



INVICTA

TRANSISTOR POCKET RADIO

Model 332



CIRCUIT ANALYSIS

Battery consumption 6 mA with no signal input.					
Code	Transistor Function	Type	Ec	Eb	Ee
VT1	Frequency Changer	NKT.152	3.4	0.8	0.79
VT2	1st I.F. Amplifier	NKT.153/25	4.3	0.6	0.45
VT3	2nd I.F. Amplifier	NKT.154/25	4.3	0.7	0.5
VT4	A.F. Amplifier	NKT.258	4.1	0.75	0.65
VT5	Output	NKT.257	9	4.4	4.4
VT6	Output	NKT.751	—	4.1	4.4

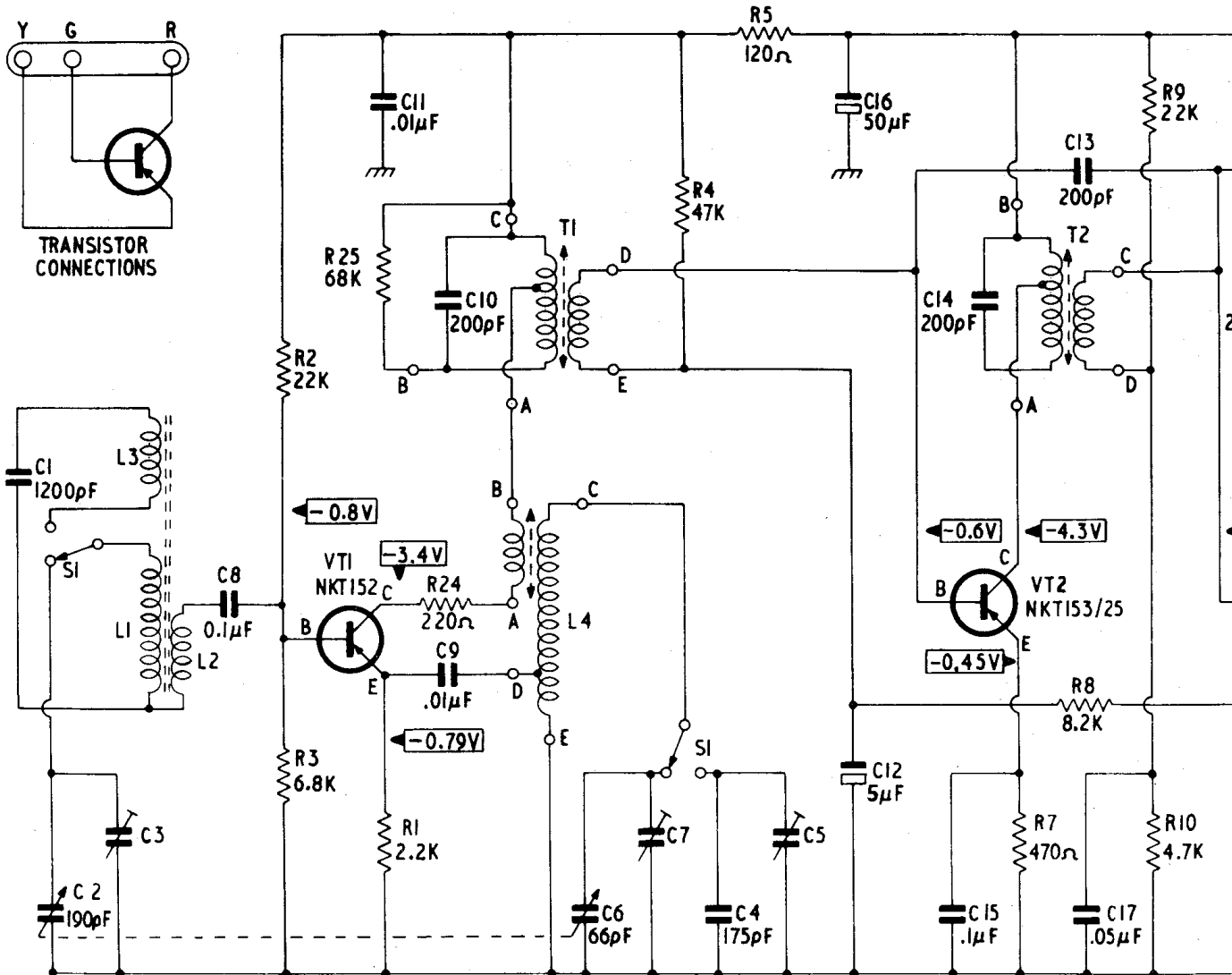
Note:—All measurements are negative with respect to chassis, and taken on M.W. band with no signal input. Gang fully closed.

Meter used:—Avometer model 8, which has a resistance of 20,000 ohms per volt.

TRIMMING PROCEDURE

	Apply signal as below:—	Set receiver controls to:—	Adjust in order for maximum output:—
1.	470 kc/s between chassis and the aerial side of C8, with the aerial disconnected.	Low frequency end of M.W. Volume Control at maximum.	Ferrite cores of T3, T2 and T1.
2.	600 kc/s to rod aerial via loop at 15 cms. from middle of rod with L1 nearer to loop.	M.W. 500 Metres.	Ferrite core of L4 and position of L1 on rod.
3.	As 2 but 1500 kc/s.	M.W. 200 Metres.	Trimmers C7 and C3.
4.	Repeat 1 and 2 until tracking is correct. Seal position of L1 on rod with bitumen.		
5.	As 2 but 200 kc/s.	L.W.	Trimmer C5 and position of L3 on rod. Secure with bitumen.

C ¹	2	3.	8.	11.	10.	6.	7.	4.	5.	16.	14.	13.	
R			2.	25.	9.			4.	5.		7.	8.	9.
M	SI.	L3.	L2.	VT1.	TI.	L4.	SI.				VT2.	T2.	



Note: The junction of L1 and L2 should be "earthed".

CAPACITORS

Circuit No.	Description	±%	Volts	Fig.	Ref. No.
C1	1200 pF Polystyrene	2	125		653479
C2	190 pF Swing Gang				800396
*C3	10 pF Trimmer ...				
C4	175 pF Polystyrene	1	20		653723
C5	3-15 pF Trimmer				DP 31293
C6	66 pF Swing Gang				800396
*C7	10 pF Trimmer				
C8	0.1 μF Ceramic ...	-20+80	3		660476
C9	0.01 μF Ceramic Disc	-20+80	30		660663
†C10	200 pF Polystyrene				
C11	0.01 μF Ceramic Disc	-20+80	30		660663
C12	5 μF Electrolytic		2½		680305
†C13	200 pF Polystyrene	5	20	2	653485
†C14	200 pF Polystyrene				
C15	0.1 μF Ceramic ...	-20+80	3		660476
C16	50 μF Electrolytic		6		680289
C17	0.05 μF Ceramic ...	-20+80	3		660477
C18	62 pF Polystyrene	5	20	2	653486
†C19	200 pF Polystyrene				
C20	0.1 μF Ceramic ...	-20+80	3		660476
C21	0.05 μF Ceramic ...	-20+80	3		660477
C22	0.1 μF Ceramic Disc	-20+80	10		660197
C23	2 μF Electrolytic		10		680302
C24	4700 pF Ceramic S.P.		30		PN 41300
C25	2 μF Electrolytic		10		680302
C26	50 μF Electrolytic		6		680289
C27	50 μF Electrolytic		6		680289

RESISTORS

Circuit No.	Ohms	Fig.	Ref. No.
R1	2.2 K		678907
R2	22 K		678910
R3	6.8 K		678909
R4	47 K		678911
R5	120		678901
R6	Not used		
R7	470		678913
R8	8.2 K		1 NG 82203
R9	22 K		678910
R10	4.7 K		NG 47203
R11	470		678913
R12	5 K Volume Control		PL 01046
R13	1 K		678906
R14	15 K		678914
R15	2.2 K		678907
R16	33 K		NG 33303
R17	330		NG 33103
R18	560		NG 56103
R19	3.9 K		678908
R20	33 K		NG 33303
R21	10		678900
R22	10		678900
R23	56		1 NG 56003
R24	220		678905
R25	68 K		2 NG 68303

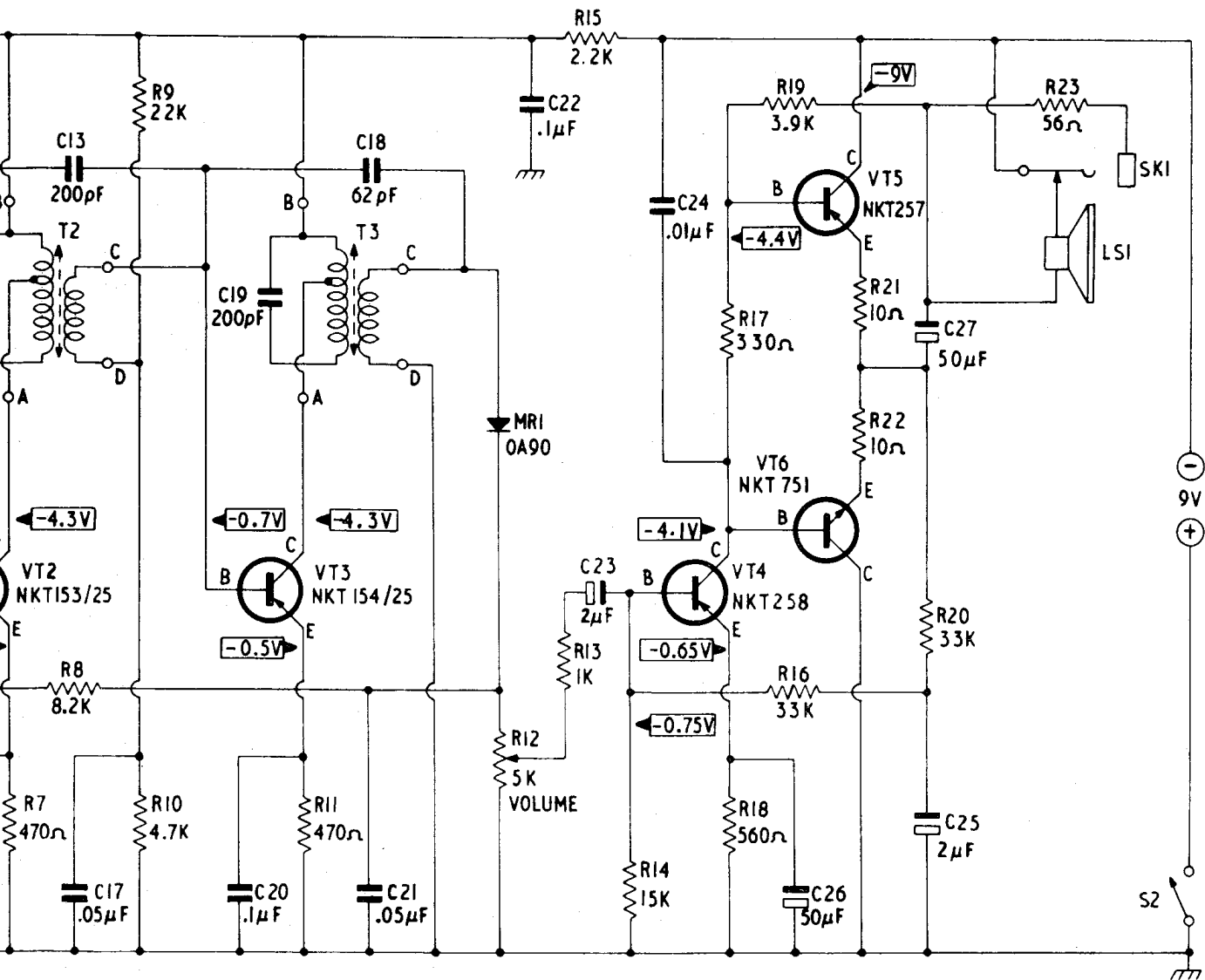
Description
L1 } Medium Wave Aerial
L3 } 2nd I.F. Transformer
L2 } L.W. Adjusting Coil
L4 } Oscillator Coil ...
Description
T1 } 1st I.F. Transformer
T2 } 2nd I.F. Transformer
T3 } 3rd I.F. Transformer
(see Important Note in n...)
Description
S1 } Wavechange Switch
S2 } On/Off Switch, on V...
MR1 } Diode, Mullard OA9...
LS } 2" round Speaker; 60...

†Integral part of I.F. transformer. (see Important Note in right-hand column).

*Part of Gang Capacitor.

All resistors are ± 10%.

13.	19.	18.	22.	24.	27.	C					
17.	20.	21.	23.	25.	26.						
7.	8.	9.	11.	12.	13.	14.	17.	19.	21.22.	23	R
T2.	VT3.	T3.	MRI.	VT4.	VT5.	VT6.	LSI.	SKI	S2.		



INDUCTORS

Description	Fig.	Ref. No.
L1 } Medium Wave Aerial Coil	1 & 2	AG 00025
L3 } Rod Aerial Assy.		
L2 } L.W. Adjusting Coil		
L4 } Oscillator Coil	1	078185

TRANSFORMERS

Description	Fig.	Ref. No.
T1 1st I.F. Transformer	1	077106
T2 2nd I.F. Transformer	1	077106
T3 3rd I.F. Transformer	1	077108

(see Important Note in next column)

SWITCHES ETC.

Description	Fig.	Ref. No.
S1 Wavechange Switch	1	083159
S2 On/Off Switch, on Volume Control	1	PL 01046
MRI Diode, Mullard OA90	1	721644
LS 2" round Speaker; 60 ohms		FS 11005

MISCELLANEOUS

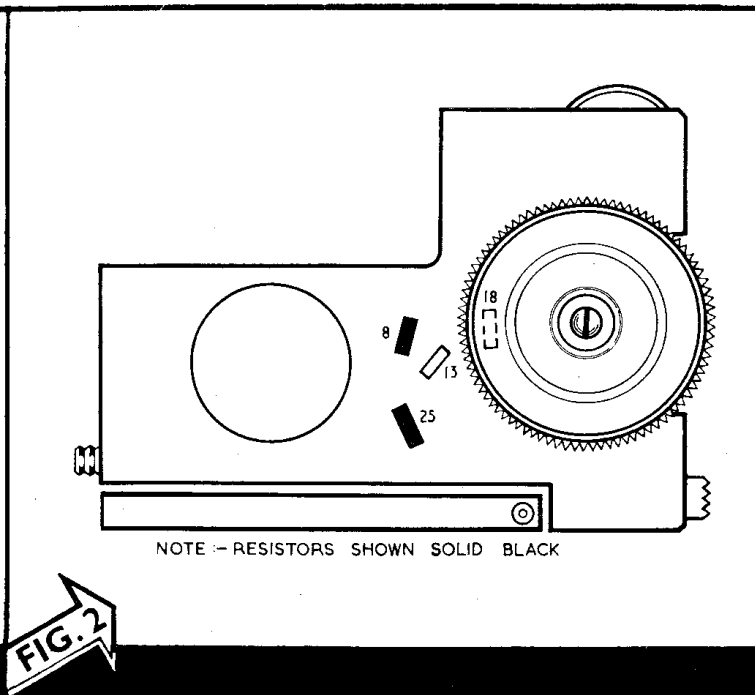
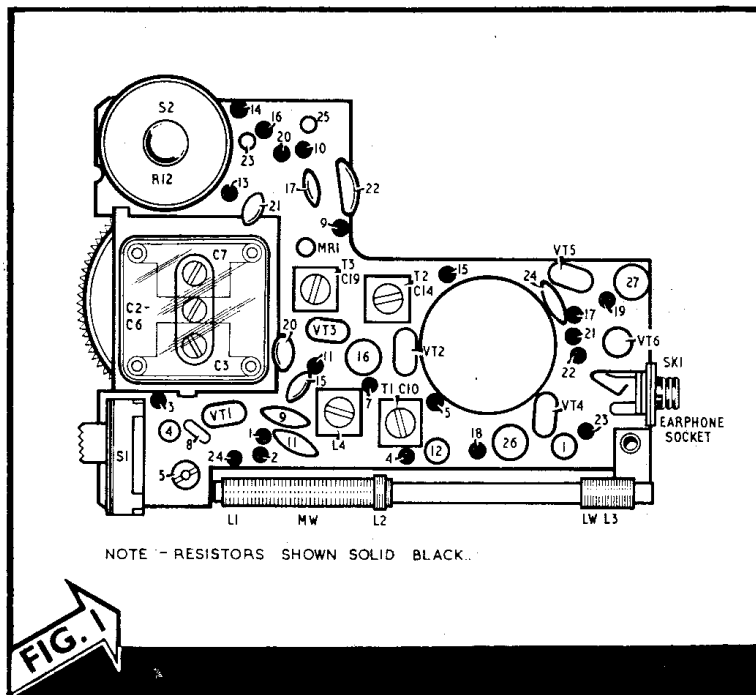
Description	Ref. No.
Case Assembly; Front	AG 00050
Case; Back	055774
Grille	040974
Speaker Ring Insulator	041385
Chassis Fixing Screw; Brass	395803/B
Tuning Dial	048554
Earphone Socket	FS 16009
Motif; Invicta	048543
Front Fascia	048574
Window	048559
Gang Fixing Screw; Ch. Hd. Brass	992068
Dial Fixing Screw; Csk.	992067

IMPORTANT NOTE

In some receivers the following alternative components are fitted:—

T1 1st I.F. Transformer	077115 (Orange)
T2 2nd I.F. Transformer	077115 (White)
T3 3rd I.F. Transformer	077116 (Black)
L4 Oscillator Coil	078199 (Red)

When the above transformers and coil are used, the value of C10, C14 and C19 becomes 180 pF Polystyrene, part no. 653703 (mounted on printed panel outside of cans).



NOTES

TO REMOVE CHASSIS

Take off the back of the case and remove the two chassis fixing screws. Carefully lift out the chassis and unsolder loudspeaker leads.

TO REMOVE LOUDSPEAKER

Remove the 332 chassis from its case as described above. Lift up the lugs around the edge of the front grille and withdraw the speaker through the front of the case.

Note: The receiver serial number is painted on the loudspeaker. When fitting a replacement speaker, please ensure that this number is transferred to the new one.

TO REMOVE TUNING GANG

Take the receiver chassis out of its case and remove the tuning dial, which is secured by a central countersunk

screw. Unscrew the cheesehead brass screw at either side the gang spindle and unsolder the gang earthing strip on the outer side of the gang mounting plate.

REPLACING PARTS

Great care should be taken to avoid damaging the printed panel or adjacent components with excessive heat and it is recommended that a light soldering iron (10 watts maximum) with a fine tip should be used. Ease out the faulty component by applying heat to each connection in turn. Clean and tin replacement parts, then melt the circuit solder before insertion into panel. To avoid running solder into adjoining circuits, use as little as possible.

Open or damaged sections of the printed circuit can be repaired by soldering a jumper of ordinary wire across the connection points.

BATTERY

9 volt: Ever Ready PP3, Exide DT3, or Vidor T6003.