

ASTOR

RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

126-130 GRANT STREET, SOUTH MELBOURNE, S.C.4.

TECHNICAL BULLETIN

**File: Receivers
Portable**

BULLETIN: FQZ - 1

Date: 12 - 7 - 60

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ASTOR MODEL "FQZ"

8 TRANSISTOR MIDGET PORTABLE RECEIVER

IN A PLASTIC CARRYING CASE

**RECEIVER, CARRYING CASE, EARPHONE POUCH AND SHOULDER STRAP
SUPPLIED IN A PRESENTATION BOX.**



THIS BULLETIN CONTAINS:

1. Service Instructions - Electrical.
2. Service Instructions - Mechanical.
3. Component Parts List.
4. Chassis Serial Number.
5. Battery Replacement Instructions
6. Circuit Diagram.
7. Wiring and Component Location Diagram.

FOR OPERATION FROM:

CURRENT CONSUMPTION:

POWER OUTPUT:

INTERMEDIATE FREQUENCY :

TUNING RANGE:

ALIGNMENT PROCEDURE

EQUIPMENT

ALIGNMENT CONDITIONS

Output Meter
Load Impedance: 15 ohms.
Output Level : 6 Milliwatts.
(voice coil open)
Vol. Control : Max. vol. (full on)
IF Frequency : 455 Kc/s.
Battery : 6 Volts (four 1.5
volt batteries in
series).

IF. TRANSFORMER ALIGNMENT

- NOTE: 1. The receiver does not have to be removed from the moulded case for alignment purposes.

It is only necessary to remove the rear section of the moulded case from the front section.

Unscrew the two screws at the rear of the case then gently prise off the rear section.

2. The connection point on the receiver for the generator IF. signal is the converter transistor 2N486 socket base lug and is accessible as detailed below and shown on the component location diagram.

Connect IF. generator active lead to the top end (pigtail lead) of the resistor (12,000 ohms circuit No.31) which is the resistor nearest to the oscillator tuning condenser terminal lug.

Connect other lead of IF. generator attenuator to common positive.

The frame of the gang condenser, all I.F. transformer cans, metal mount sleeve of the audio driver and output transformers and the speaker mount clip ring are connected to common positive.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Refer para.2.	455 Kc/s.	0.01 MF Mica. cond. in series with generator	Turn tuning cond. gang plates fully out of mesh. Peak 3rd IF. trans. iron core for max. output.
2.	" "	"	"	Peak 2nd IF. trans. iron core for max. output.
3.	" "	"	"	Peak 1st IF. trans. iron core for max. output.
4.	" "	"	"	Repeat operations 1 and 2 and 3.

BROADCAST ALIGNMENT

- A. Inject a signal into the receiver ferrite strip aerial, connect to the active terminal of the signal generator attenuator approximately 2 ft. of aerial wire, then fashion the wire to a vertical position.
- B. Place receiver so that ferrite strip aerial is uppermost and horizontal and so that volume control end of moulded case is nearest to the 2 ft. of vertical aerial wire.

A distance of not less than one foot is to be between the two feet of vertical aerial wire and the end of the receiver.

Oper. No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	Refer para.	525 Kc/s.	Refer para. A and B.	Fully mesh cond. gang plates then peak oscl. coil iron core.
2.	" "	1615 Kc/s.	" "	Cond. gang plates fully out of mesh, peak oscl. trimmer cond.
3.	" "	1470 Kc/s.	" "	Tune receiver accurately to 1470 Kc/s. generator signal and adjust aerial and oscl. trimmer conds. for max. output. Do not rock cond. gang to and fro through the signal while adjusting the trimmers.
• 4.	" "	600 Kc/s.	" "	Repeak oscl. coil iron core for max. output. Rock cond. gang to and fro through the signal while adjusting the iron core.
5.	" "	1470 Kc/s.	" "	Repeat operations No. 3 and 4.
6.	Tuning range after alignment 535 - 1610 Kc/s. (minimum).			

TUNING INDICATOR DISC SETTING

Turn the locking screw in the centre of the tuning indicator disc anti-clockwise. Rotate the disc for optimum logging of the local stations, then retighten the locking screw.

PRECAUTIONS WHEN SERVICING TRANSISTOR RECEIVERS

A transistor is extremely sensitive to heat. If a soldering iron is to be used close to a transistor, remove the transistor from its socket before applying the iron. Use a soldering iron which supplies just the required heat for satisfactory soldering of connections. The short wires protruding from the transistors must not be heated to make direct connections.

When checking components, cut the long pigtail of the component in preference to unsoldering from the circuit board. Components checked in this way may be returned into the circuit by pressing the ends of the pigtail together then solder. Faulty components should be removed from the circuit board by cutting through the body of the component leaving two short stubs of wire protruding (approx. $\frac{1}{8}$ ") above the circuit board. The pigtail leads of the new component are to be soldered to these stubs.

A continuity meter must not be applied to the receiver wiring with the transistor in circuit. A transistor must not be checked for continuity with an ohmmeter as the applied voltage and resultant excess current flow may result in permanent damage to the transistor. A voltmeter of at least 20,000 ohms/volt or a high impedance vacuum tube type voltmeter is a safe means of measuring circuit voltages.

A screwdriver or similar instrument must not be used to short components together or to the common positive. The use of this method of checking for the existance of voltage or signal clicks may result in permanent damage to the transistors and components.

A fault finding procedure including a click test is detailed on page 5.

FAULT LOCATION GUIDE- GENERATOR CHECK

Connect generator through a .1 mfd condenser to the following points.

CAUTION: Always start with low generator output. Strong signals may overload the receiver, or cause the A.G.C. to function. Set volume control at max.

CHECK POINT	LOCATION Circuit Nos. at Junction Point	SIGNAL GENERATOR FREQUENCY	SIGNAL STRENGTH
2N632 Output base	No.23 & Driver trans. second.	Audio	Weak
2N632 Output base	No.24 & Driver trans. second.	"	Weak
2N363 Driver base	Nos.19, 50 & 49	"	Increase in level
2N362 Aud. Amp. base	Nos.17, 45 & 46	"	Further increase
Det. output at Vol.Con.	Terminal 'A'	"	Same level as above
Turn tuning condenser gang to full open position			
Det. output at diode	No.16 & Term. 'A'	455 Kc/s	Weak
2N484 2nd IF base	Pin 5 IFT. 2.	"	Increase in level
2N484 1st IF base	Pin 5 IFT. 1.	"	Increase in level
2N486 Mixer base	Nos.2, 30 & 31	"	Increase in level
Tune receiver to signal generator frequency.			
2N486 Mixer base	Nos.2, 30 & 31	Sig.Freq.	Signal
Aerial secondary	No.2 & Aerial lead	" "	Same level as above

FAULT FINDING GUIDE- CLICK TEST

Connect one end of a 6.8K ohm resistor to common positive. Touch the other end on and off the following points and listen for clicks. Volume control at maximum.

<u>CHECK POINT</u>	<u>LOCATION</u> Circuit numbers at Junction Point	<u>STRENGTH OF CLICK</u>
Transistor Base		
2N632 Output	No.23 & Driver trans. secondary	very weak click
2N632 Output	No.24 & Driver trans. secondary	very weak click
2N363 Driver	Nos.19, 50 & 49.	loud click
2N362 Aud. Amp.	Nos.17, 45 & 46.	loud click
2N484 2nd IF.	Pin No.5 IFT. 2.	very weak click
2N484 1st IF.	Pin No.5 IFT. 1.	loud click
2N486 Mixer	Nos. 2, 30 & 31.	loud click

SERVICE INSTRUCTIONS—mechanical

TO REMOVE RECEIVER CHASSIS FROM MOULDED PLASTIC CASE

1. Unscrew and remove two screws located about the centre of the back.
2. Prise back section off body section by inserting a knife blade between the two sections.
3. Place receiver front face downward then remove batteries by pulling ends of tape protruding from beneath batteries.
4. Unscrew and remove a screw from each of the lower cavities in the battery holder.
5. Hold the tuning indicator disc securely, turn the chrome plated locking screw located in the centre of the dial anticlockwise then remove screw, tuning indicator disc, rubber washers and plastic bush from the tuning condenser shaft.
6. Unscrew and remove hexagonal bush located between volume control and tuning condenser gang.
7. Remove the chassis from the plastic case by lifting firstly the end near tuning condenser then the battery end.

TO REFIT CHASSIS TO MOULDED PLASTIC CASE

1. Place chassis into plastic case by entering first the battery end then tuning condenser end.
2. Refit hexagonal spacer (finger tight) on to screw protruding through chassis between volume control and tuning condenser.
3. Place plastic bush on to tuning condenser shaft. Turn bush until flats inside bush fit flats on shaft then press bush firmly on to shaft.
4. Refit rubber washers, tuning indicator disc and chrome plated locking screw to tuning cond. shaft. Turn locking screw clockwise to tighten.
5. Tighten hexagonal spacer between volume control and tuning condenser then refit two screws which fasten battery box to plastic case.
6. Place tapes across battery box cavities then refit batteries, refer battery replacement diagram for correct polarity.
7. Switch receiver 'ON' and check station logging. Should adjustment be required loosen locking screw by turning it anti-clockwise. The dial indicator disc is to be adjusted for optimum logging.

8. Two screws and locknuts are provided in the tuning cond. mount bracket for clearance adjustment between the tuning indicator disc and dial reading.
9. Refit rear section of plastic case and fasten in position with two screws previously removed.

TO REMOVE TUNING INDICATOR DISC AND FIT NEW TUNING DIAL READING

The chassis does not have to be removed from plastic case to perform this operation.

1. A set of four dial readings are stored in the metal dial reading holder located behind the tuning indicator disc.
2. Remove the locking screw from the centre of the tuning indicator disc by turning the screw anti-clockwise.
3. Lift off tuning indicator disc, note the position of the rubber washers.
4. Carefully prise the metal lugs of the dial reading holder upward off the dial readings.
5. Lift out transparent cover and dial readings then select the required reading.
6. Refit dial readings into dial reading holder, selected dial reading last.
7. Place transparent cover on top of dial readings then fold down metal lugs of dial reading holder.
8. Reposition the rubber washers then refit tuning indicator disc.
9. Refit locking screw to centre of tuning indicator disc. Turn clockwise to tighten.
10. Switch receiver 'ON' and check station logging. Should adjustment be required loosen locking screw by turning it anti-clockwise. Adjust disc the required distance then retighten the locking screw. The tuning indicator disc is to be adjusted for optimum logging.

CLEANING AGENT FOR PLASTIC BAG AND MOULDED PLASTIC CASE

Do not polish the plastic bag or the moulded plastic case with an abrasive material, motor car polish, boot polish or similar household cleaning fluids as permanent damage may result to the finish of the plastic bag or the moulded case.

To restore the lustre of the plastic bag and the moulded case wipe with a soft cloth dampened with water and lightly polish with a neutral wax.

BATTERY REPLACEMENT

About the centre of the back of the moulded case are two screws. Unscrew and remove these two screws then prise off rear section of case. Replacement type batteries are detailed in the parts list.

NOTE: It is most important that the batteries be installed with their polarity as shown in the placement diagram attached to the circuit.

BATTERY CONNECTIONS OF INCORRECT POLARITY
WILL DAMAGE THE RECEIVER

Two tapes are provided for ease of battery removal. Before fitting new batteries lay the tapes into the cavities of the battery holder.

RECEIVER SERIAL NUMBER

The receiver serial number is stamped into the metal bracket to which the tuning condenser is mounted.

To view the serial number fully mesh condenser gang plates then unscrew the two screws fastening the centre of the moulded back to the front section. Prise the sections apart.

STORAGE WHEN OUT OF USE

It is not advisable to leave an exhausted battery in the receiver. If the receiver is stored away or not required for long periods even partially used batteries should be removed and stored in a dry cool place. This is a precautionary measure against the swelling and corroding action of worn-out batteries, which applies to all battery operated devices such as torches etc.

Circuit No.	Description	+ Tol.	Rating	Part No.
1	Two gang variable condenser - includes trimmers			C295
2	.01 MF Ceramic condenser	GMV	33V DCW	C391
3	.01 MF Ceramic condenser	GMV	33V DCW	C391
4	220 MMF Tubular ceramicon	5%	33V DCW	C392
5	.01 MF Ceramic condenser	GMV	33V DCW	C391
6	.01 MF Ceramic condenser	GMV	33V DCW	C391
7	.01 MF Ceramic condenser	GMV	33V DCW	C391
8	10 MF Electrolytic condenser	-10% +250%	6V DCW	C322
9	22 MMF Disc ceramicon	5%	500V DCW	C352
10	.01 MF Ceramic condenser	GMV	33V DCW	C391
11				
12	.01 MF Ceramic condenser	GMV	33V DCW	C391
13	18 MMF Disc ceramicon	5%	500V DCW	C361
14	.01 MF Ceramic condenser	GMV	33V DCW	C391
15	220 MMF Tubular ceramicon	5%	33V DCW	C392
16	.047 MF Ceramic condenser	-20% +80%	33V DCW	C388
17	2 MF Electrolytic condenser	-10% +250%	6V DCW	C323
18	10 MF Electrolytic condenser	-10% +250%	6V DCW	C322
19	2 MF Electrolytic condenser	-10% +250%	6V DCW	C323
20	.01 MF Ceramic condenser	GMV	33V DCW	C391

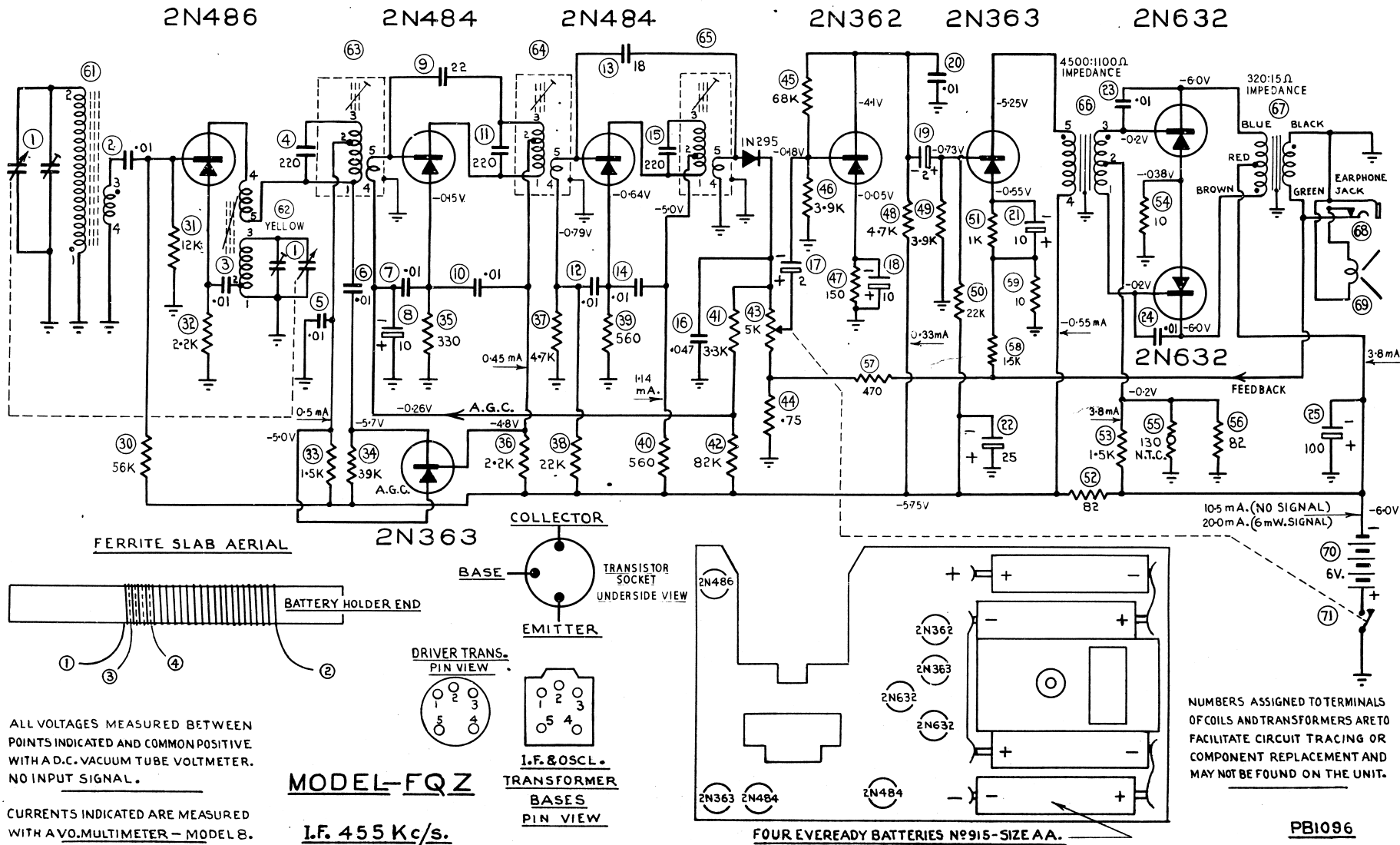
Circuit No.	Description	+ - Tol	Rating	Part No.
21	10 MF Electrolytic condenser	-10% +250%	6V DCW	C322
22	25 MF Electrolytic condenser	-10% +250%	6V DCW	C362
23	.01 MF Ceramic condenser	GMV	33V DCW	C391
24	.01 MF Ceramic condenser	GMV	33V DCW	C391
25	100 MF Electrolytic condenser	-10% +250%	6V DCW	C321
26				
27				
28				
29				
30	56,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R5632
31	12,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1232
32	2,200 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2222
33	1,500 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1522
34	39,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3932
35	330 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3312
36	2,200 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2222
37	4,700 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4722
38	22,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2232
39	560 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R5612
40	560 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R5612
41	3,300 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3322
42	82,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R8232
43	Volume control and SP.ST. ON/OFF switch 5000 Ohm			R262
44	.75 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	PR996
45	68,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R6832
46	3,900 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3922
47	150 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1512
48	4,700 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4722
49	3,900 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R3922
50	22,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R2232
51	1,000 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1022
52	82 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	R157
53	1,500 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1522
54	10 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	PR553
55	130 Ohm neg. temp. coeff. resistor	10%	1W	R167
56	82 Ohm wire wound resistor	10%	$\frac{1}{2}$ W	R157
57	470 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R4712
58	1,500 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1522
59	10 Ohm carbon resistor	10%	$\frac{1}{2}$ W	R1002
60				
61	Ferrite slab aerial			L531
62	Oscillator coil			L532
63	No.1 I.F. transformer			L533
64	No.2 I.F. transformer			L534
65	No.3 I.F. transformer			L535
66	Driver transformer - 4500 ohm : 1100 ohm C.T.			T273
67	Output transformer - 320 ohm C.T. : 15 ohm			T274
68	Earphone jack socket			A127/250
69	Speaker - 2 $\frac{3}{4}$ " dia. permag. type "C" 15 ohm V.C. imped.			K218
70	1.5 volt battery (4) Eveready type 915 size AA.			M491
71	Switch - ON/OFF part of circuit No. 43.			

Socket (8) transistor	A142/849
Earpiece, cord and jack assy.	M485
Battery holder assy. - includes lugs eyelets and springs	A131/849
Speaker clip ring	21/849
Slab aerial mount (2) moulded	691/81
Locking screw - chrome - tuning indicator disc	151/849
Moulded bush - tuning cond. shaft extension	686/81
Washer - rubber - moulded bush	68/849
Tuning indicator disc.	768/81
Dial reading holder	82/849
Dial reading - N.S.W.	48/395-2
Dial reading - VIC/TAS.	48/395-3
Dial reading - QLD.	48/395-4
Dial reading - SA./WA.	48/395-5
Dial reading cover - transparent	83/849
Hexagonal spacer - fastens receiver into cabinet	32/849
Screw (2) $\frac{5}{8}$ " x No.4 Csk. Hd. self-tapping, fastens battery box to cabinet	36/560-20
Tuning condenser mount bracket	22/849
Screw (2) fastens back sec. to front sec. of plastic case	236/415-3
Screw (2) $\frac{5}{8}$ " x $\frac{1}{8}$ " Whit.rd.hd. - tuning disc spacing adjust.	10/560-8
Screw - $\frac{5}{8}$ " x $\frac{1}{8}$ " Whit. hex. hd. - cabinet front	16/609-2
Nut (2) $\frac{1}{8}$ " Whit.	3/478-2
Linen tape - $9\frac{1}{2}$ " long. battery removal	OC082
Organdie - black	G0151
Plastic carry bag - complete, includes shoulder strap and earphone pouch which are not available as separate items	2206/250
Leather carry bag - complete, includes shoulder strap and earphone pouch which are not available as separate items	2207/250
Presentation gift box	A760/294

STYLING

Cabinet front assy. - consists of escutcheon and grille assy., cabinet front section and paper gasket.

CHERRY RED	with CHARCOAL escutcheon grille	A138/849-23
CHARTREUSE	" " " "	A138/849-5
WEDGEWOOD BLUE	" " " "	A138/849-10
CINNAMON	" " " "	A138/849-11
TAN	with BLACK escutcheon grille	A138/849-1
LIME	" " " "	A138/849-8
DARK GREEN	" " " "	A138/849-9
CHERRY RED	" " " "	A138/849-3
Escutcheon grille assy. BLACK		A139/849-1
" " " CHARCOAL		A139/849
Grille - part of escutcheon assy, BLACK		155/849-1
" - " " " CHARCOAL		155/849
Paper gasket - black, fitted between escutcheon grille assy. and cabinet front section.		152/849
Cabinet rear section - BLACK		545/81-9
" " " - CHARCOAL		545/81-3
Volume control disc - BLACK		765/81-9
" " " - CHARCOAL		765/81-4



CHASSIS COMPONENT SIDE VIEW

NOTE:
VOLUME CONTROL CONNECTIONS.
A TO CIRCUIT NO. 41 & CIRCUIT NO.16.
B TO CIRCUIT NO. 17.
C TO CIRCUIT NO. 44.

