TECHNICAL INFORMATION AND SERVICE DATA

RADIOLAS

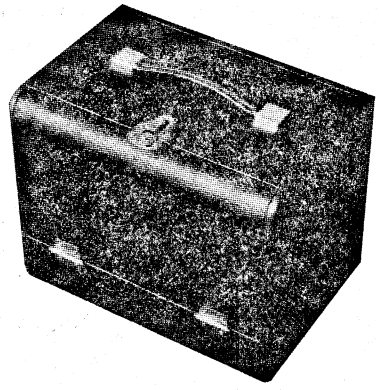
PORTABLE MODELS 451-P & 451-PZ

FIVE VALVE, BROADCAST, BATTERY OPERATED SUPERHETERODYNES

INCORPORATING DATA ON CHRYSLER-DODGE-DE SOTO RECEIVER MODEL C.D.D.3.

ISSUED BY

AMALGAMATED WIRELESS (A/SIA.) LTD.



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ELECTRICAL SPECIFICATIONS.

FREQUENCY RANGES:

Medium Wave ..... 540-1600 Kc/s (555-187.5 M.)

INTERMEDIATE FREQUENCY ..... 455 Kc/s

BATTERY VOLTAGES:

"A" Battery ..... 1.5 volts

"B" Battery ..... 90 volts

BATTERY CONSUMPTION:

"A" Battery ..... 300 mA.

"B" Battery .. "Bty. Full," 14 mA., "Bty. Saving," 9 mA.

LOUDSPEAKER:

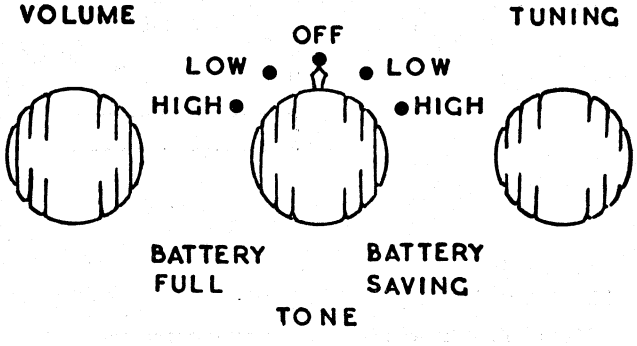
5 inch Permanent Magnet—Code No. AC32.

Transformer—XA8.

V.C. Impedance—3 ohms at 400 C.P.S.

UNDISTORTED POWER OUTPUT ..... 200 milliwatts on "Full Battery."

CONTROLS:



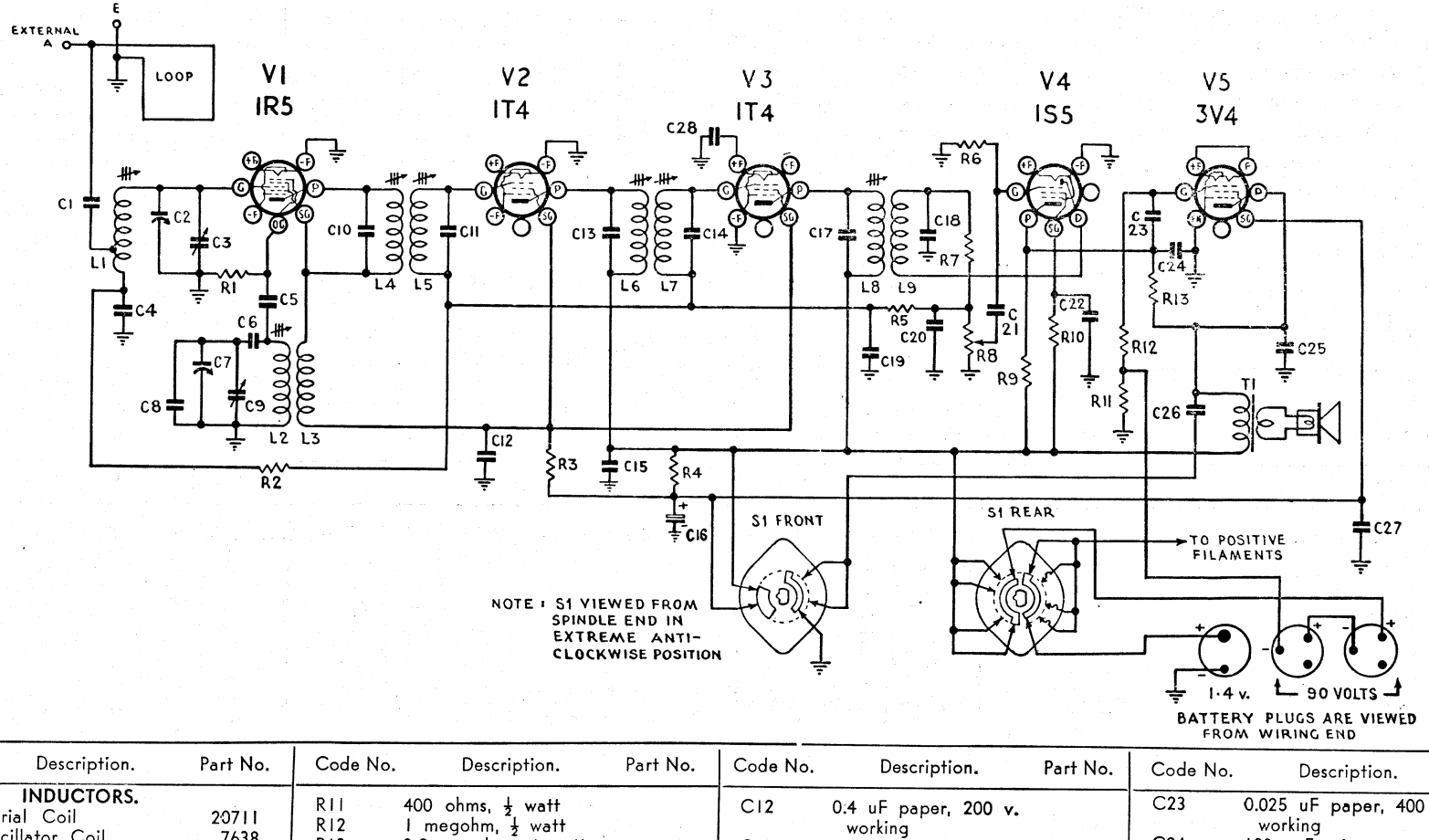
MECHANICAL SPECIFICATIONS.

	Height.	Width.	Depth.
Cabinet Dimensions (inches)	10¼	12¾	8⅝
Chassis Base Dimensions (inches) ..	2½	11	5½

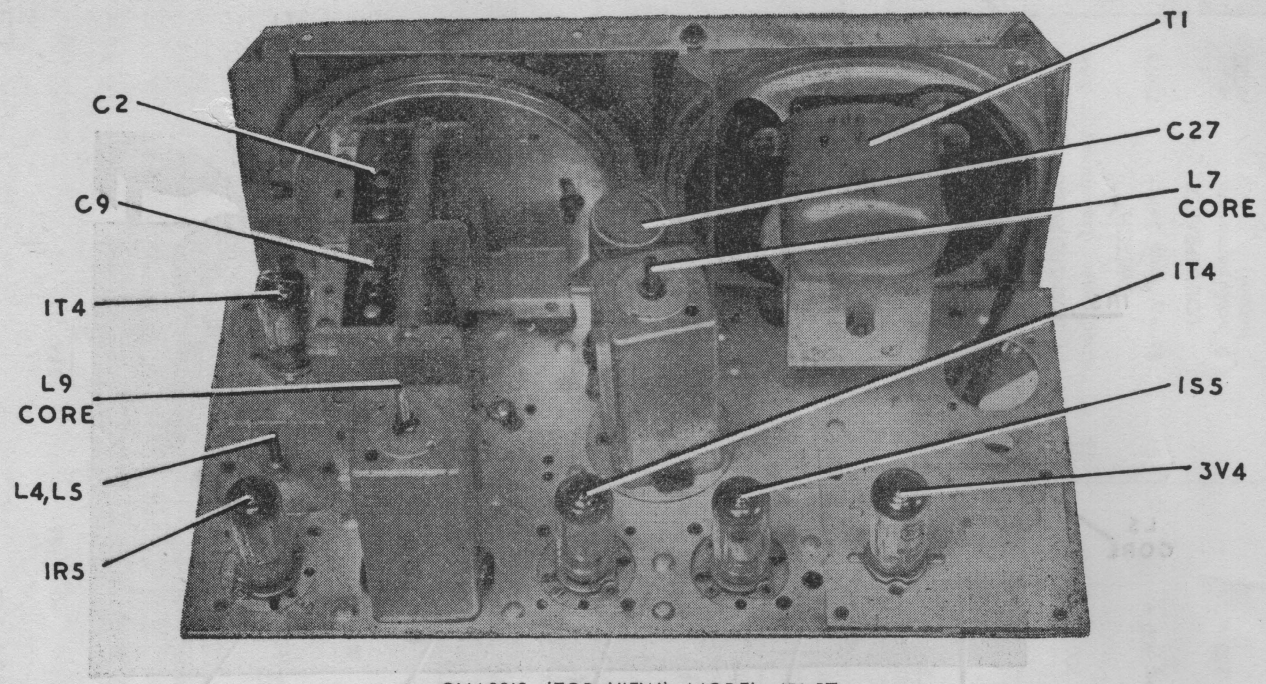
	Height.	Width.	Depth.
Carton Dimensions (inches)	11	13	9

Weight (nett lbs.) ..... 19 lbs. complete with batteries

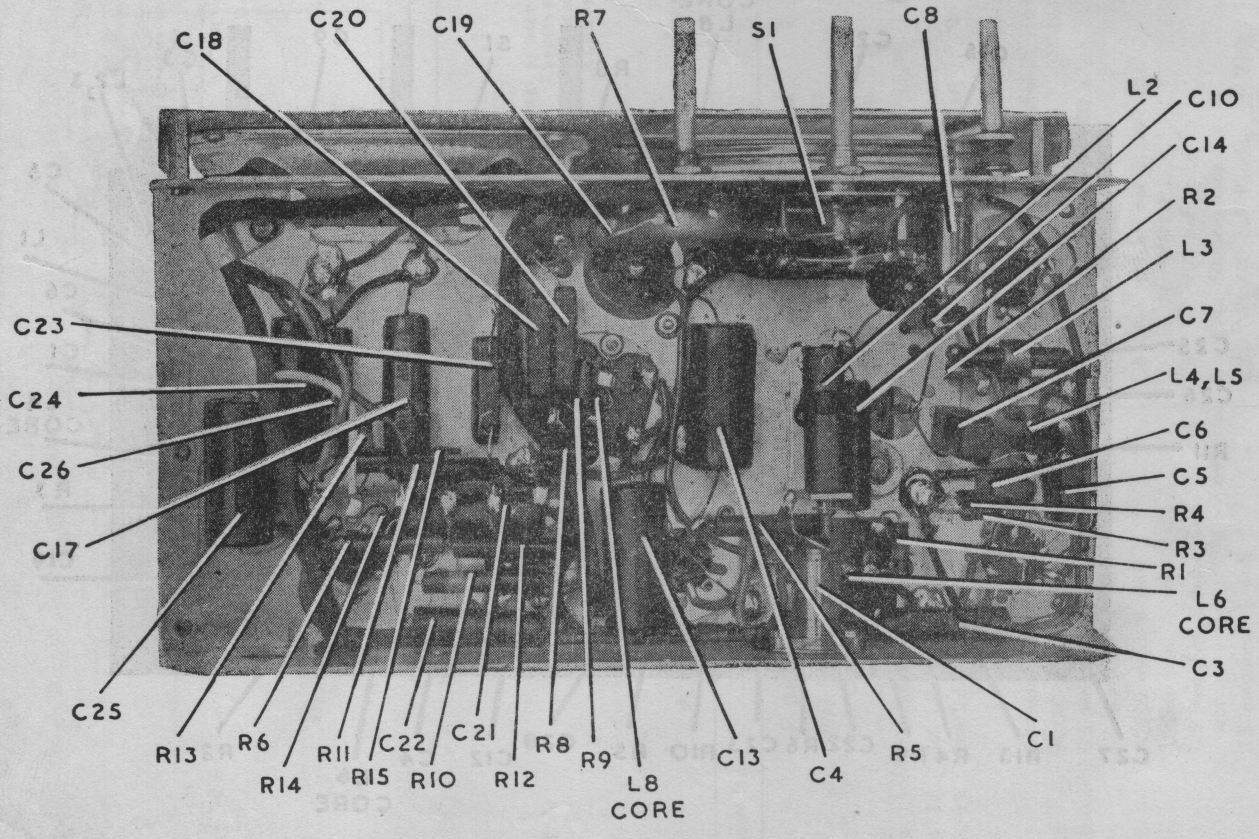
CIRCUIT DIAGRAM & CODE — Models 451-P & C.D.D.3



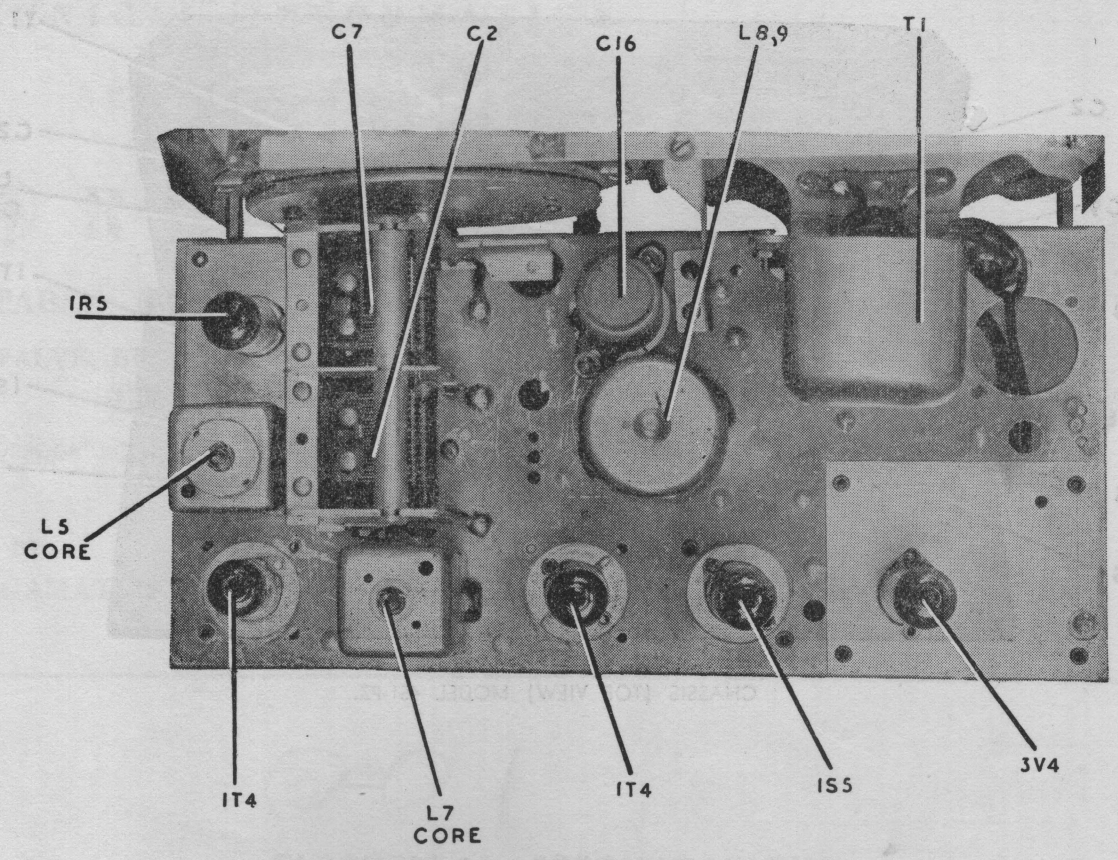
Code No.	Description.	Part No.
	INDUCTORS.	
L1	Aerial Coil	20711
L2, L3	Oscillator Coil	7638
L4, L5	1st I.F. Transformer	22416
L6, L7	2nd I.F. Transformer	22416
L8, L9	3rd I.F. Transformer	15483
	RESISTORS.	
R1	0.1 megohm, ½ watt	
R2	0.1 megohm, ½ watt	
R3	25,000 ohms, 1 watt	
R4	10,000 ohms, 1 watt	
R5	2.5 megohms, ½ watt	
R6	10 megohms, 1 watt	
R7	20,000 ohms, ½ watt (in 3rd I.F. Assy.)	
R8	0.5 megohm, Volume Control	6491
R9	1 megohm, 1 watt	
R10	3.2 megohms, 1 watt	
R11	400 ohms, ½ watt	
R12	1 megohm, ½ watt	
R13	3.2 megohms, 1 watt	
	CAPACITORS.	
C1	0.05 uF paper, 200 v. working	
C2	12-430 uuF tuning	15686
C3	3-25 uuF air trimmer	16959
C4	0.05 uF paper, 200 v. working	
C5	50 uuF mica	
C6	470 uuF padder	
C7	12-430 uuF tuning	15686
C8	14 uuF mica	
C9	3-25 uuF air trimmer	16959
C10	70 uuF mica	
C11	70 uuF mica	
C12	0.4 uF paper, 200 v. working	
C13	70 uuF mica	
C14	70 uuF mica	
C15	0.1 uF paper, 200 v. working	
C16	20 uF 200 P.V. electrolytic	
C17	70 uuF mica	
C18	100 uuF mica (in 3rd I.F. Assy.)	
C19	0.05 uF paper, 200 v. working	
C20	100 uuF mica (in 3rd I.F. Assy.)	
C21	0.025 uF paper, 400 v. working	
C22	0.1 uF paper, 200 v. working	
C23	0.025 uF paper, 400 v. working	
C24	100 uuF mica	
C25	0.0025 uF paper, 600 v. working	
C26	0.025 uF paper, 400 v. working	
C27	0.005 uF paper, 600 v. working	
C28	0.4 uF paper, 200 v. working	
	TRANSFORMER.	
T1	Loudspeaker Transformer	XA8
	SWITCH.	
S1	Battery/Tone Switch	22426
	LOUDSPEAKER.	
	5 inch (permanent Magnet)	AC32



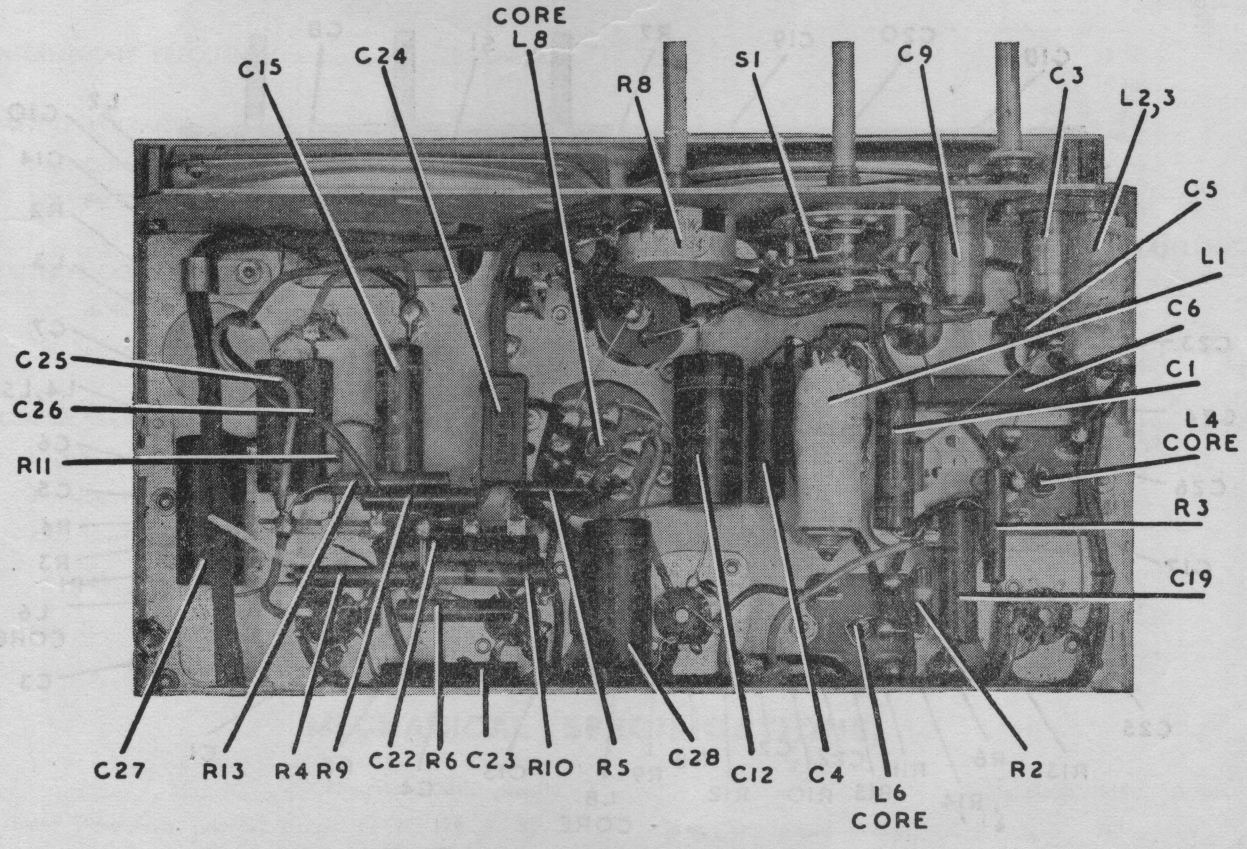
CHASSIS (TOP VIEW) MODEL 451-PZ.



CHASSIS (UNDERNEATH VIEW) MODEL 451-PZ.



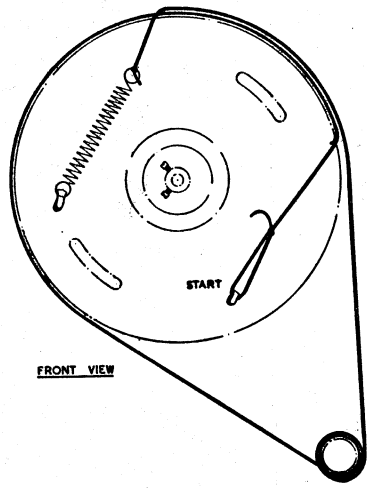
CHASSIS (TOP VIEW) MODEL 451-P and C.D.D.3.

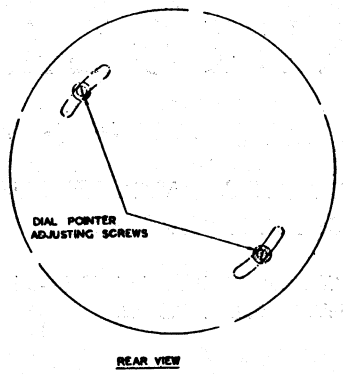


CHASSIS (UNDERNEATH VIEW) MODEL 451-P and C.D.D.3.

Dial Pointer Adjustment.

To shift the position of the dial pointer, loosen two screws in the rear of the drive drum—see accompanying diagram—move the drum to the required position and re-tighten the screws.

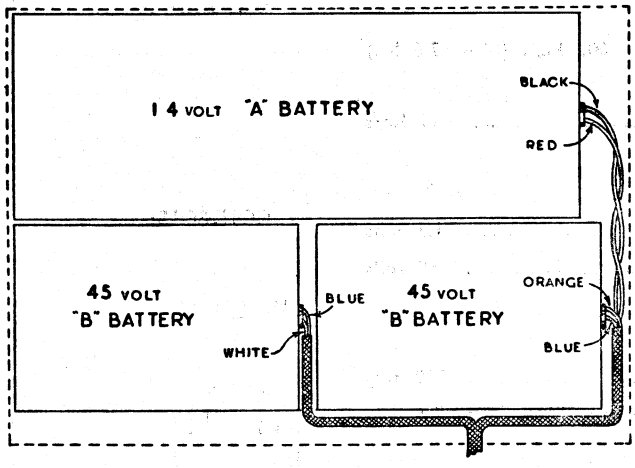




GENERAL DESCRIPTION.

The Models 451-P, C.D.D.3 and 451-PZ are portable models and are housed in cases attractively finished in weatherproof baggage cloth. They embody a hinged cover, which effectively protects the dial and controls from damage, dust or weather.

Features of design include: Tropic-proof construction, automatic volume control, magnetite cores in I.F. transformers, oscillator coil and aerial coils, air-dielectric trimming capacitors.



ALIGNMENT PROCEDURE.

Manufacturers' Setting of Adjustments.

The receiver is tested by the manufacturers with precision instruments, and all adjusting screws are sealed. Re-alignment should be necessary only when components in tuned circuits are repaired or replaced, or, when it is found that the seals over the adjusting screws have been broken.

It is especially important that the adjustments should not be altered unless in association with the correct testing instruments listed below.

Under no circumstances should the plates of the ganged tuning capacitor be bent, as the unit is accurately aligned during manufacture and cannot be re-adjusted unless by skilled operators using specialised equipment.

For all alignment operations, except aerial stage, connect the "low" side of the signal generator to the receiver chassis and keep the generator output as low as possible to avoid A.V.C. action. Also, keep the volume control in the maximum clockwise position.

Testing Instruments.

(1) A.W.A. Junior Signal Generator type 2R3911.

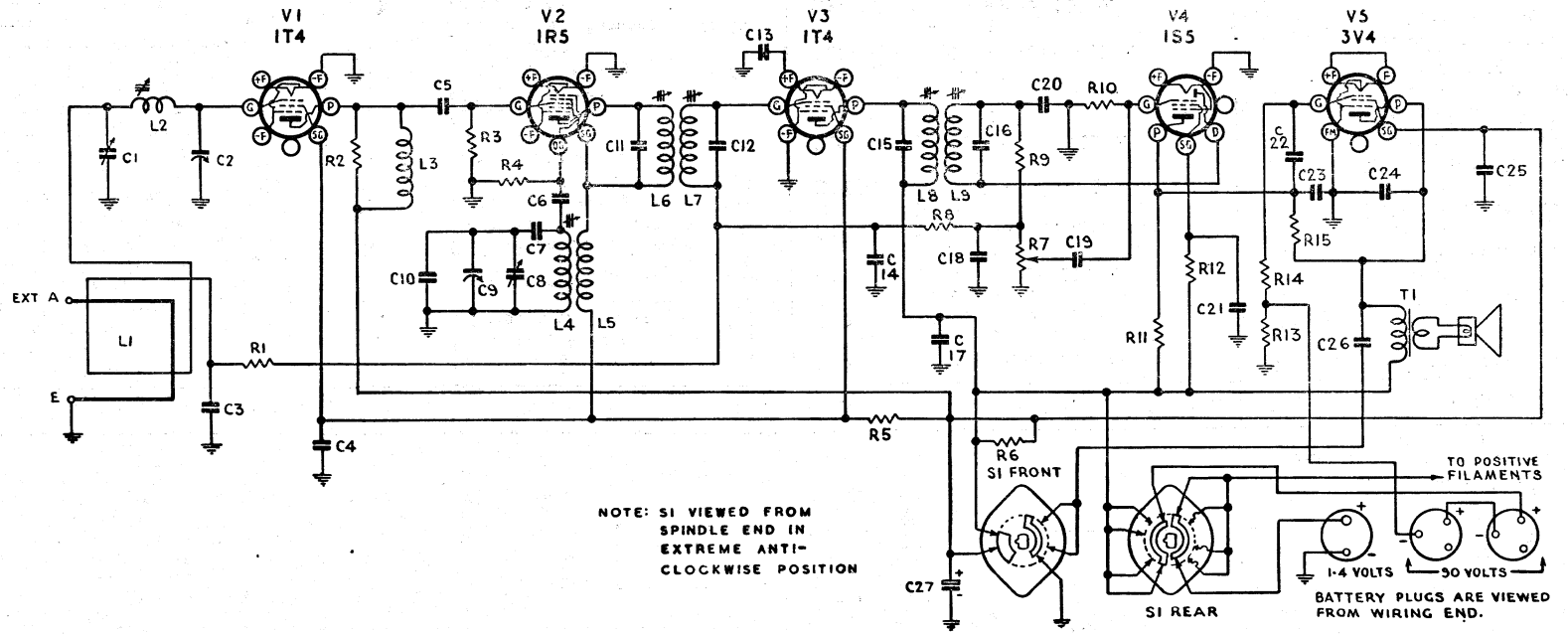
or

(2) A.W.A. Modulated Oscillator type J6726.

If the modulated oscillator is used, connect an 0.25 megohm non-inductive resistor across the output terminals.

(3) A.W.A. Output Meter Type 2M8832.

CIRCUIT DIAGRAM & CODE — Model 451-PZ



A Neutralizing Capacitor (C28) has been incorporated in Model 451-PZ. It is connected between the plate of V3 (1T4) and the junction of C14 and R8.

Code No.	Description.	Part No.
	INDUCTORS.	
L1	Aerial Coil Loop	
L2	Loop Coupling Coil	22719
L3	Compensating Coil	22720
L4, L5	Oscillator Coil	20741
L6, L7	1st I.F. Transformer	22700
L8, L9	2nd I.F. Transformer	22703
	RESISTORS.	
R1	0.1 megohm, ½ watt	
R2	10,000 ohms, 1 watt	
R3	0.5 megohm, ½ watt	
R4	0.1 megohm, ½ watt	
R5	10,000 ohms, 1 watt	
R6	10,000 ohms, 1 watt	
R7	0.5 megohm, Volume Control	6491
R8	2.5 megohms, ½ watt	
R9	20,000 ohms, ½ watt	
R10	10 megohms, 1 watt	
R11	1 megohm, 1 watt	
R12	3.2 megohms, 1 watt	
R13	400 ohms, ½ watt	
R14	1 megohm, ½ watt	
R15	3.2 megohms, 1 watt	
	CAPACITORS.	
C1	3-25 uuF Air Trimmer	16959
C2	12-430 uuF Tuning	16615
C3	0.05 uF paper, 200 v. working	
C4	0.4 uF paper, 200 v. working	
C5	100 uuF mica	
C6	50 uuF mica	
C7	470 uuF Padder, ± 2½%	
C8	3-25 uuF Air Trimmer	16959
C9	12-430 uuF Tuning	16615
C10	14 uuF mica	
C11	70 uuF mica	
C12	70 uuF mica	
C13	0.4 uF paper, 200 v. working	
C14	0.01 uF paper, 600 v. working	
C15	70 uuF mica	
C16	70 uuF mica	
C17	0.1 uF paper, 200 v. working	
C18	100 uuF mica	
C19	0.025 uF paper, 400 v. working	
C20	100 uuF mica	
C21	0.1 uF paper, 200 v. working	
C22	0.025 uF paper, 400 v. working	
C23	100 uuF mica	
C24	0.0025 uF paper, 600 v. working	
C25	0.4 uF paper, 200 v. working	
C26	0.025 uF paper, 400 v. working	
C27	20 uF 200 P.V. Electrolytic	
C28	9 uuF mica (neutralizing)	
	TRANSFORMER.	
T1	Loudspeaker Transformer	XA8
	SWITCH.	
S1	Battery/Tone Switch	22426
	LOUDSPEAKER.	
	5 inch (permanent magnet)	AC32

ALIGNMENT TABLE — Models 451-P & C.D.D.3

Order.	Connect "high" side of Generator to:	Tune Generator to:	Tune Receiver Dial to:	Adjust for maximum peak output.
1	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L8 (core)
2	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L7 (core)
3	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L6 (core)
4	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L5 (core)
5	Aerial section of gang (rear portion)	455 kc/s	540 kc/s	L4 (core)
	Repeat above adjustments until the maximum output is obtained.			
6	* Inductively coupled to loop	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L2)
7	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C9)
8	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L1)
9	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C3)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed flat against the loop.

ALIGNMENT TABLE — Model 451-PZ

Order.	Connect "high" side of generator to:	Tune generator to:	Tune receiver Dial to:	Adjust for maximum peak output:
1	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L9 (core)
2	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L8 (core)
3	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L7 (core)
4	Aerial section of gang (front portion)	455 kc/s	540 kc/s	L6 (core)
	Repeat above adjustments until the maximum output is obtained			
5	Aerial section of gang (front portion)	540 kc/s	540 kc/s	L.F. Osc. Core Adj. (L4)
6	Aerial section of gang (front portion)	1500 kc/s	1500 kc/s	H.F. Osc. Adj. (C8)
7	* Inductively coupled to loop	600 kc/s	600 kc/s	L.F. Aerial Core Adj. (L2)
8	* Inductively coupled to loop	1500 kc/s	1500 kc/s	H.F. Aerial Adj. (C1)

* A coil comprising 3 turns of 16 gauge D.C.C. wire and about 6 inches in diameter should be connected between the output terminals of the test instrument and placed co-axial with the loop and distant not less than 1 foot from it.

SOCKET VOLTAGES — Models 451-P & C.D.D.3

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB*	BS*	FB	BS	FB	BS	FB	BS	FB	BS
1R5 Converter	0	0	33†	25†	33†	25†	0.4	0.2	1.4	1.4
1T4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
1T4 I.F. Amplifier	0	0	33†	25†	85	87	1.1	0.7	1.4	1.4
1S5 Detector	0	0	10†	10†	10†	10†	0.1	0.1	1.4	1.4
3V4 Output	−5.5	−3.5	85	60†	80	83	7.5	5.0	1.4	1.4

* FB = Full battery position of Battery/Tone Switch.
BS = Battery saving position of Battery/Tone Switch.
Measured with no signal input.
† These readings may vary depending on the resistance of the voltmeter used.

SOCKET VOLTAGES — Model 451-PZ

Valves.	Bias Volts.		Screen Grid to Chassis Volts.		Anode to Chassis Volts.		Anode Current mA.		Filament Volts.	
	FB†	BS†	FB	BS	FB	BS	FB	BS	FB	BS
1T4 R.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
1R5 Converter	0	0	45	30	45	30	0.5	0.2	1.4	1.4
1T4 I.F. Amp.	0	0	45	30	84.5	86.5	1.7	0.7	1.4	1.4
1S5 Det., A.F. Amp. A.V.C.	0	0	25*	25*	30*	30*	0.07	0.07	1.4	1.4
3V4 Output	−5.5	−3.5	84.5	45	81	85	7.5	5.0	1.4	1.4

† FB = Full Battery position of Battery/Tone Switch.
BS = Battery Saving Position of Battery/Tone Switch.
* = Calculated from measured current. An ordinary voltmeter will register a lower value.
Measured with no signal input.

MECHANICAL REPLACEMENT PARTS

Item.	Part No.
Cabinet	C80
Cabinet back	22429
Cable, battery	20713
Cable, volume control	20712
Chassis end—	
Right-hand	22417
Left-hand	20124

Item.	Part No.
Dial Scale, Model 451-P, 451-PZ:	21912, 22682 or 23300
Model C.D.D.3	21844 or 23329
Drum, drive assembly	20130
Knob, assembly	22433
Knob	17603
Socket, valve	19965
Strip tag, 1 way	7628
6 way	22423

D.C. RESISTANCE OF WINDINGS.

Winding.	D.C. Resistance in ohms.
Aerial Coil (451-P, C.D.D.3 only)	4
Tapped Portion	*
Aerial Coupling Coil (451-PZ only)	*
Oscillator Coil—	
Primary	3
Secondary	8
I.F. Transformer Windings—	
1st and 2nd I.F.	10
3rd I.F. (451-P, C.D.D.3 only)	20
Loudspeaker Input Transformer—	
XA8 Primary	425 or 510
Secondary	*

* Less than 1 ohm.

The above readings were taken on a standard chassis, but substitution of materials during manufacture may cause variations and it should not be assumed that a component is faulty if a slightly different reading is obtained.