



DYNATRON

RADIO SERVICE MANUAL

MODELS TP38 and TP39

April 1968

'ELAN' MODELS TP38 and TP39

General Description

The 'Elan' Model TP38 (Model TP39 in teak cabinet) is a 13 transistor battery operated portable radio receiver covering VHF, Medium and Long Wavebands.

A telescopic aerial is provided for VHF reception and the 'Ferrite' aerial system for Medium and Long Wave reception may be switched off by push button and separate tuning circuits selected for car aerial connection. An external aerial may also be attached for VHF reception if required.

Technical Data

Batteries:

Two 9 volt batteries type PP9 are supplied with the receiver.

Aerials:

Telescopic for VHF. 'Ferrite' 8" for Medium and Long Wave. (Car aerial input for standard car aerial installation.)

Wavebands:

VHF 87-108 MHz.

Medium 185-570 metres (1620-525 kHz).

Long 1100-2000 metres (270-150 kHz).

Output:

1 watt into 25 ohms.

Loudspeaker:

7 in. x 4 in. elliptical high flux 25 ohm (18 x 10 cms.).

Tone Controls:

Bass and treble controls independent. Volume control has tone compensation.

Transistors and Diodes, etc.

VHF Tuner Unit:

TR1	AF78	R.F. Amp.
TR2	AF115	Mixer
D1	BA102	A.F.C.

10.7 MHz I.F. Unit:

TR1	BF194	I.F. Amp.
TR2	BF195	I.F. Amp.
TR3	BF 195	I.F. Amp.
D1	AA119	Detector
D2	AA119	Detector

470 kHz I.F. Unit:

TR1	AF115	Mixer/Oscillator
TR2	AF117	I.F. Amp.
TR3	AF117	I.F. Amp.
D1	OA90	Detector

Audio Amp. Unit:

TR4	NKT.275P	A.F. Amp.
TR5	NKT.775	A.F. Amp.
TR6	NKT.272A	Driver
TR7	NKT.773	Complementary
TR8	NKT.271A	Pair Output
TDR1	VA1040	Bias compensator.

Cabinet

TP38 Rexine covered. Black.

TP39 Teak veneer.

Dimensions

12 $\frac{3}{4}$ in. wide x 3 $\frac{3}{4}$ in. deep x 8 in. high (including handle)
(32 x 9.5 x 20 cms.).

Weight

4 $\frac{3}{4}$ lbs. less batteries. 6 $\frac{1}{2}$ lbs. with batteries. (2.2 and 2.9 kgs.)

Chassis Removal

1. Remove battery connectors.
2. Remove push on tags to earphone socket.
3. Remove connections to external aerial socket
4. Remove cross-head screws from each end of dial scale.
5. Withdraw complete chassis through top of cabinet.

Quiescent Current—TR7 and TR8

1. Open TR7 collector connection and insert 10 mA range meter.
2. With volume at **minimum** adjust RV2 for 4mA indication.
3. Remove meter, seal RV2 and reconnect TR7 collector.

Note: Check 'mid point' volts at TR7 emitter=9 volts (with 18 volt batteries).

Static Voltage Measurements

These voltages are shown on circuit diagram measured with Avo 8.

Alignment Procedure

A.M. Section

I.F. 470 kHz: The frequency changer and I.F. amplifiers are contained in a pre-tuned module which will not require adjustment. In the event of a component failure, including transistors, the module should be returned to Dynatron

Spares Department for replacement. When a replacement is fitted to a receiver the first I.F. transformer should be peaked for optimum gain. **Only this adjustment should be made.**

R.F. Section

Check pointer coincides with end of scale aperture when gang is closed. Align circuits as follows:—

Medium Wave using Ferrite Rod Aerial: Inject signals from generator using a coupling loop.

1. Close gang and adjust L5 to receive 525 kHz input signal.
2. Open gang and adjust C9 to receive 1630 kHz input signal.
3. Set input signal to loop at 560 kHz, tune receiver to signal and adjust L2 on rod for maximum output.
4. Set input signal to loop at 1500 kHz, tune receiver and adjust C2 for maximum output.
5. Repeat 3 and 4 for optimum.

Long Wave using Ferrite Rod Aerial

1. Switch to L.W. and tune to 1600 metres on dial.
2. Set input signal to loop at 187 kHz and tune C11 for signal.
3. Adjust L1 on Ferrite rod for maximum output.
4. Check calibration and tracking on M.W. and L.W. using known stations.

Medium Wave using Car Aerial Coils

Inject signals from generator using a dummy aerial (as shown on circuit diagram) into car aerial socket.

1. Depress 'M.W.' and 'Car' push buttons.
2. Set input signal to 560 kHz and tune to signal. Adjust L4 for maximum output.
3. Set input signal to 1500 kHz and tune to signal. Adjust C5 for maximum output.
4. Repeat 2 and 3 for optimum.

Long Wave using Car Aerial Coils

1. Switch to L.W. and feed in 187 kHz and tune to signal.
2. Adjust L3 to give maximum output.

NOTE:

M.W. trimmer C5 may need adjustment for optimum performance on a particular car aerial installation if cable capacitance is high. In this case tune a station at H.F. end of band and trim C5 for maximum signal.

VHF/FM Section

I.F. 10.7 MHz

1. Connect wobblator at 10.7 MHz to input at C1-Base TR1. Output for display is taken from junction C12 R16.
2. Adjust T3 for maximum output and set T4 for correctly centred 'S' curve.
3. Adjust T2 for maximum output, reducing input so that only a small curve is displayed to give greater accuracy in setting.
4. Adjust T1 for maximum sensitivity.
5. Repeat 2, 3 and 4 for maximum sensitivity and correctly centred 'S' curve with ± 100 kHz band width.
6. Connect wobblator to VHF aerial input and remove core from filter coil L6.
7. Adjust VHF unit I.F. cores L3 and L4 for maximum sensitivity with good 'S' curve. Note that T1 may need slight adjustment.
8. Set R.F. coil core L1 to be level with top of former and adjust R.F. trim capacitor C7 to give maximum output.
9. Insert core into filter coil L6 and adjust for minimum output.

VHF Calibration

A.F.C. Button should be 'out'.

1. Set pointer to 88 MHz and inject 88 MHz signal from Sig. generator (with 22.5 kHz deviation) into aerial socket.
2. Adjust L5 for signal.
3. Set generator to 108 MHz and tune set to H.F. end of scale. Adjust C16 for signal.
4. Repeat 2 and 3 until tracking correct.

VHF R.F. Alignment

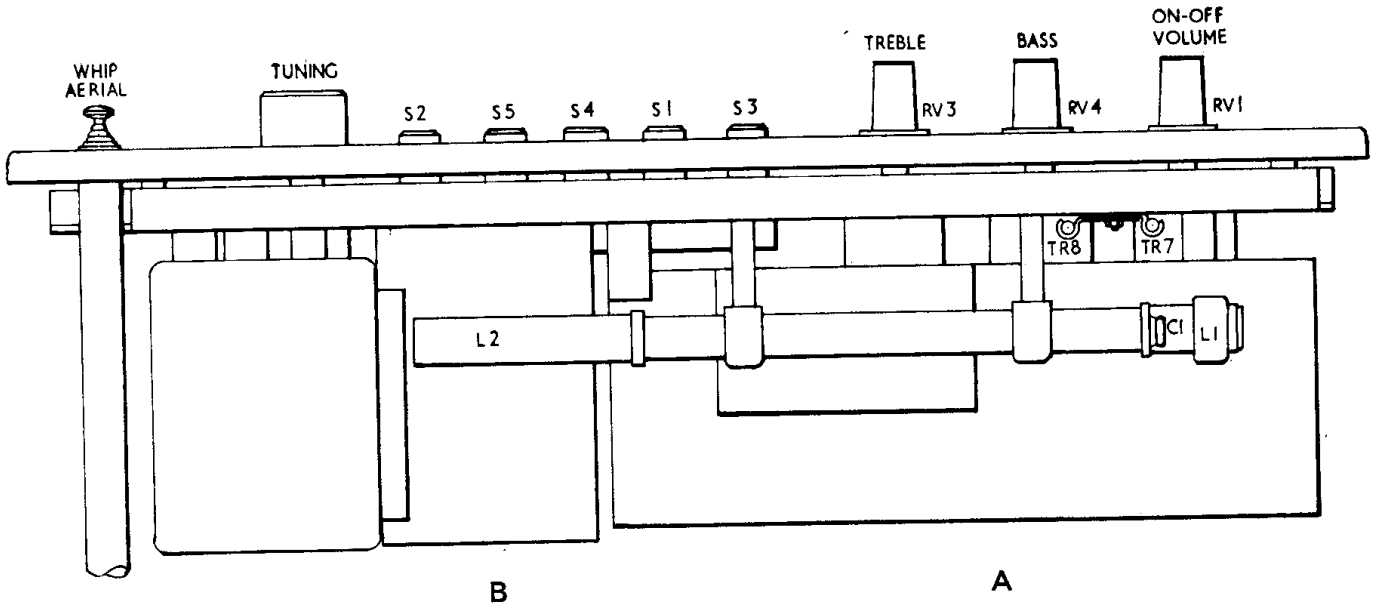
1. Set generator to 90 MHz and tune receiver to signal.
2. Connect Avo 8 (10v. DC) to gang frame and junction D1 and RV1.
3. Tune set for maximum voltage reading. Reduce input to approximately 0.75v.
4. Adjust C7 for maximum voltage reading.

A.M. Rejection

1. Use Avo connected as above as tuning indicator and tune very accurately to the signal generator. Remove Avo connections.
2. Switch generator to A.M. at 30% modulation.
3. Adjust RV1 for minimum output. Seal RV1.

A.F.C. Action

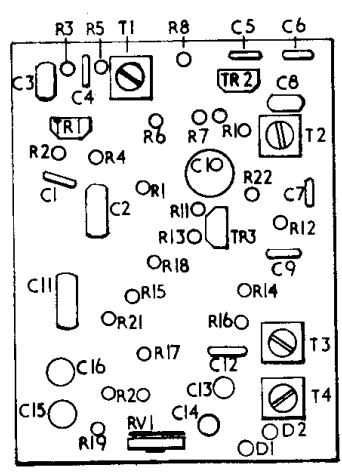
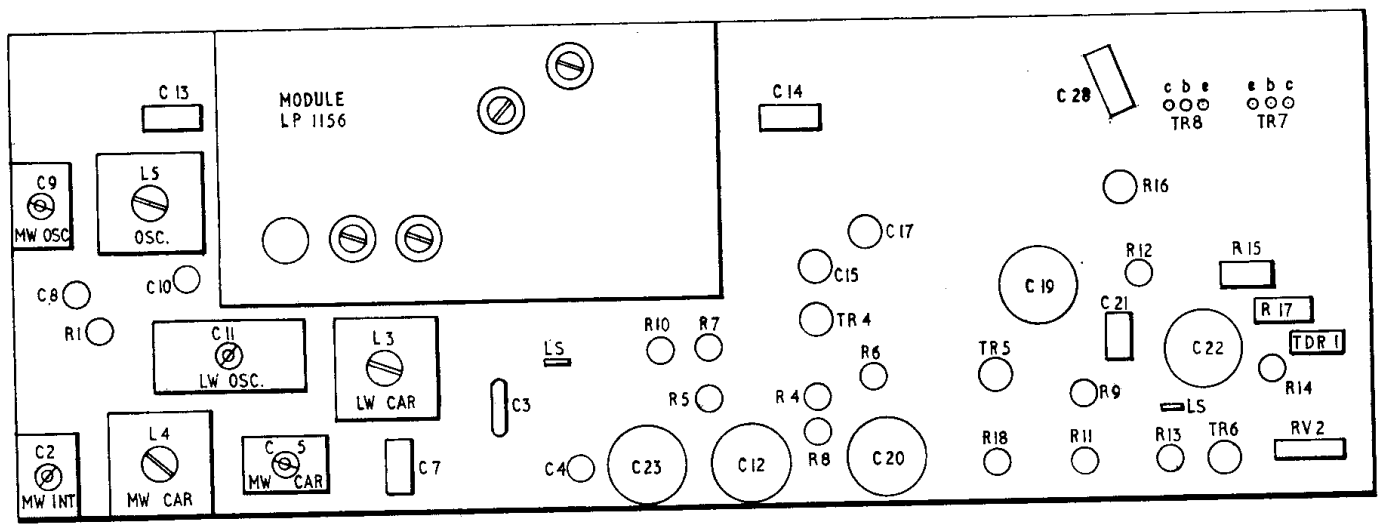
1. Reconnect Avo as indicator and tune receiver accurately. Adjust input to give 1 volt reading on Avo. A.F.C. button 'out'.
2. Detune receiver to H.F. side for Avo reading of 0.6 volt.
3. Press A.F.C. button and observe that voltage rises to 0.8v. approximately. Release button.
4. Detune receiver to L.F. side and repeat. Observe symmetry.



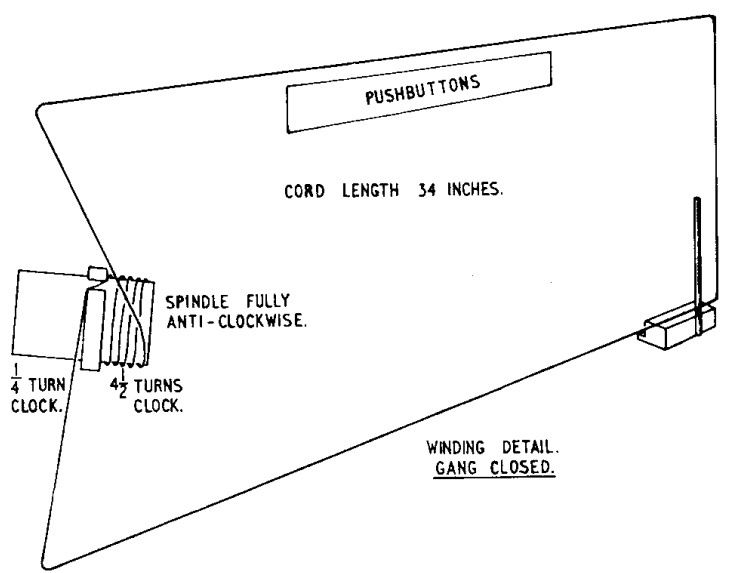
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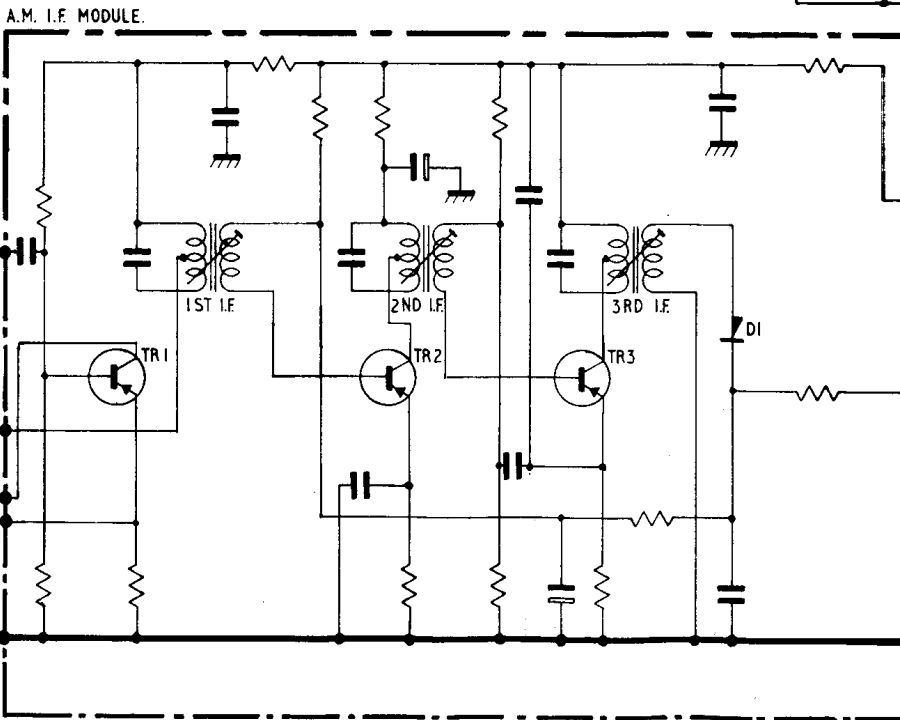
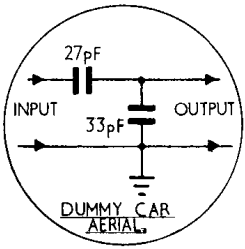
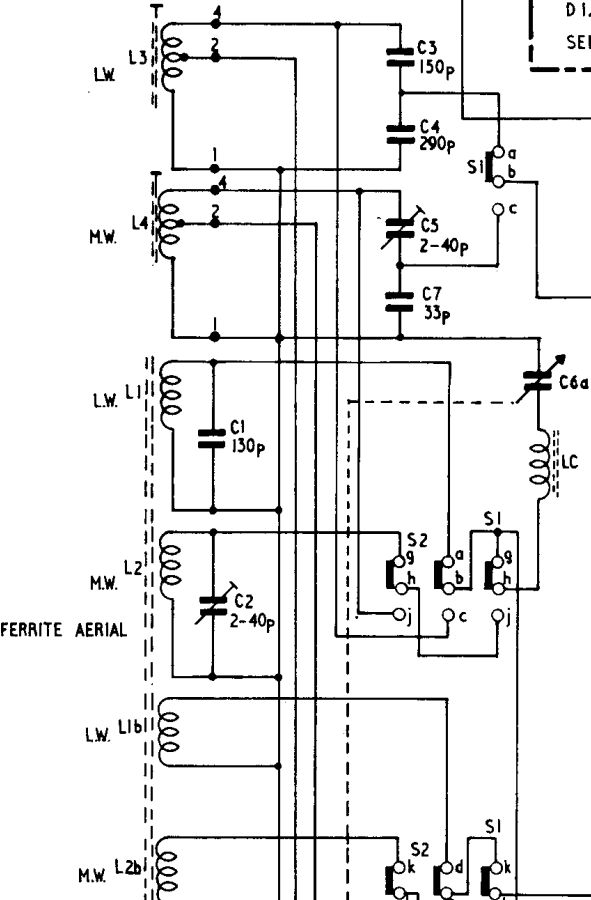
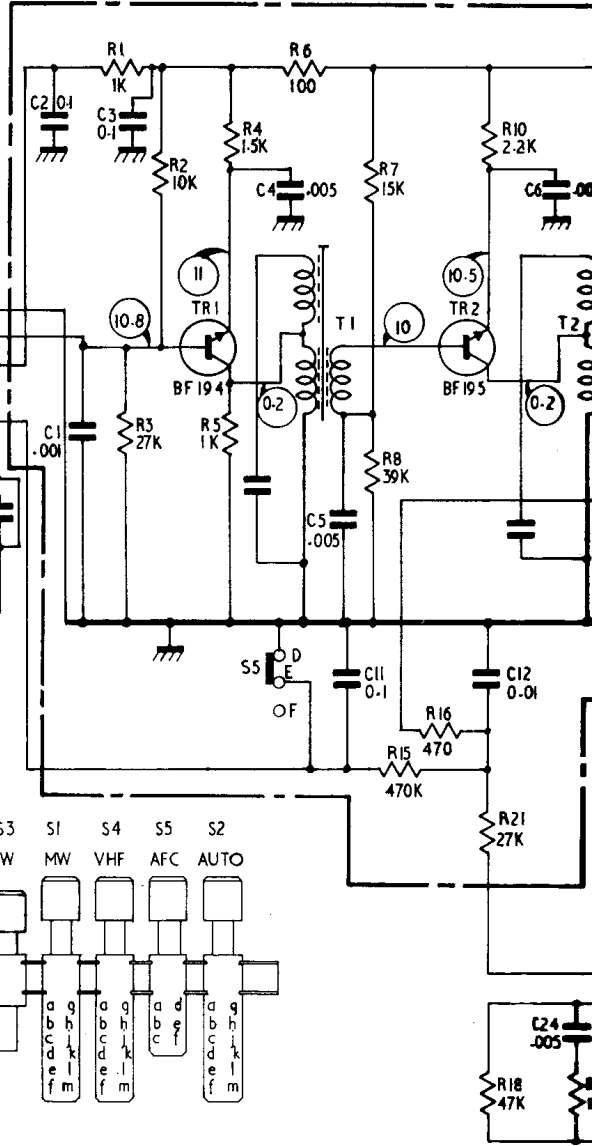
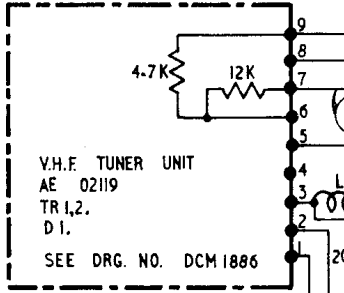
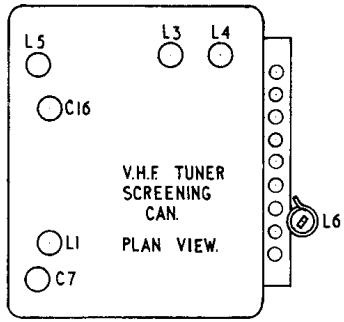
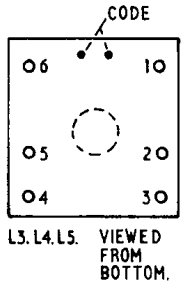
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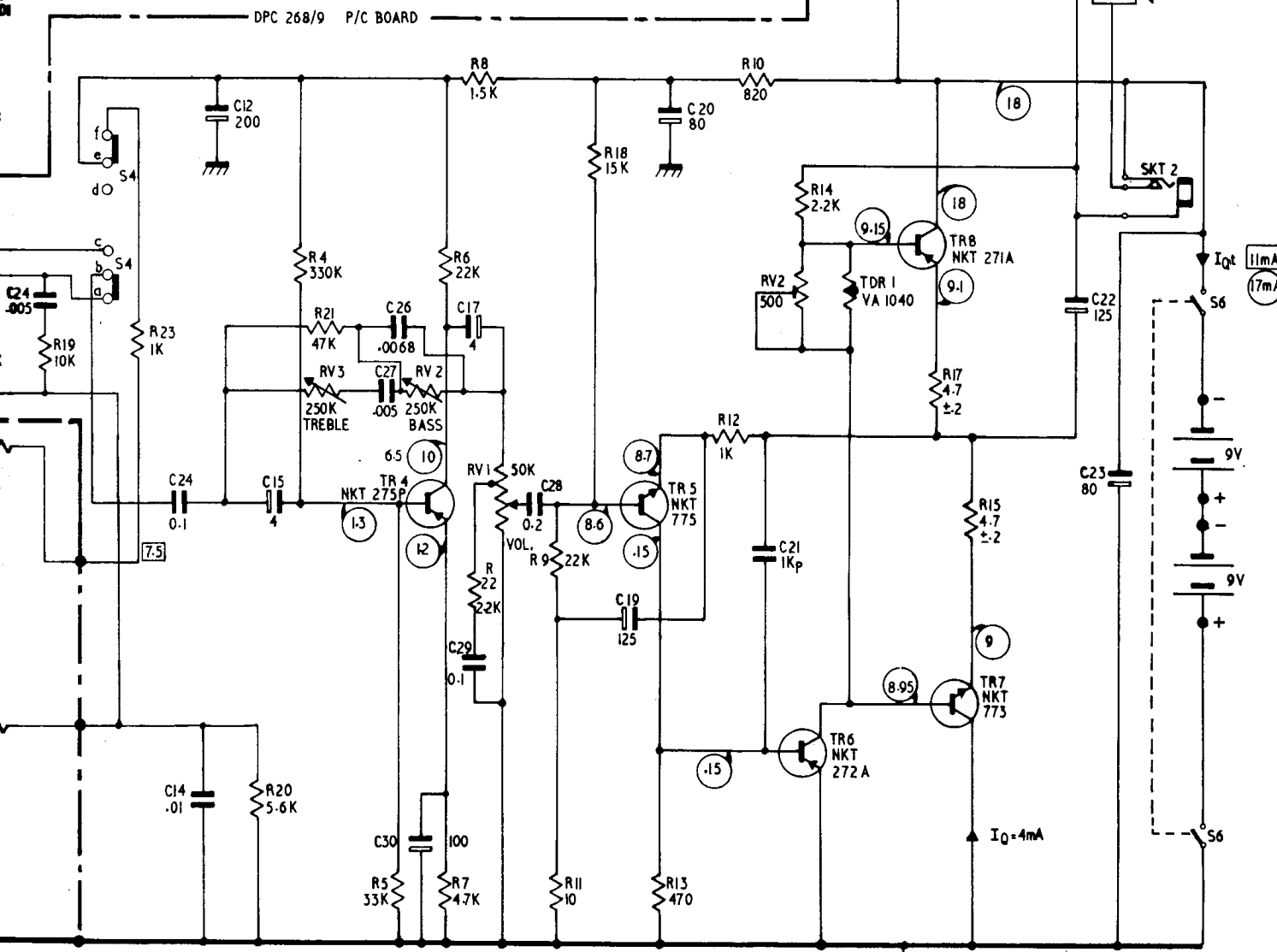
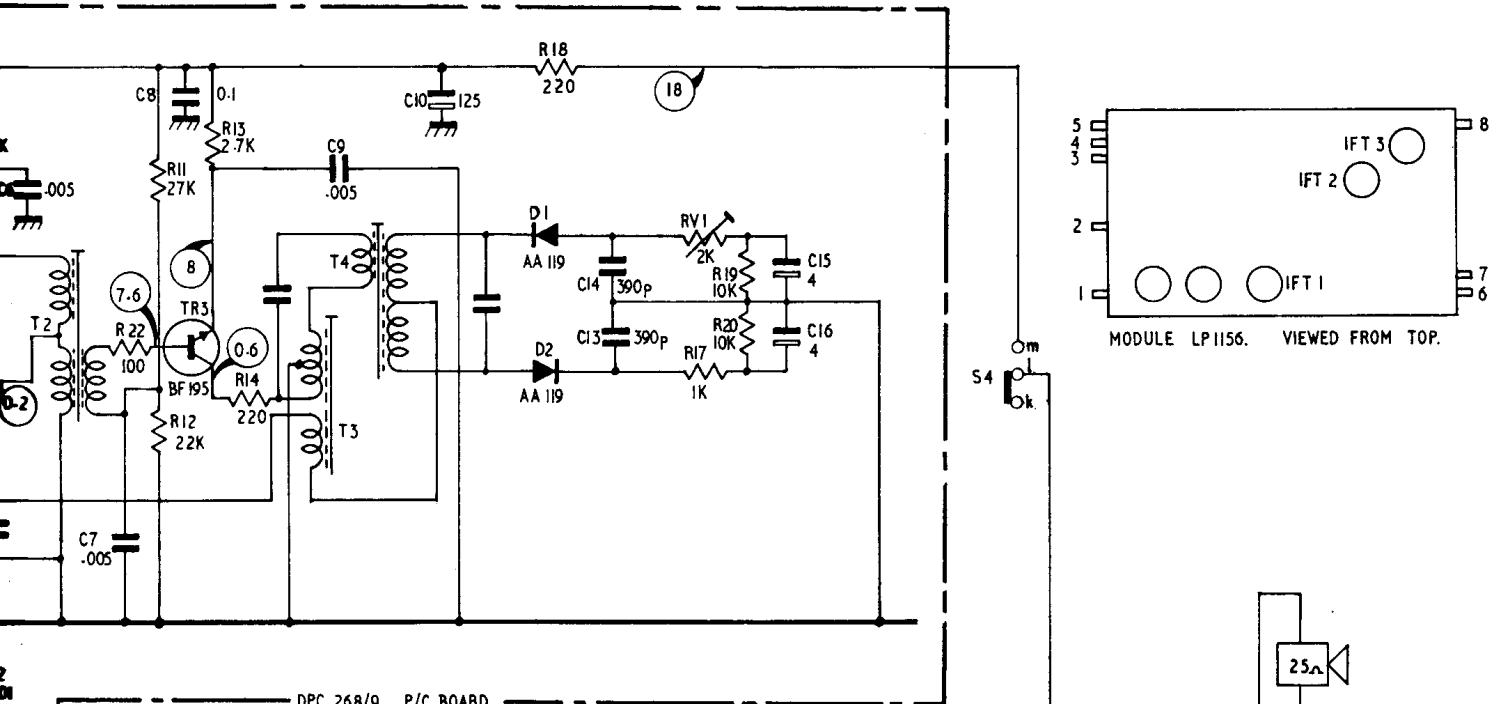
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B







- NOTES.
1. ALL RESISTORS IN OHMS UNLESS OTHERWISE STATED.
 2. ALL CAPACITORS IN MICROFARADS UNLESS OTHERWISE STATED.
 3. SHOWN SWITCHED TO FERRITE INTERNAL AERIAL L.W.
 4. ALL VOLTAGES MEASURED WITH MIN. VOLUME & NO SIGNAL RELATIVE TO CHASSIS.
- VOLTAGES
- 1.2 SET SWITCHED TO F.M.
 - 1.2 SET SWITCHED TO M.W.