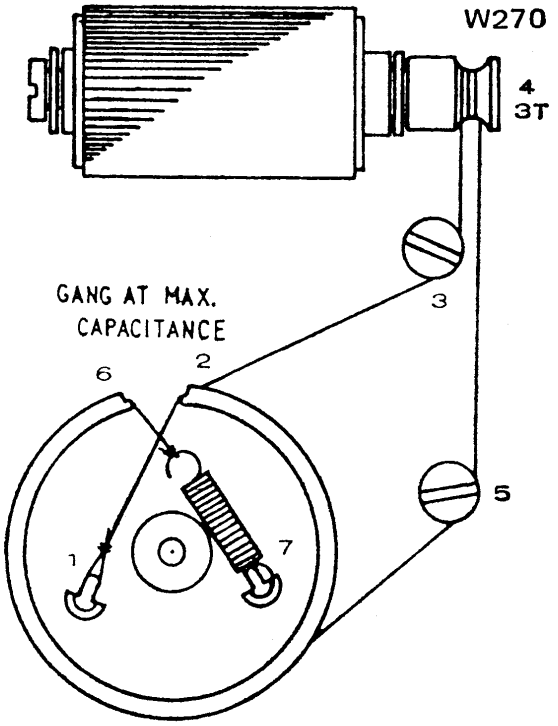
BUSH Model VTR225

General Description: A portable ten-transistor radio receiver covering Medium and V.H.F. wavebands. A socket is provided for the connection of an earphone.



(W270) Drive Cord—Model VTR225

Batteries: 6V (4×HP7).

Quiescent Current: 20mA.

Wavebands: M.W. 510–1,620kHz; F.M. 87·5–104MHz.

Loudspeaker: 8Ω impedance.

Dismantling: Remove the back cover. To detach it completely slide out the phone socket panel and unsolder the telescopic aerial lead.

Remove four chassis fixing screws shown in Fig. W271 and withdraw the chassis to the extent of the leads. Most of the servicing is accessible at this stage.

For a complete removal, note and disconnect leads to the loudspeaker.

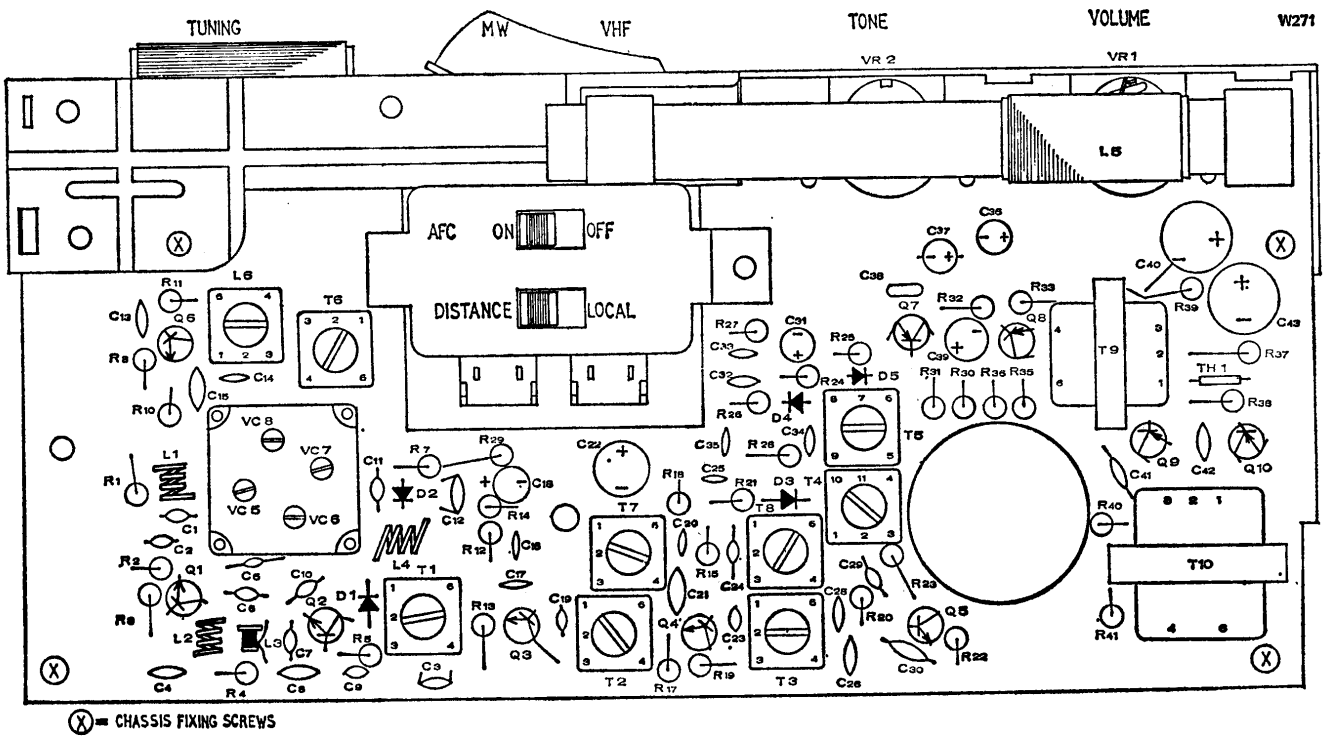
Transistor Voltages (Negative with respect to chassis).

Transistor	*Measured at*	*Volts D.C.*	
		M.W.	*V.H.F.*
	emitter	—	3·2
Q1	base	—	1·7
	collector	—	—
	emitter	—	4·2
Q2	base	—	3·1
	collector	—	—
	emitter	5·2	4·9
Q3	base	4·3	4·1
	collector	—	—
	emitter	4·5	4·4

Transistor	*Measured at*	*Volts D.C.*	
		M.W.	*V.H.F.*
Q4	base	2·9	2·8
	collector	0·25	0·2
	emitter	—	4·6
Q5	base	—	2·9
	collector	—	0·25
	emitter	4·1	—
Q6	base	3·3	—
	collector	1	—
	emitter	—	—
Q7	base	0·2	0·2
	collector	1·15	1·15
	emitter	1	1
Q8	base	1·15	1·15
	collector	4·8	4·7
	emitter	—	—
Q9, 10	base	0·15	0·15
	collector	6	6

Alignment

A.M. Circuits: (*Note:* The signal generator should be coupled to the receiver by a 10 in. diameter loop of insulated wire in series with a resistor of a value to match the output impedance of the generator. The loop should be placed at right angles to the ferrite rod aerial.)



(W271) Component Layout—Model VTR225

I.F. Alignment: Switch the receiver to Medium waveband and set the tuning scale to approximately 300 metres.

Inject a signal of 470kHz, modulated 30 per cent at 400Hz, and align I.F. transformers T8, T7, and T6 in that order for maximum audio output.

R.F. Alignment: (Inject the signal as in I.F. alignment and follow the operation below.)

Operation	*Waveband*	*Sig. gen. freq. (mod 30% at 400Hz)*	*Tuning scale setting*	*Adjust for max. output*	*Sig. gen. freq. (unmodulated)*
Oscillator Circuits					
1	M.W.	600kHz	500 metres	L6	87·5MHz
2	M.W.	1,500kHz	200 metres	VC8	104·5MHz
Repeat operations 1 and 2 until calibration is correct.					
Aerial Circuits					
3	M.W.	600kHz	500 metres	L5	87·5MHz
4	M.W.	1,500kHz	200 metres	VC7	104·5MHz
Repeat operations 3 and 4 until tracking is correct.					

F.M. Circuits:

I.F. Alignment: *Notes:* Switch the A.F.C. switch to off position.

Connect a D.C. voltmeter across C31 and a Balance meter into the circuit between C35/R28 and chassis.

Couple the Signal Generator to the coil L3 by a three turn loop of insulated wire.

The signal level should be maintained to produce an output between 0·5 to 1V D.C. on the D.C. voltmeter.

1. Switch the receiver to V.H.F., and set the tuning scale to approximately 94MHz.

2. Inject a signal of 10·7MHz, amplitude modulated, 30 per cent at 400Hz.

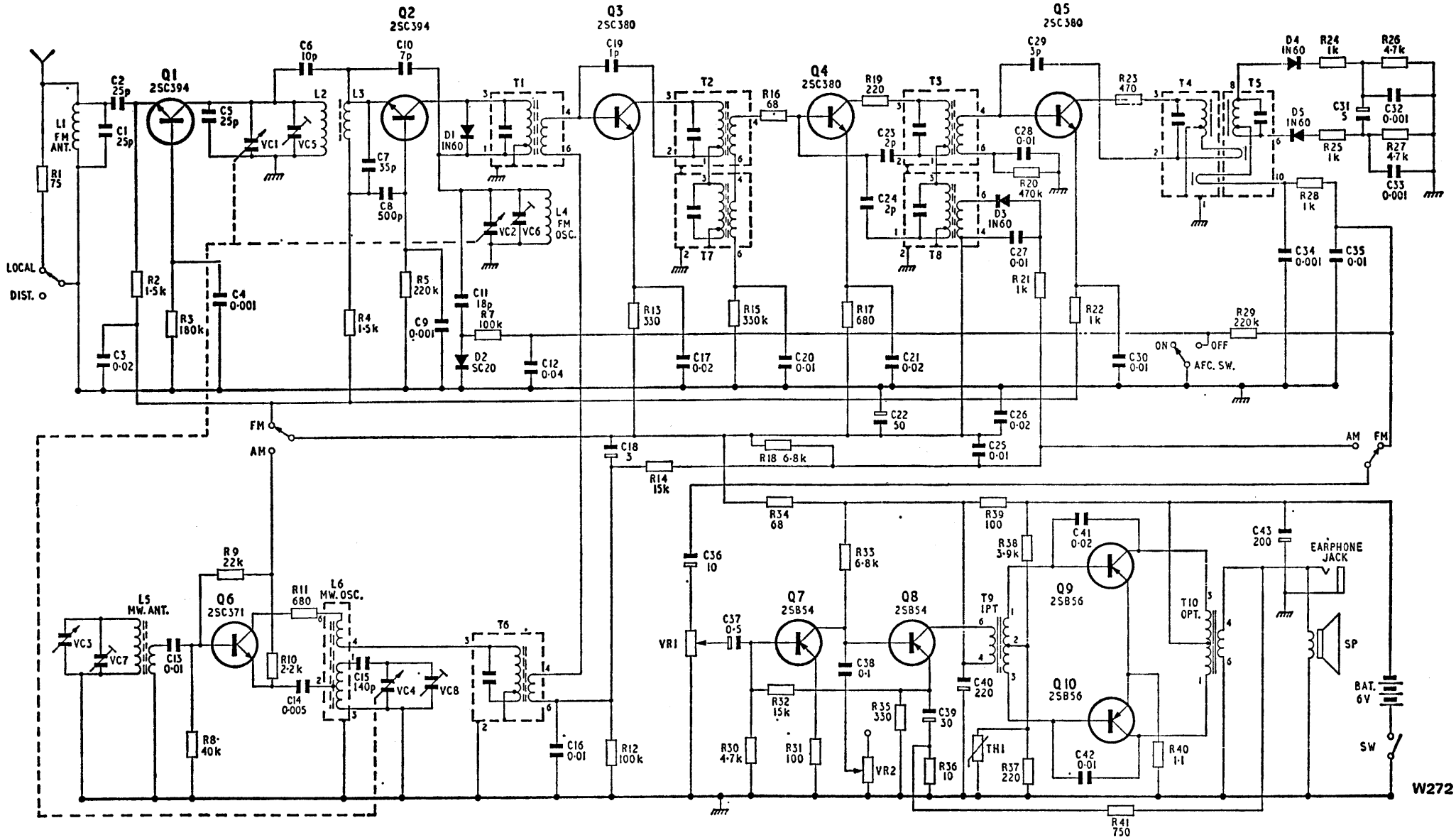
3. Align T4 for maximum D.C. output and T5 for zero reading on the Balance meter.

4. Align T3, T2, and T1 in that order for maximum D.C. output. Realign T4 for maximum D.C. output and T5 for zero reading on the Balance meter.

R.F. Alignment: *Notes:* Connect a D.C. voltmeter and a balance meter into the circuit as above.

The signal level should be maintained to produce an output between 0·5 to 1V D.C. on the D.C. voltmeter.

Connect the signal generator via a resistor of a value of 30 to 50Ω to the telescopic aerial and chassis and follow the procedure below.



(W272) Circuit Diagram—Model VTR225

Tuning scale setting	*Adjust for max. D.C. output*
L.F. end of scale (Gang closed)	L_4
H.F. end of scale (Gang opened)	VC6
L.F. end of scale	L_2
H.F. end of scale	VC_5