500 m 800 m	150 kc/s 200 kc/s 375 kc/s	CP9 L9 Repeat CP12 Repeat
S.W.2	150 m 50 m	2 Mc/s 6 Mc/s	L11 CP14 Repeat
S.W.1	7·0 Mc/s 20·0 Mc/s	7·0 Mc/s 20·0 Mc/s	L12 CP15 Repeat

R.F. Alignment

(1) Connect a signal generator, modulated 30% at 400 c/s, via a dummy aerial to the A.M. aerial socket SK1.

(2) Connect V/V to tuner output plug, or use tuning indicator, and adjust as follows for maximum indication.

Band	Set	Generator Setting	Adjust
L.W.	2000 m 800 m	600 kc/s 375 kc/s	L5 L1 CP5 CP1 Repeat
L.W.	500 m 200 m	600 kc/s 1500 kc/s	L6 L2 CP6 CP2 Repeat
S.W.2	150 m 50 m	2 Mc/s 6 Mc/s	L7 L3 CP7 CP3 Repeat
S.W.1	7·0 Mc/s 20·0 Mc/s	7·0 Mc/s 20·0 Mc/s	L8 L4 CP8 CP4 Repeat

Overall Sensitivity—A.M.

(1) Using a dummy aerial inject an R.F. signal of 1 Mc/s modulated 30% at 400 c/s via the A.M. aerial socket. Connect a V/V across the tuner unit output plug.

(2) Set selectivity switch to 10 kc/s a.v.c. to be left in circuit. The audio output should be greater than 250 mV.

Overall Sensitivity—F.M.

(1) Inject a generator output into the F.M. aerial socket. Connect V/V across R54. The C.W. input to produce 1 volt across R54 should not be greater than:

Frequency	Input
100 Mc/s	20 μV
90 Mc/s	25 μV

V.H.F. Tuner Unit—FE2

Owing to the special equipment required for alignment purposes it is advisable to return this unit to the Dynatron Service Dept. for re-alignment.

MODIFICATIONS RECORD

Mod. 1

Incorporated April 1958 to prevent oscillator instability at the H.F. end of the S.W.1 range. Add R57 15 ohm watt 10% between junction L13, R50, C9 and contact on wave-change switch.

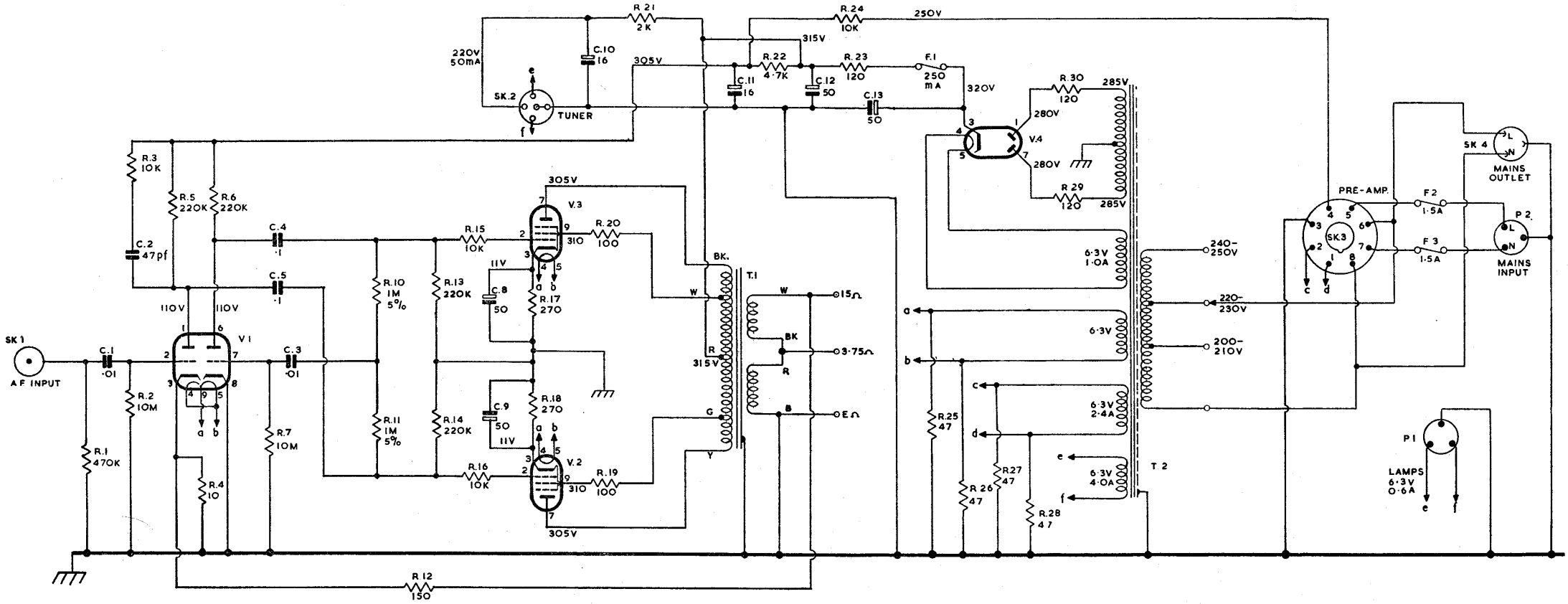
Mod. 2

Incorporated March 1959 to eliminate sparking at waveband switch contacts when changing from A.M. to F.M.

(1) Disconnect C72 from junction of R38 and waveband switch contacts.

(2) Reconnect C72 to H.T. positive line.

MODIFICATIONS RECORD

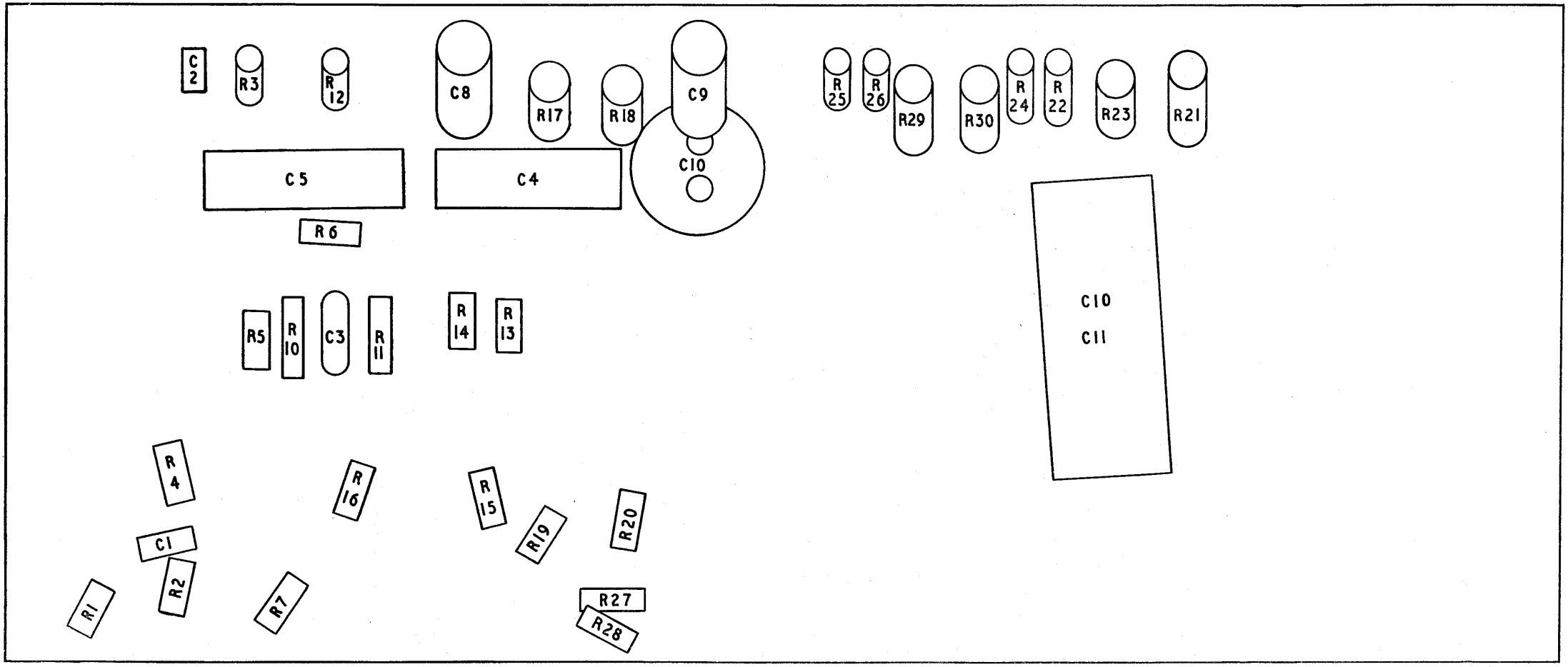


NOTE:- WHEN THE LF.16 IS POWERED FROM THIS UNIT F.2 AND F.3 MUST BE INCREAD TO 3·0A

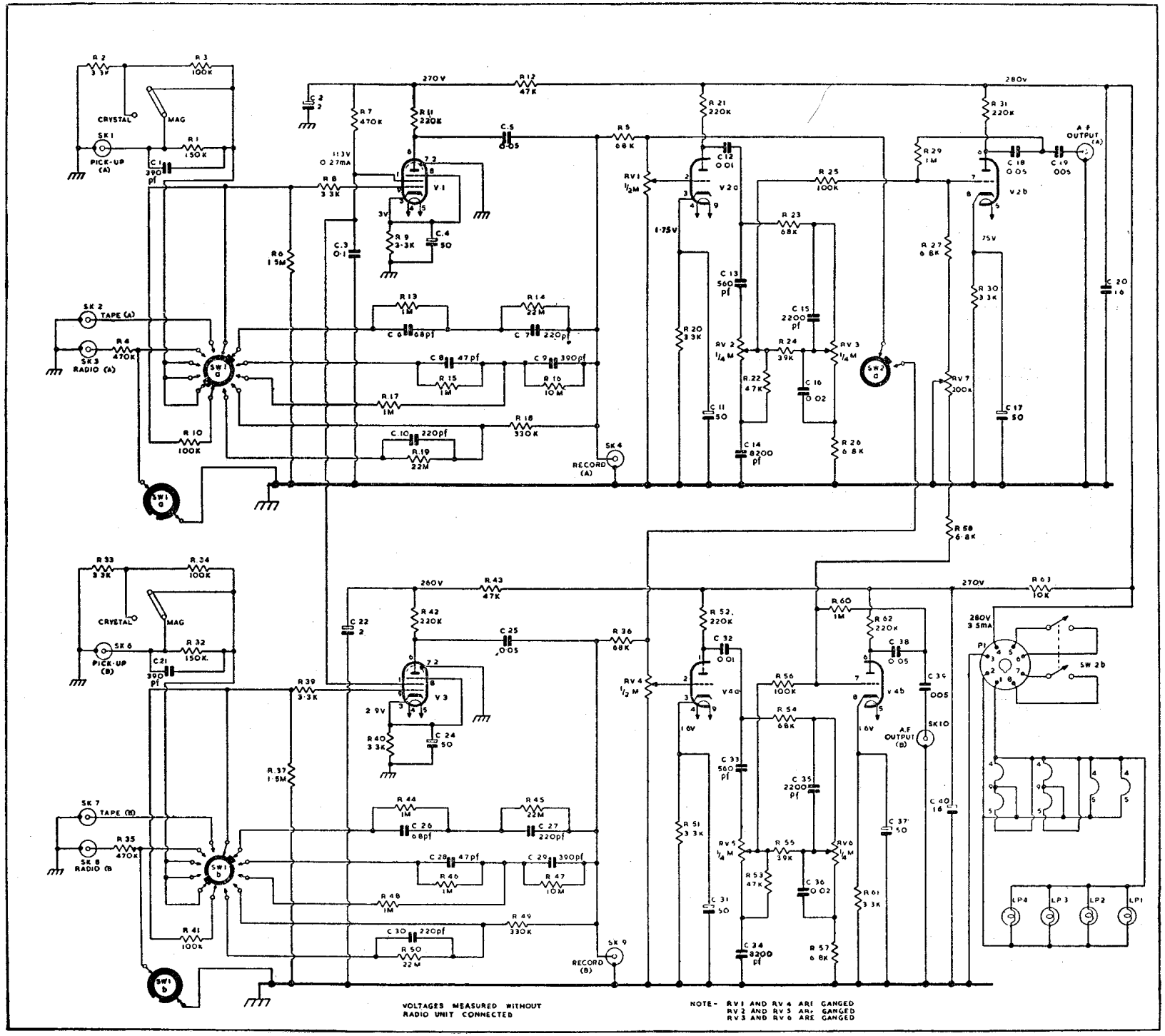
VOLTAGES MEASURED WITH AVO MODEL 7 AND FM 2 AND TC 16 CONNECTED

V1,—ECC83 V2, V3,—EL84 V4,—EZ81

LF15 Amplifier

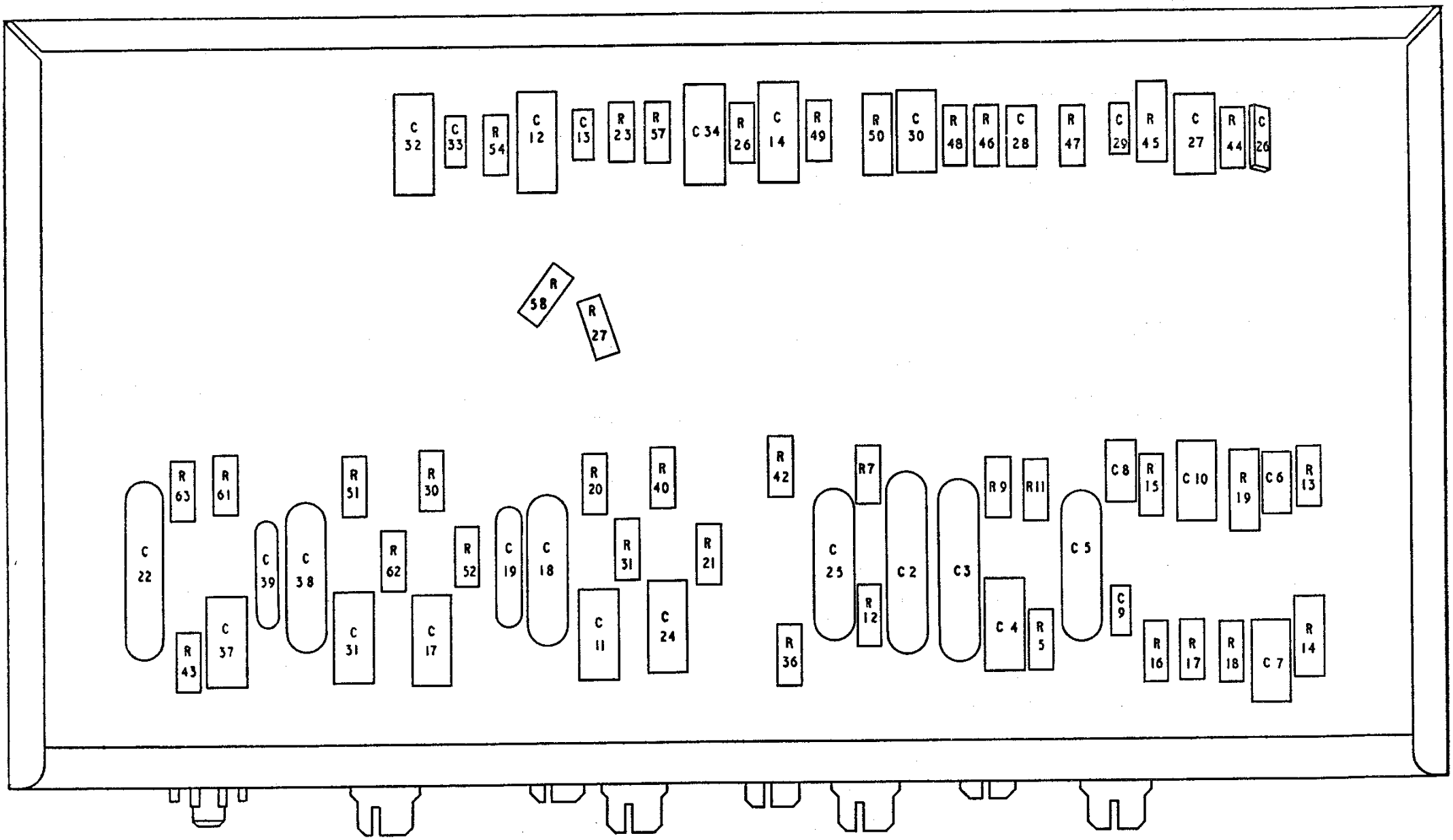


LF15—Underside View

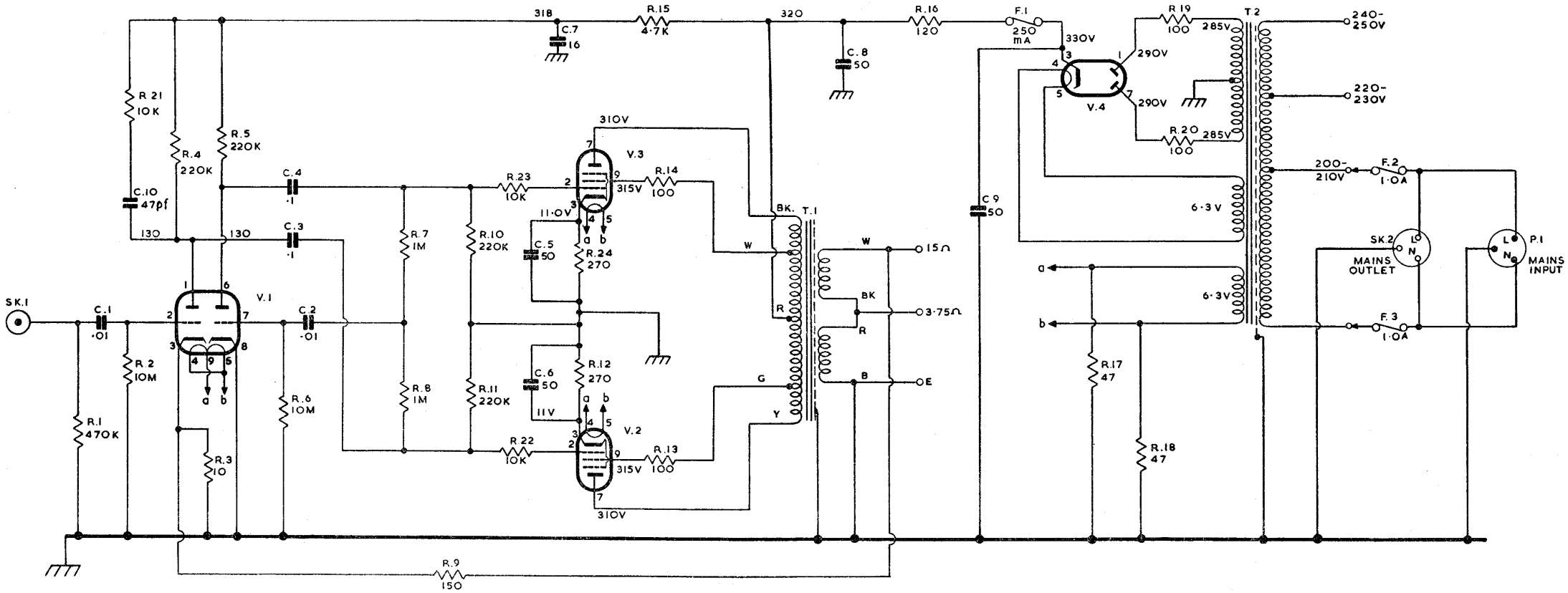


V1, V3,—EF86 V2, V4,—ECC83

TC16—Pre-amplifier and Tone Control Unit

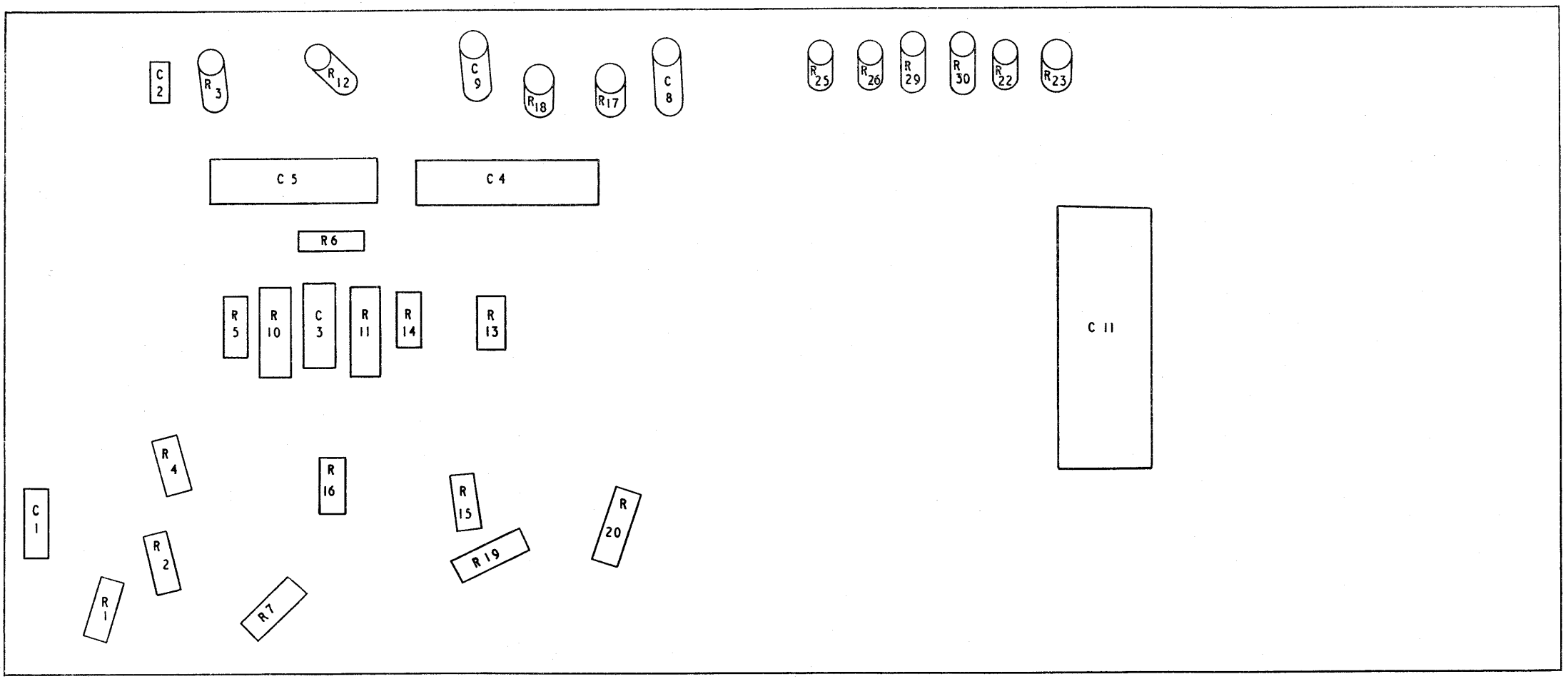


TC16—Underside View

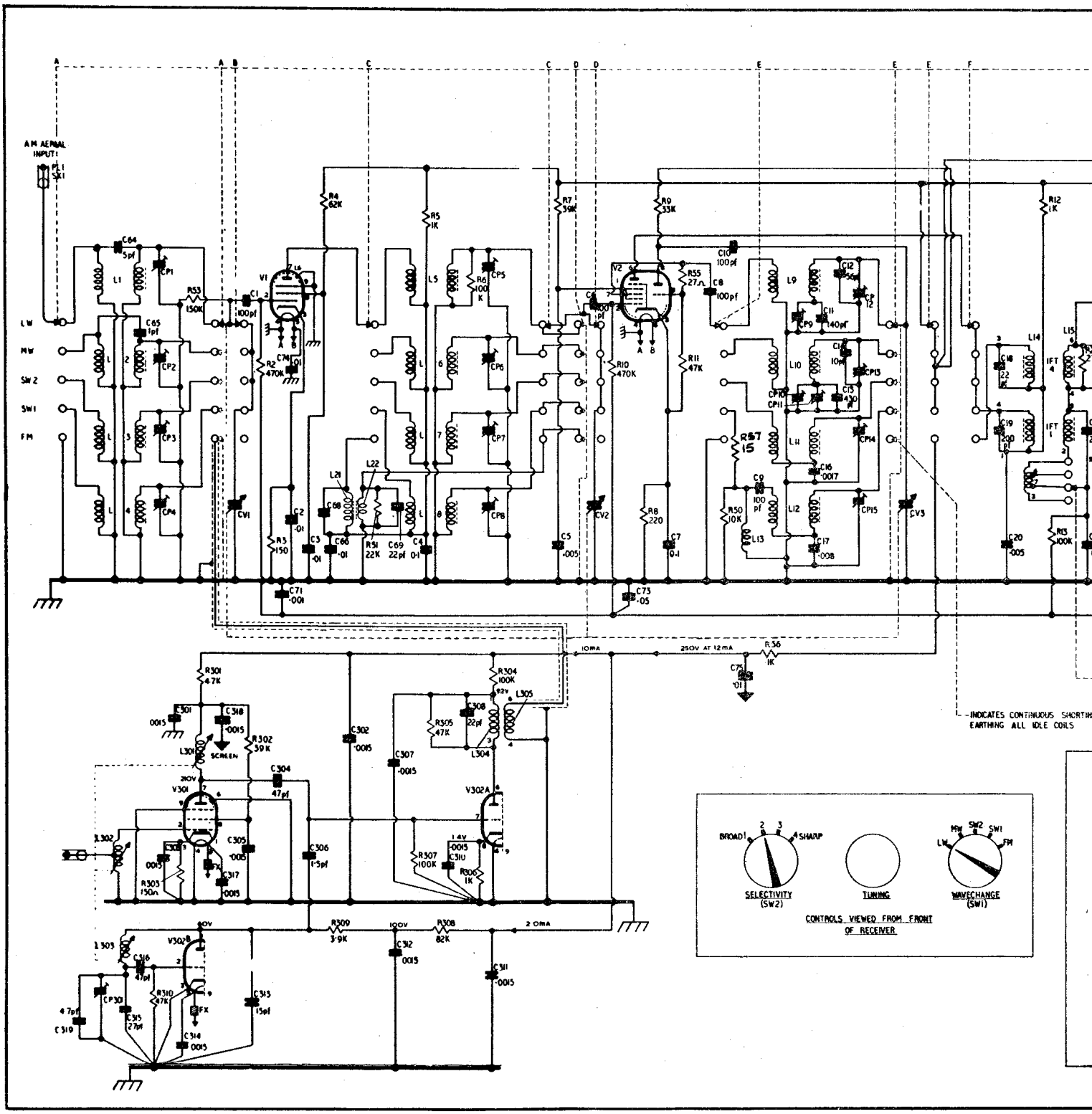


V1,—ECC83 V2, V3,—EZ84 V4,—EZ81

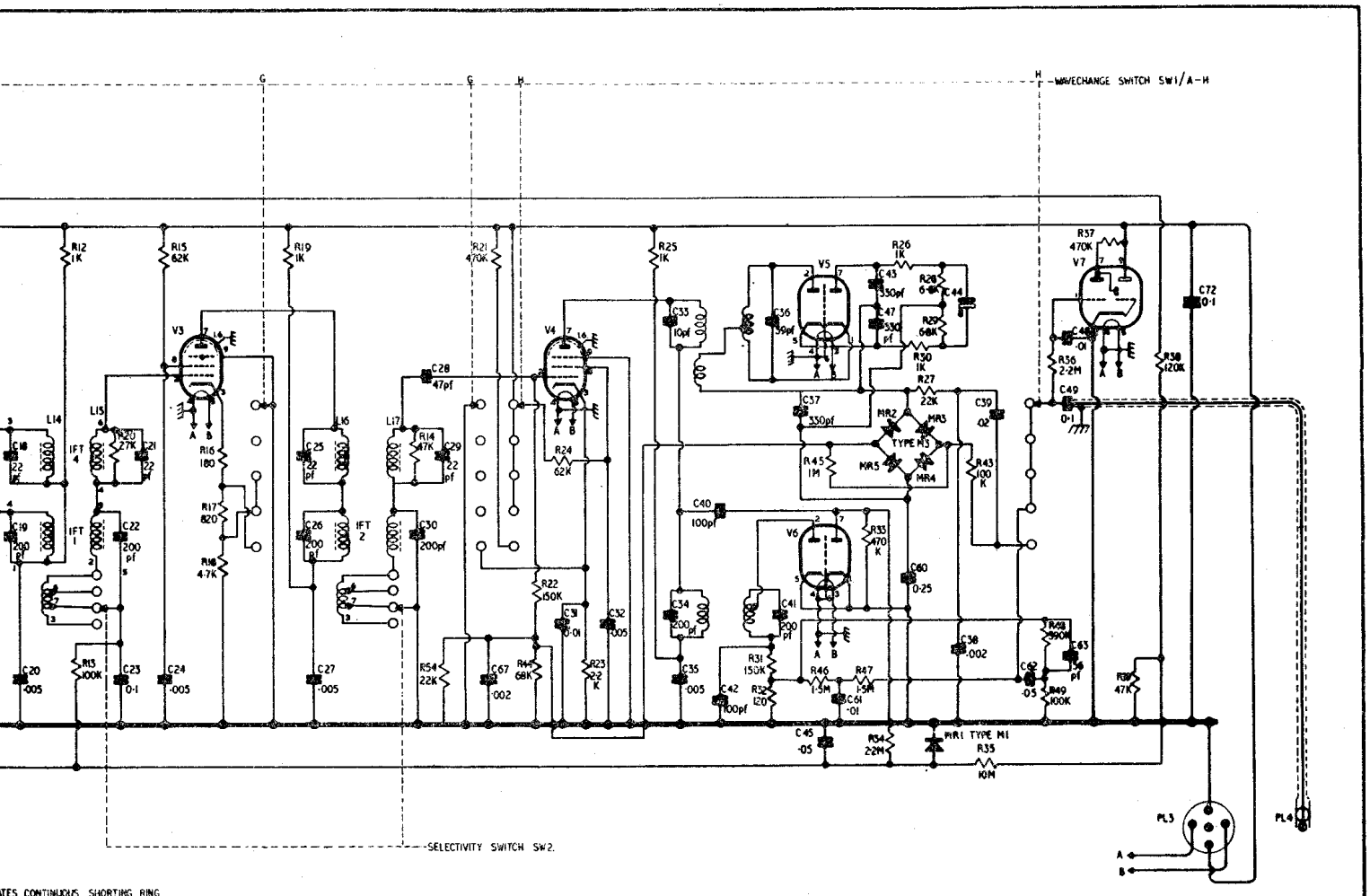
L16 Amplifier



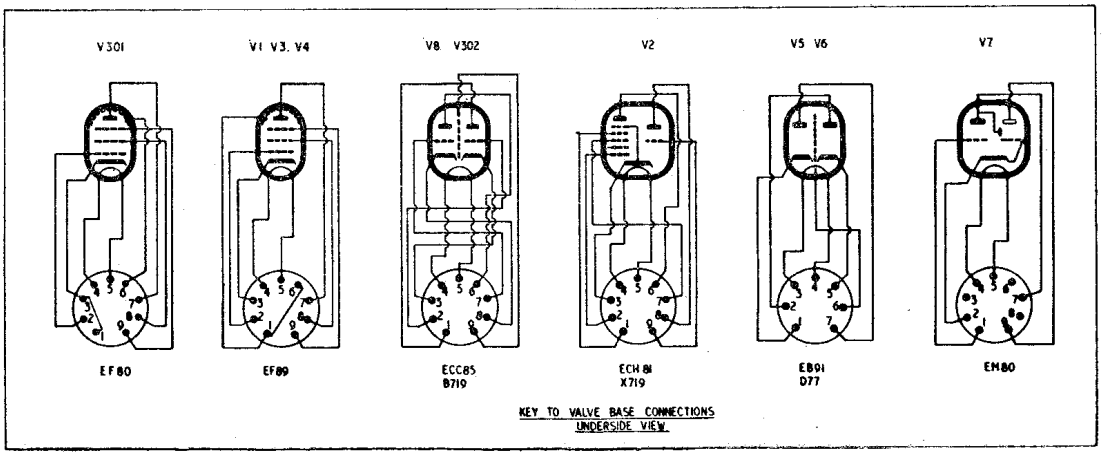
LF16—Underside View


AM AERIAL INPUT
LW
MW
SW 2
SW 1
FM
SCREEN
10MA
250V AT 12MA
INDICATES CONTINUOUS SHORTING EARTHING ALL IDLE COILS
BROAD
SHARP
SELECTIVITY (SW2)
TUNING
WAVECHANGE (SW1)
CONTROLS VIEWED FROM FRONT OF RECEIVER

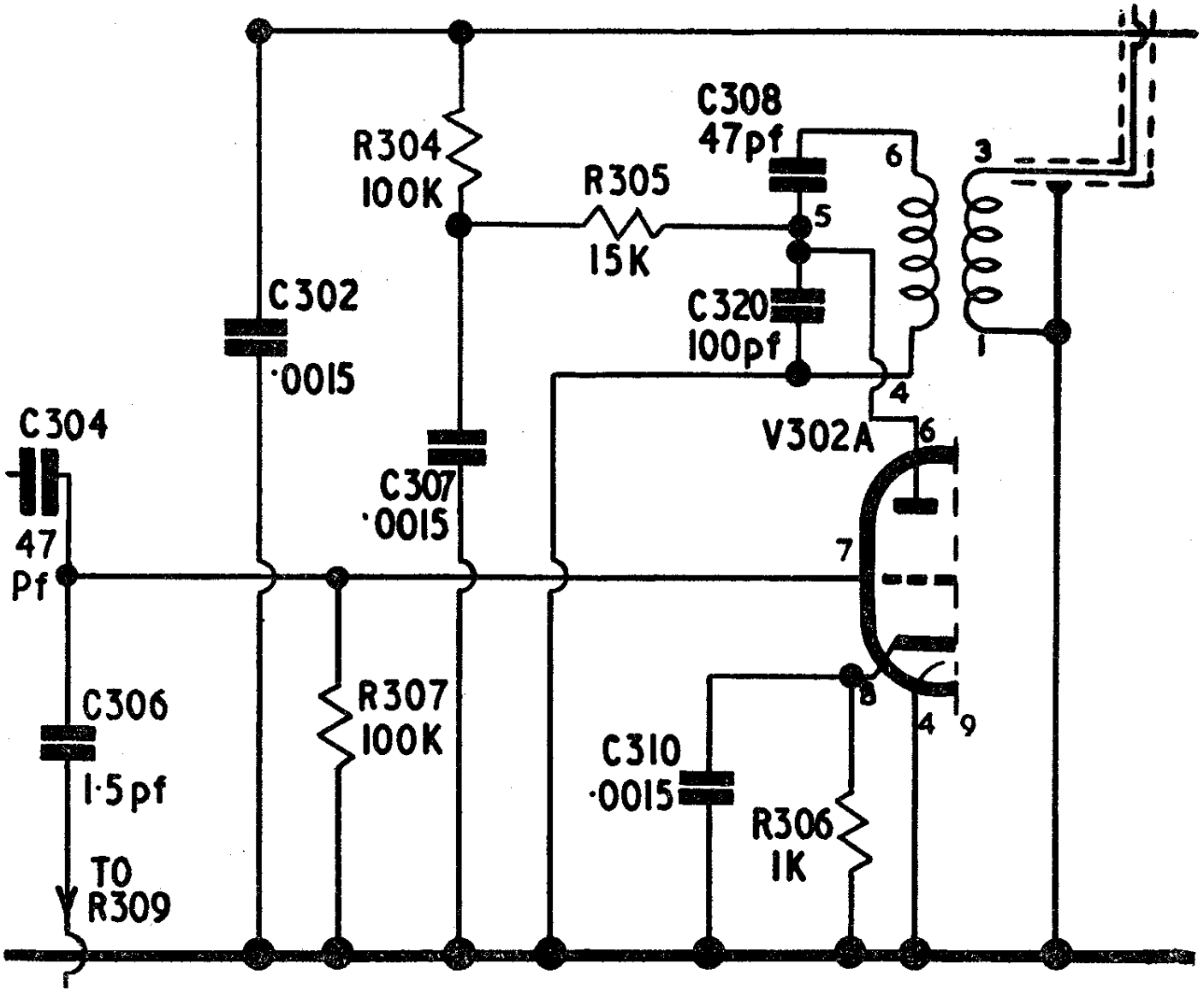
TIO A



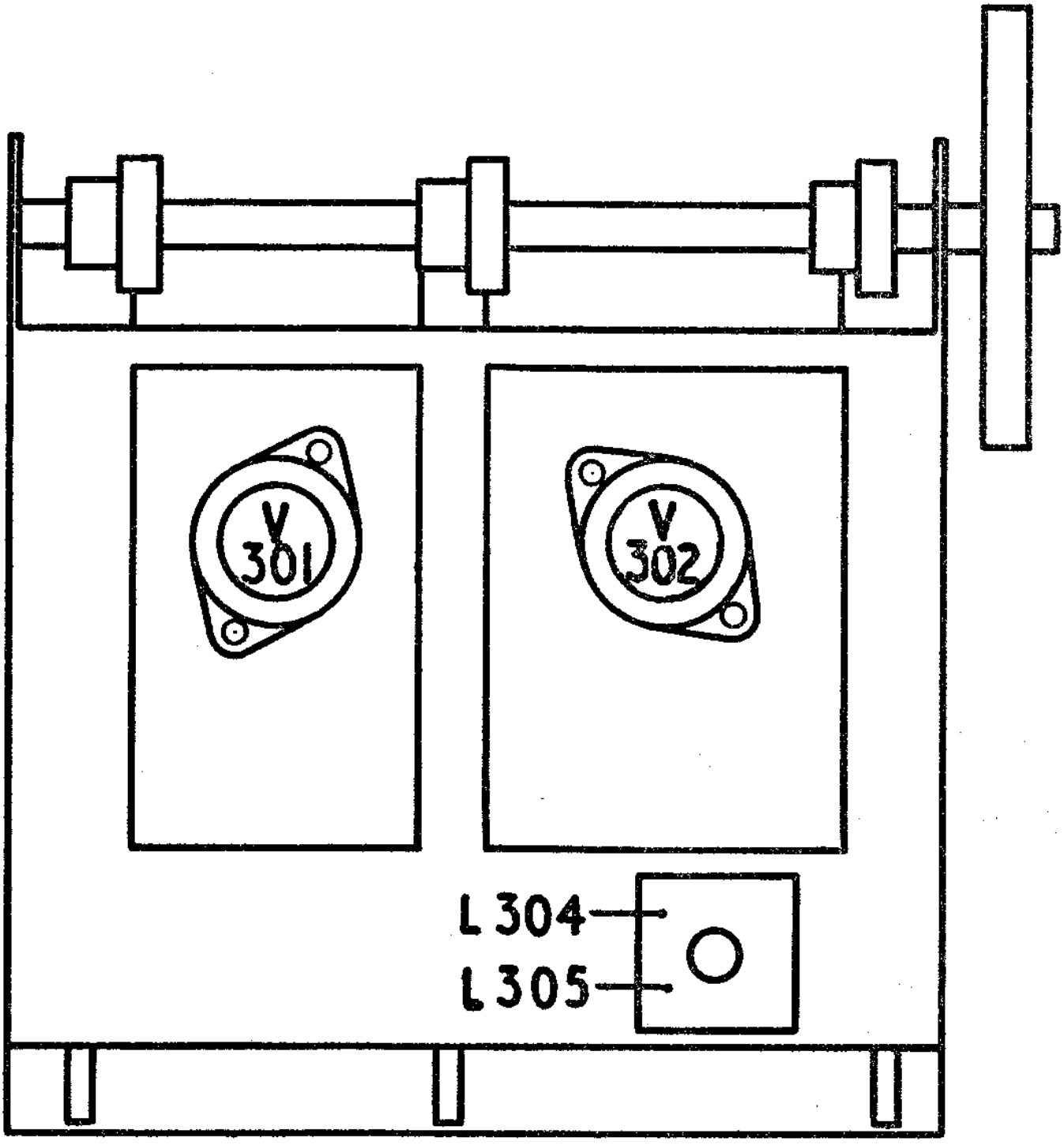
ATES CONTINUOUS SHORTING RING
ING ALL IDLE COILS



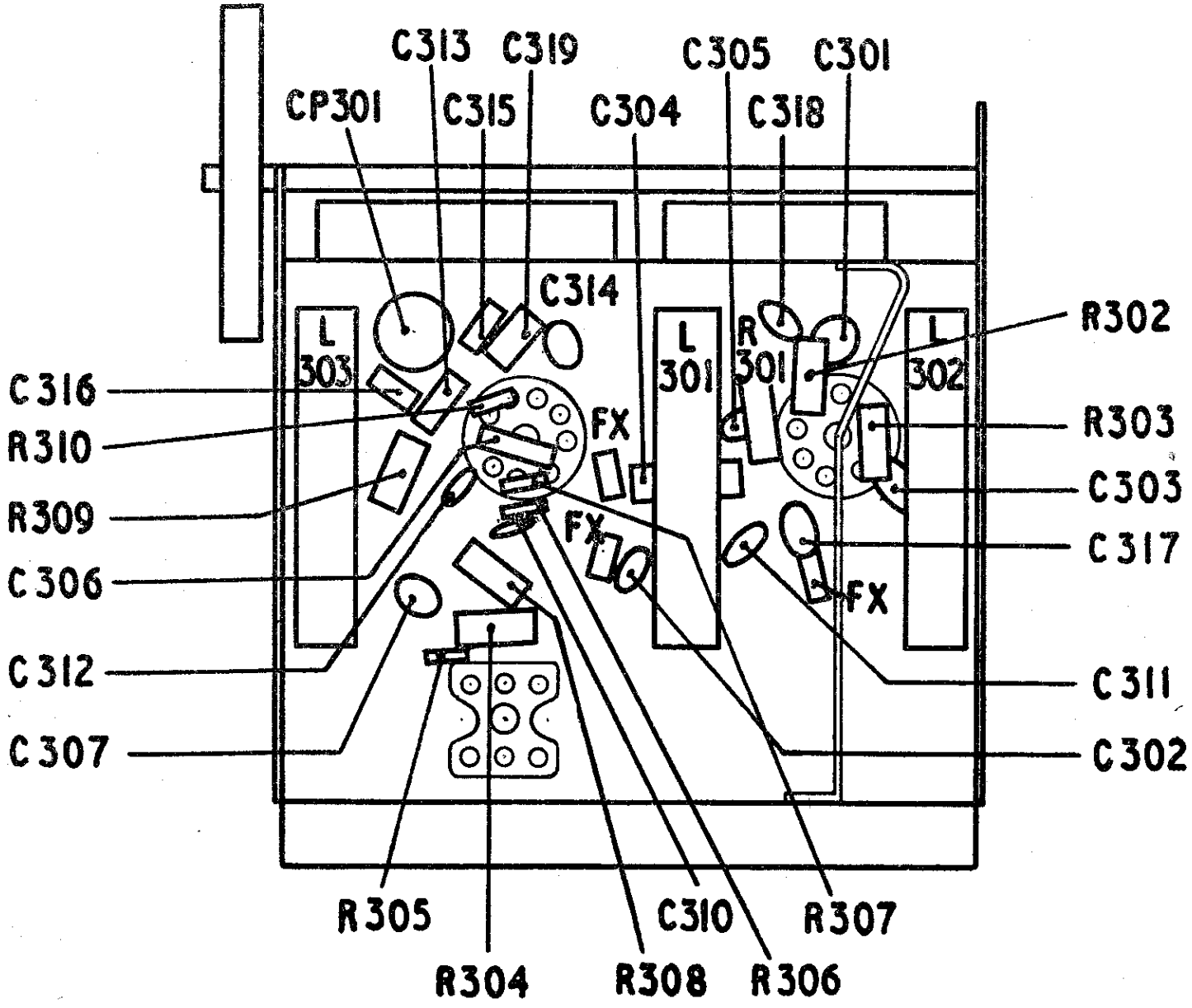
TIO A



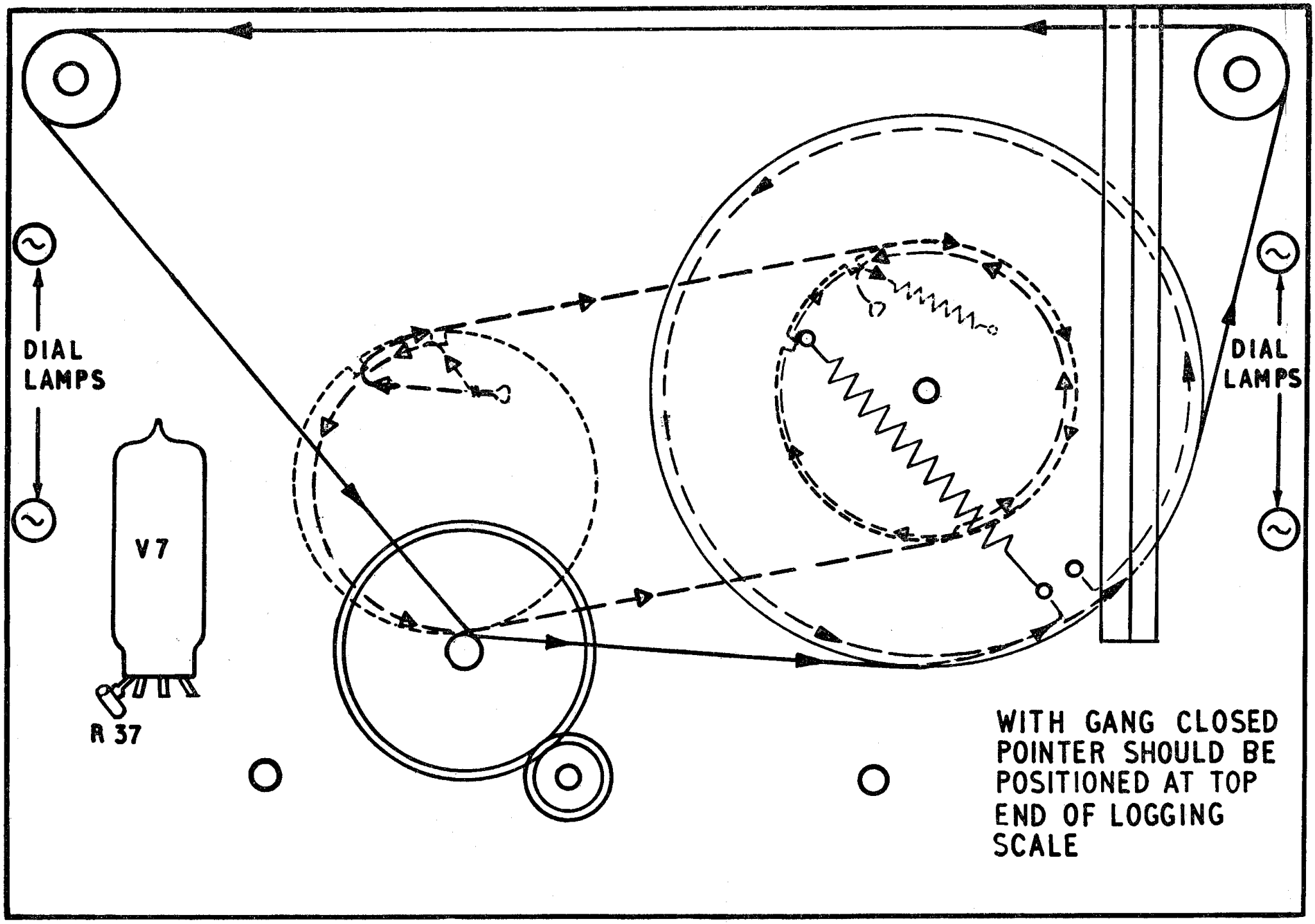
Portion of Modified Circuit of the FE2 as fitted to later T10A Units



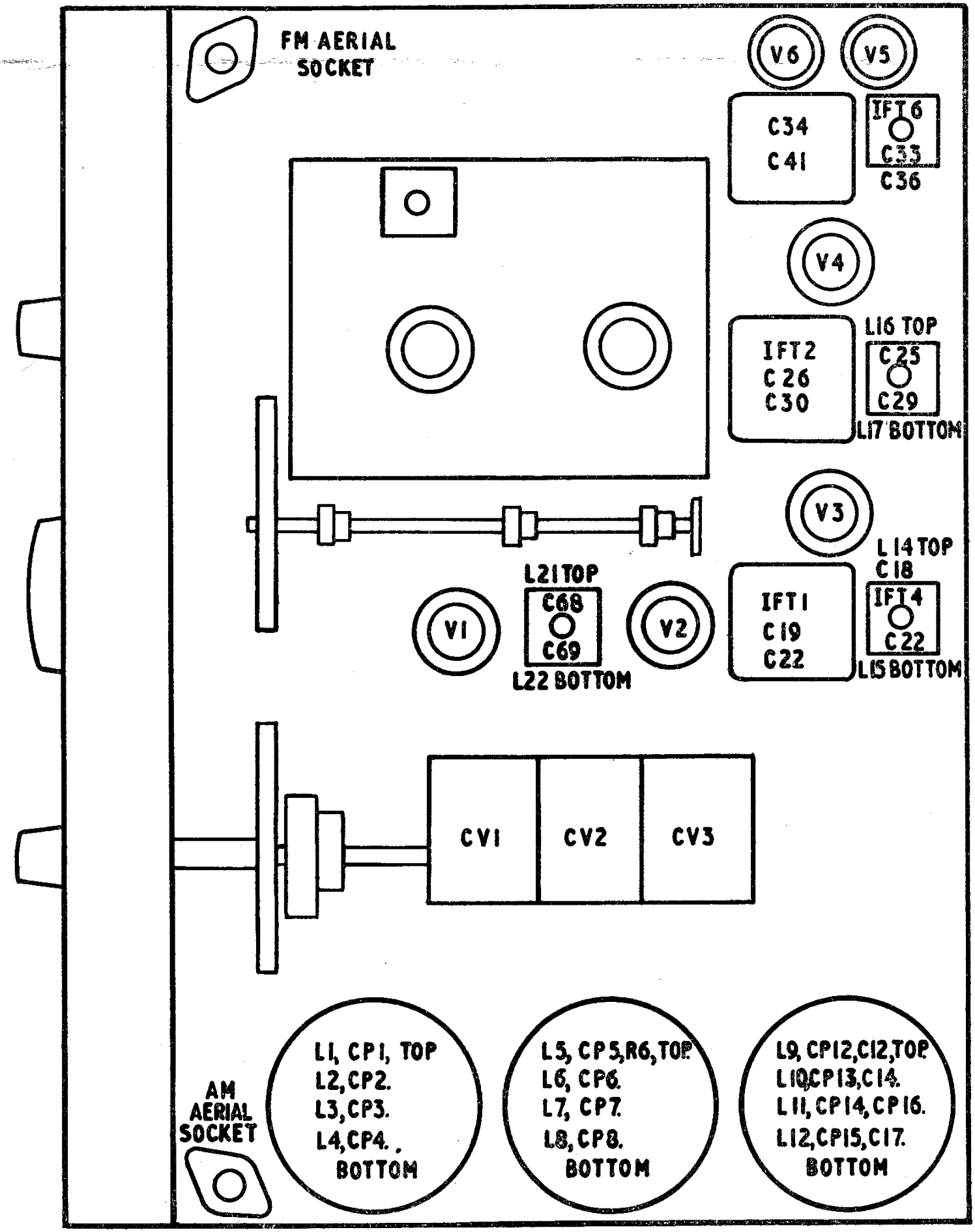
Topside View FE2



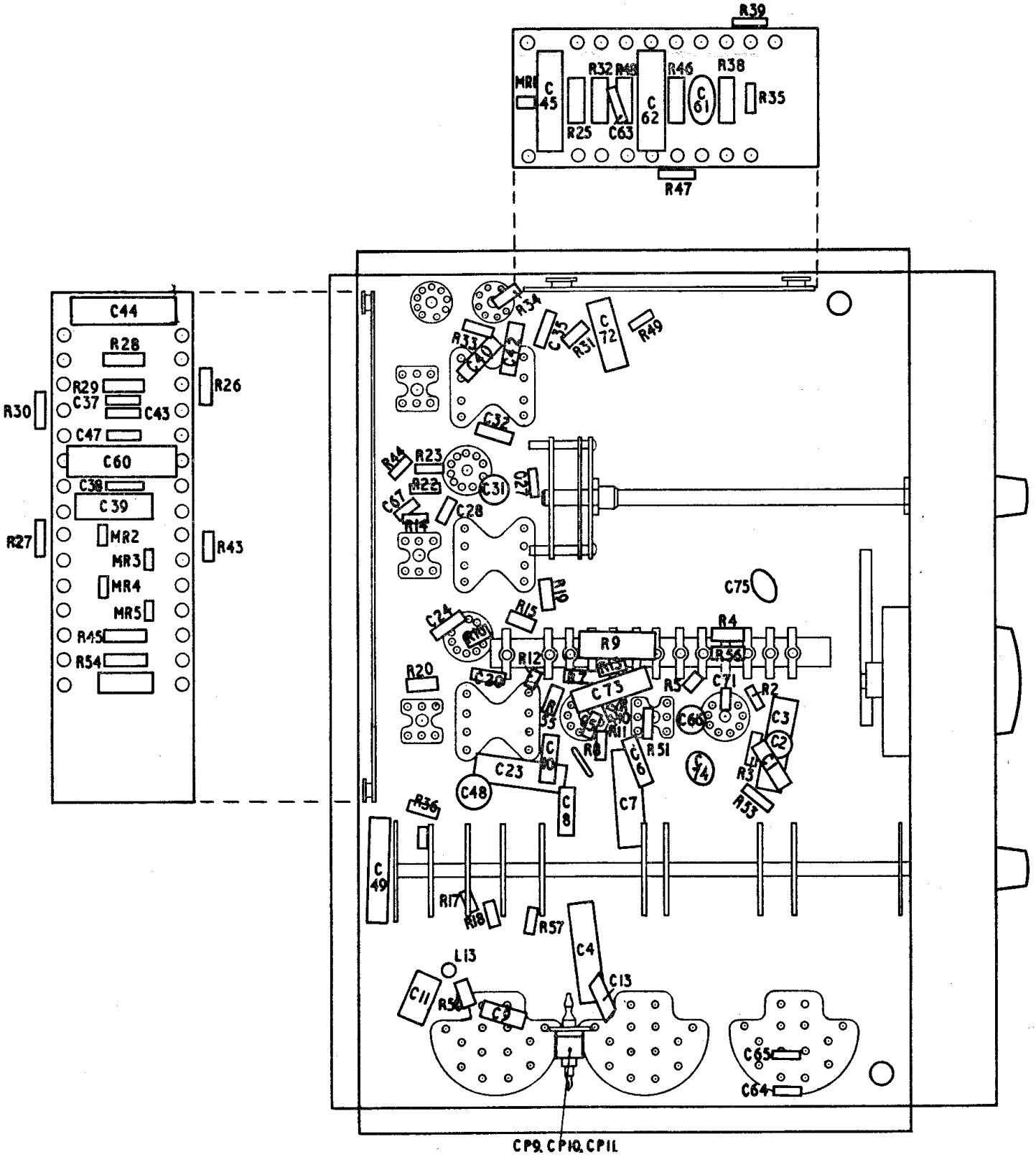
Underside View FE2



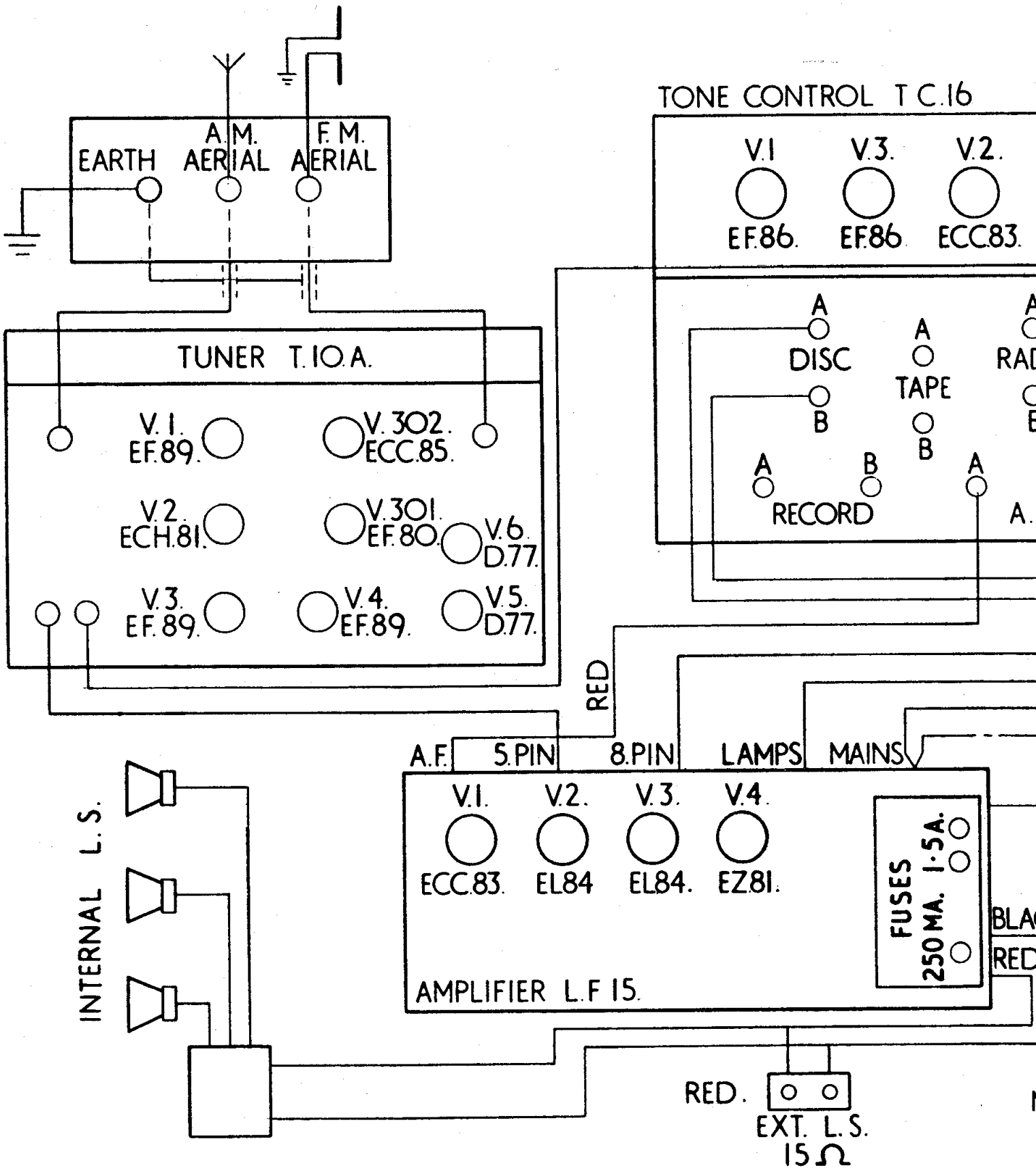
T10A—Front View showing routing of tuning drive cord.

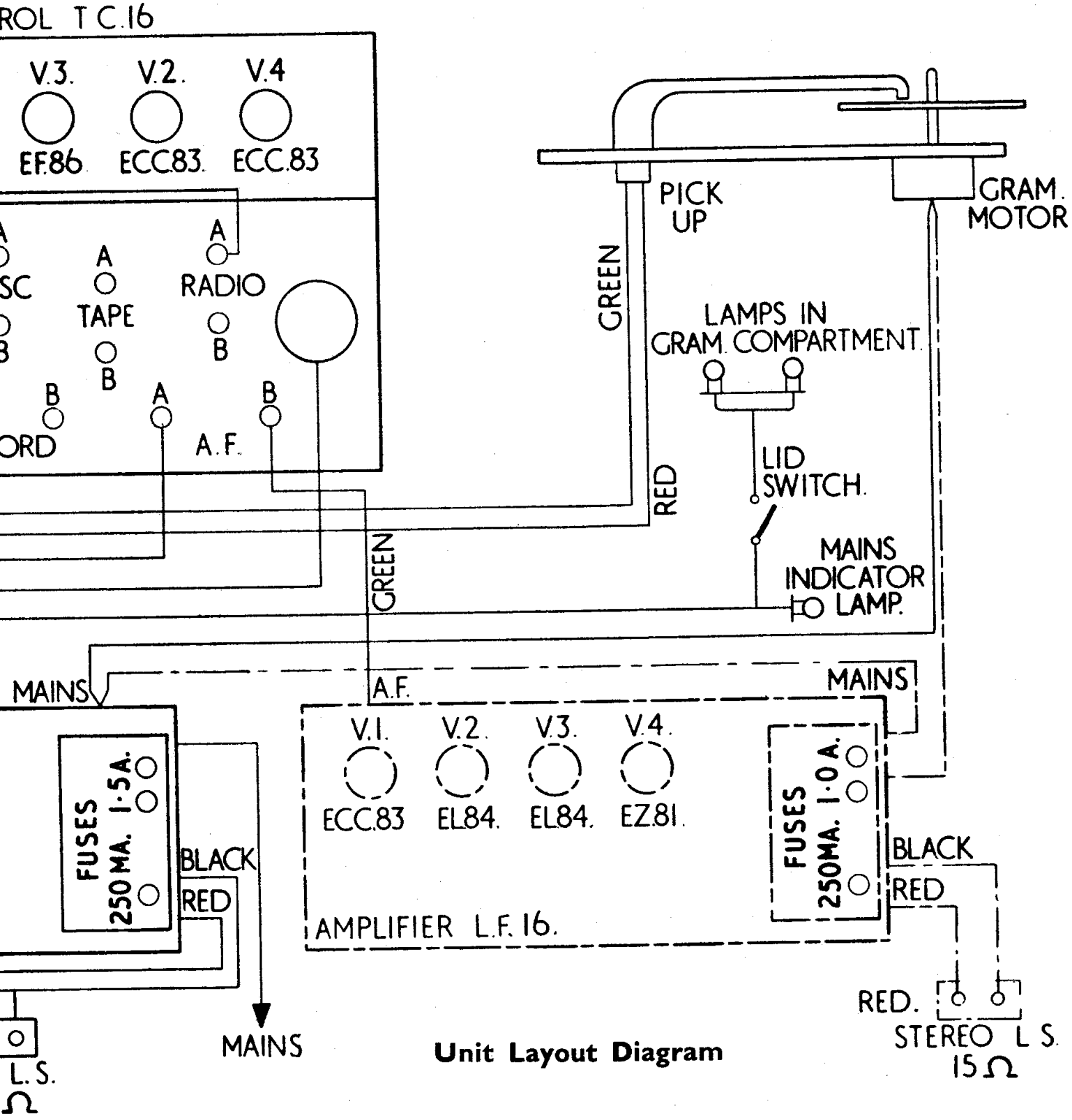


T10A—Topside View



T10A—Underside View


EARTH
A.M. AERIAL
F.M. AERIAL
TONE CONTROL T.C.16
V.1 EF.86.
V.3. EF.86
V.2. ECC.83.
TUNER T.10.A.
V.1. EF.89.
V.302. ECC.85.
V.2. ECH.81.
V.301. EF.80.
V.6. D.77.
V.3. EF.89.
V.4. EF.89.
V.5. D.77.
A DISC
A TAPE
B
B
A B RECORD
A
RED
A.F.
5.PIN
8.PIN
LAMPS
MAINS
V.1. ECC.83.
V.2. EL84
V.3. EL84.
V.4. EZ.81.
FUSES 250 MA. 1·5A.
AMPLIFIER L.F 15.
INTERNAL L.S.
RED.
EXT. L.S. 15Ω



Unit Layout Diagram