



# RADIO CORPORATION PTY. LTD.

DIVISION OF ELECTRONIC INDUSTRIES LTD.

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

## TECHNICAL BULLETIN

Bulletin: NK-1.  
File. Receivers AC.  
Date: 2-3-53.  
1.

### MODEL—NK—TABLEGRAM

An Automatic 3 Speed Record Changer (78, 45,  $33\frac{1}{3}$  r.p.m.) and a 5 Valve Superheterodyne Four Band Receiver incorporating Bandspreading of the 19 Metre, 25 Metre and 31 Metre Shortwave Bands.

#### FOR OPERATION FROM:—

200-250 Volts 50 Cycle AC. Supply Mains.  
Power Trans. Primary Mains Taps: 200-220V. and 221-250V.

#### POWER CONSUMPTION:—

Radio Operation:—55 Watts.—approx.  
Gramo Operation:—75 Watts.—approx.

#### TUNING RANGES:—

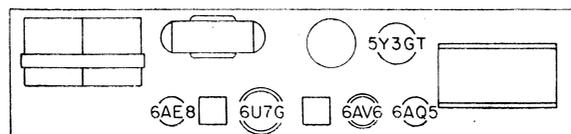
Broadcast Band, 535-1610 Kc/s.  
19 Metre Band, 14.9-15.5 Mc/s. (Bandspread)  
25 Metre Band, 11.6-12.1 Mc/s. (Bandspread)  
31 Metre Band, 9.4-9.8 Mc/s. (Bandspread)

#### RECEIVER COVERAGE:—

560.7-186.3 Metres.  
20.13-19.29 Metres (approx.)  
25.86-24.79 Metres (approx.)  
31.91-30.61 Metres (approx.)

#### THIS BULLETIN CONTAINS:—

1. Alignment Instructions.
2. Circuit Diagram.
3. Component Parts List.
4. Connections for IF. and RF. Transformers.
5. Dial Drive Cording Diagram.
6. Valve Placement Diagram.
7. Instructions for Changing Mains Input Voltage Tap.
8. Instructions for Removing Chassis from Cabinet.



## ALIGNMENT PROCEDURE

## EQUIPMENT

Signal Generator:  
 Output Meter:  
 Mica Capacitor: 0.01MF. (for IF. trans. alignment)  
 Dummy Antenna: 200MMF. Mica Capacitor.  
 Dummy Antenna: 400 Ohm non-inductive resistor.  
 Alignment Tools: Type M195 and PM581.

## ALIGNMENT CONDITIONS

Load Impedance: 5,000 ohms.  
 Output Level: 50 Milliwatts.  
 Vol. Control: Max. Vol. fully clockwise.  
 Intermed. Freq.: 455 Kc/s.  
 Input Voltage: 230 Volt 50 Cycle AC. input to trans. 221-250 volt pri. tap.  
 Tone Control: Treble position.

**To Remove Chassis from Cabinet—** Switch receiver off and disconnect receiver mains lead plug from power point socket. Remove cabinet base plate by unscrewing four rubber mount feet. Remove four push-on type control knobs by pulling them straight off their spindles. Remove speaker leads from socket at left-hand end of chassis, pick-up leads from sockets beneath motor and AC. leads from junction block. Unscrew and remove two screws at each end of chassis fastening chassis to small brackets on side of cabinet. Lift chassis out of cabinet. Refit chassis in exact reverse procedure to removing it.

Opera- tion No.	Generator Connection	Generator Frequency	Dummy Antenna	Instructions
1.	To control grid of 6U7G I.F. valve	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn wave change switch to B/cast band. Leave grid cap on valve. Peak 2nd I.F. trans. pri. and sec. for max. output.
2.	To control grid of 6AE8 valve (pin No. 2)	455 Kc/s.	0.01MF. Mica capacitor in series with generator.	Turn cond. gang plates fully out of mesh. Leave grid wire attached to valve socket. Peak 1st I.F. trans. pri. and sec. for max. output.
3.				Repeat operations No. 1 and 2.
4.	Fully mesh the cond. gang plates.			Set the centre of the dial pointer to align with the centre of the end of travel mark on the dial reading near 540 Kc/s.
5.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position and peak the oscl. coil inductance trim (iron core) for max. output.
6.	To antenna lead from receiver.	1400 Kc/s.	200MMF. Mica series with capacitor in generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 1400 Kc/s. spot on dial reading. Adjust oscl. coil trim condenser for logging and peak antenna trans. trim. condenser for max. output.
7.	To antenna lead from receiver.	600 Kc/s.	200MMF. Mica capacitor in series with generator.	Turn cond. gang and dial pointer until centre of dial pointer aligns with centre of 600 Kc/s. spot on dial reading. Leave the gang and pointer set in this position. Re-peak oscl. coil ind. trim. (iron core) and then peak the antenna trans. ind. trim. (iron core) for max. output. Do not rock the gang or dial pointer to and fro through the signal while adjusting or move them until after the inductance trimmer (iron core) of both of these transformers has been peaked for max. output.

8. To antenna 1400 Kc/s. 200MMF. Mica Turn cond. gang and dial pointer until  
lead capacitor in centre of dial pointer aligns with  
from series with centre of 1400 Kc/s. spot on dial reading.  
receiver. generator. Adjust oscl. coil trim condenser for  
logging and repeak antenna trans. trim.  
condenser for max. output.
9. Turn wave change switch to 31 metre band (this band must be aligned before  
the 25 and 19 metre bands).
10. To antenna 9.6 Mc/s. 400 ohm non- Turn dial pointer and gang to 9.6 Mc/s.  
lead from inductive Adjust 31 metre band oscl. coil. ind.  
receiver. resistor. trim. (iron core) for logging and peak  
31 metre ant. trans. trim. (iron core)  
for max. output. Rock cond. gang to  
and fro through the signal while  
adjusting.
11. To antenna 11.8 Mc/s. 400 ohm non- Turn wave change switch to 25 metre  
lead from inductive band. Turn dial pointer and gang to  
receiver. resistor. 11.8 Mc/s. Adjust 25 metre band oscl. coil  
ind. trim. (iron core) for logging and  
peak 25 metre ant. trans. trim. (iron  
core) for max. output. Rock cond. gang  
to and fro through the signal while  
adjusting.
12. To antenna 15.2 Mc/s. 400 ohm non- Turn wave change switch to 19 metre  
lead from inductive band. Turn dial pointer and gang to  
receiver. resistor. 15.2 Mc/s. Adjust 19 metre band oscl.  
coil. ind. trim. (iron core) for logging  
and peak 19 metre ant. trans. trim.  
(iron core) for max. output. Rock cond.  
gang to and fro through the signal while  
adjusting.
13. Check the logging of the shortwave bands on some well-known shortwave  
stations. If a crystal calibrator is available, check the logging at each  
100 Kc/s. mark on the dial.  
31 Metre spreadband coil, RED spot on iron core end of former.  
25 Metre spreadband coil, WHITE spot on iron core end of former.  
19 Metre spreadband coil, BLUE spot on iron core end of former.

### INSTRUCTIONS FOR CHANGING MAINS VOLTAGE INPUT TAPS

**MAINS VOLTAGE.**—The mains adjustment tap should be adjusted as follows:  
For any AC. voltage between 200 V. and 220 V., on the 200-220 V. tap, and  
for any AC. voltage between 221 V. and 250 V., on the 221-250 V. tap.

**MAINS VOLTAGE ADJUSTMENT.**—For 200-220 Volt Operation: The receiver chassis  
does not have to be removed from the cabinet for this adjustment. SWITCH THE  
RECEIVER OFF AND DISCONNECT THE RECEIVER MAINS LEAD PLUG FROM THE POWER POINT  
SOCKET. Remove the cabinet base plate by unscrewing the four rubber mount  
feet fastening the base to the cabinet. The AC. junction strip is located at  
the left-hand end of the chassis. Unsolder the mains lead wire from the switch  
on the volume control which is attached to the 221-250 volt tap and re-solder  
it to the 200-220 volt tap. Refit the base plate and rubber mount feet.



Circuit No.	Description.	Tol. ±	Rating	Part No.
1.	.1 MFD Paper Condenser.	20%	400V.DCW.	PC103
2.	.1 MFD Paper Condenser.	20%	400V.DCW.	PC103
3.	.1 MFD Paper Condenser.	20%	200V.DCW.	PC218
4.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
5.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
6.	.05 MFD Paper Condenser.	20%	200V.DCW.	PC102
7.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
8.	.05 MFD Paper Condenser.	20%	400V.DCW.	PC109
9.	.02 MFD Paper Condenser.	20%	400V.DCW.	PC111
10.	.03 MFD Paper Condenser.	20%	200V.DCW.	PC303
11.	.002 MFD Paper Condenser.	20%	600V.DCW.	PC112
12.	.001 MFD Mica Condenser.	10%	1000VT.	PC108
13.	.0003 MFD Mica Condenser.	10%	1000VT.	PC212
14.	.00046 MFD Mica Condenser.	2½%	1000VT.	PC728
15.	.00025 MFD Mica Condenser.	10%	1000VT.	PC126
16.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
17.	.0001 MFD Mica Condenser.	10%	1000VT.	PC110
18.	.0001 MFD Mica Condenser.	10%	1000VT.	PC571
19.	85 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC809
20.	75 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC871
21.	70 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC799
22.	50 MMFD Silvered Mica Condenser.	2½%	1000VT.	PC801
23.	30 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC810
24.	15 MMFD Silvered Mica Condenser.	1MMFD	1000VT.	PC811
25.	6 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW	PC831
26.	4 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
27.	4 MMFD Ceramicon Condenser.	+1MMFD-0	500V.DCW.	PC830
28.	2 Gang Varb. Condenser.			PC636
29.	0-30 MMFD Trimmer Cond. Wire Wound.			PC663
30.	1.5-18 MMFD Trimmer Condenser.			PC250
31.	16 MFD E'lytic. Cond. Tol.± 20% 525PV.	} Combination type.		PC760
32.	16 MFD E'lytic. Cond. Tol.± 20% 525PV.			
33.	25 MFD E'lytic. Cond. Tol.± 20% 40PV.			
34.	10 Megohm Carbon Resistor.	10%	1 W.	PR236
35.	3 Megohm Carbon Resistor.	10%	½ W.	PR282
36.	1.75 Megohm Carbon Resistor.	10%	½ W.	PR248
37.	.5 Megohm Carbon Resistor.	10%	½ W.	PR245
38.	.25 Megohm Carbon Resistor	10%	½ W.	PR249
39.	.25 Megohm Carbon Resistor.	10%	1 W.	PR496
40.	100,000 ohm Carbon Resistor.	10%	1 W.	PR165
41.				
42.	60,000 ohm Carbon Resistor.	10%	1 W.	PR415
43.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
44.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
45.	50,000 ohm Carbon Resistor.	10%	½ W.	PR160
46.	30,000 ohm Carbon Resistor.	10%	½ W.	PR151
47.	20,000 ohm Carbon Resistor.	10%	1 W.	PR171
48.	5,000 ohm Carbon Resistor.	10%	½ W.	PR250
49.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
50.	2,000 ohm Carbon Resistor.	10%	½ W.	PR253
51.	200 ohm Carbon Resistor.	10%	½ W.	PR176
52.	300 ohm Carbon Resistor.	10%	½ W.	PR258
53.	300 ohm Wire Wound Resistor.	10%	1 W.	PR122
54.	50 ohm Wire Wound Resistor.	10%	½ W.	PR280
55.	25 ohm Wire Wound Resistor.	10%	½ W.	PR281
56.	100,000 ohm Potentiometer.	20%		PR720
57.	500,000 ohm Pot. tapped at 40,000 ohms and with DP.ST. switch attached.	20%		PR671
58.	IF. Transformer.			PT869
59.	IF. Transformer.			PT869
60.	Antenna Trans. B/cast. (iron cored).			PT905
61.	Oscl. Coil B/cast			PT860

6.

62.	19 Metre Bandsread Coil (blue spot on coil).			PT914
63.	25 Metre Bandsread Coil (White spot on coil).			PT913
64.	31 Metre Bandsread Coil (Red spot on coil).			PT912
65.	Speaker Input Trans. 5,000-3.7 ohms Imped. KBG112.			PT848
66.	Choke, 14H, 60 Ma.			PT806
67.	Power Transformer, 200-250 Volt 50 cycle mains.			PT807
	Power Transformer, 200-260 Volt 40 cycle mains.			PT809
68.	Gramo-Wave Change Switch.			S179
69.	Dial Lamp, 6-8V. 0.25A. Min. Screw Base, T 3 $\frac{1}{4}$ Bulb.			PM678
70.	6" Permag. Speaker, type 6H magnet.			K166
71.	8MMFD (Part of antenna coil circuit No. 60).			PC832
72.				
73.	Record Changer - Garrard type RC72A, 3 speed, Turnover type crystal cartridge 200-250V. 50 cycle operation			M283
	Replacement turnover type head (includes needles)			229/524
	40 cycle Drive Bush			228/524
	Record Changer - Collaro type 3RC 521, 3 speed, Turnover type crystal cartridge, 200-250V. 50 cycle operation			M292
	Replacement turnover type head (includes needles).			230/524
	40 Cycle Drive Bush			231/524
	Special Grub-Screw for 40 cycle drive bush 231/524.			194/415
74.				
75.	.00005 MFD Mica Condenser.	10%	1000VT.	PC141
	7 pin Socket			A104/58
	8 " "			PM532
	9 " "			279/250
	Valve Shield - 6U7G			PM217
	Valve Shield Earth Contact (6U7G)			22/30C
	Spindle Bearing Spring on Switch Spindle			24/754-1
	Dial Pulley, $\frac{3}{4}$ " dia.	17/87	Dial Pulley, 5/8" dia., wood	13/613
	Pulley Stud	18/87	Dial Pointer Assy.	A103/763
	Brass Bush Gang Mtg.	93/53-1	Tuning Spindle Assy.	A116/698-1
	Rubber Grommet Gang Mtg.	64/30A	Valve Shield - 6AV6	38/635
	Dial Reading	60/763	Clip - I.F. Trans. Mtg.	7/670
	Lamp Socket Assy. (3)	A105/661	Clip - Osc. Coil Mtg.	6/622
	Switch Coupling Crank	8/627	Astor Badge	295/250
	Switch Spindle Extension	3/758-2	Astor Badge Transfer	274/250
	Lid Hinge Assy.	A102/763	Dial Drum Assy.	A102/617
	Cab. Mount Foot Assy.	A138/30C	Knob Springs (4)	22/755
			Cabinet Base Assy.	A114/763

STYLING

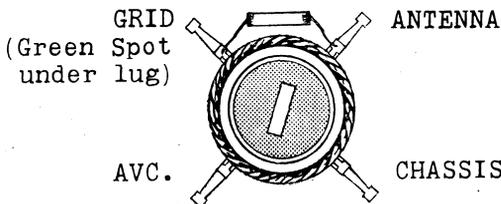
MAHOGANY CABINET

Cabinet	203/81-4	Mahogany
Lid	204/81-2	"
Grille	210/81-1	Ivory
Tone Knob	178/81-2	Mahogany
Gramo Knob	178/81-2	"
Volume Knob	228/81-4	"
Tuning Knob	228/81-5	"

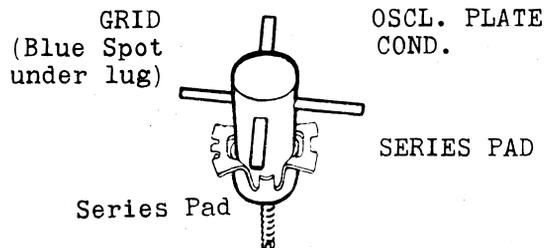
WALNUT CABINET

203/81-5	Walnut
204/81-1	"
210/81-1	Ivory
178/81	Walnut
178/81	"
228/81-1	"
228/81-2	"

ANTENNA TRANS.



OSCL. COIL



### 19, 25 AND 31 METRE ANT. TRANS.

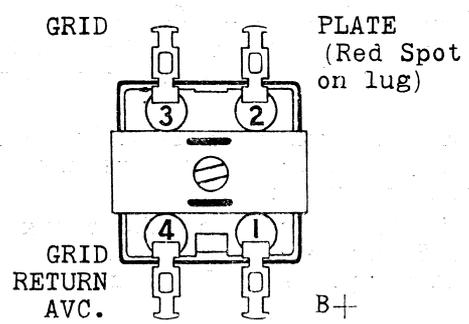
Lead from top lug (iron core end):-  
 GRID.  
 Lead from bottom lug (mounting end):-  
 CHASSIS - EARTH.

### 19, 25 AND 31 METRE OSCL. COIL

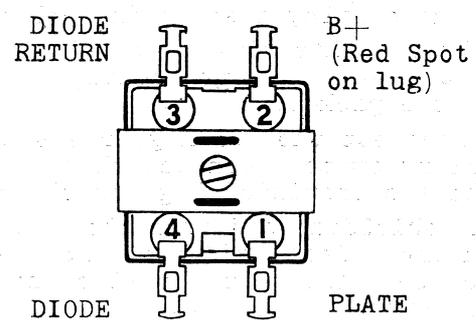
Lead from top lug (iron core end):-  
 GRID.  
 Lead from bottom lug (mounting end):-  
 OSCL. PLATE COND.

31 Metre spreadband coil, RED spot on iron core end of former.  
 25 Metre spreadband coil, WHITE spot on iron core end of former.  
 19 Metre spreadband coil, BLUE spot on iron core end of former.

### 1st IF. TRANS.

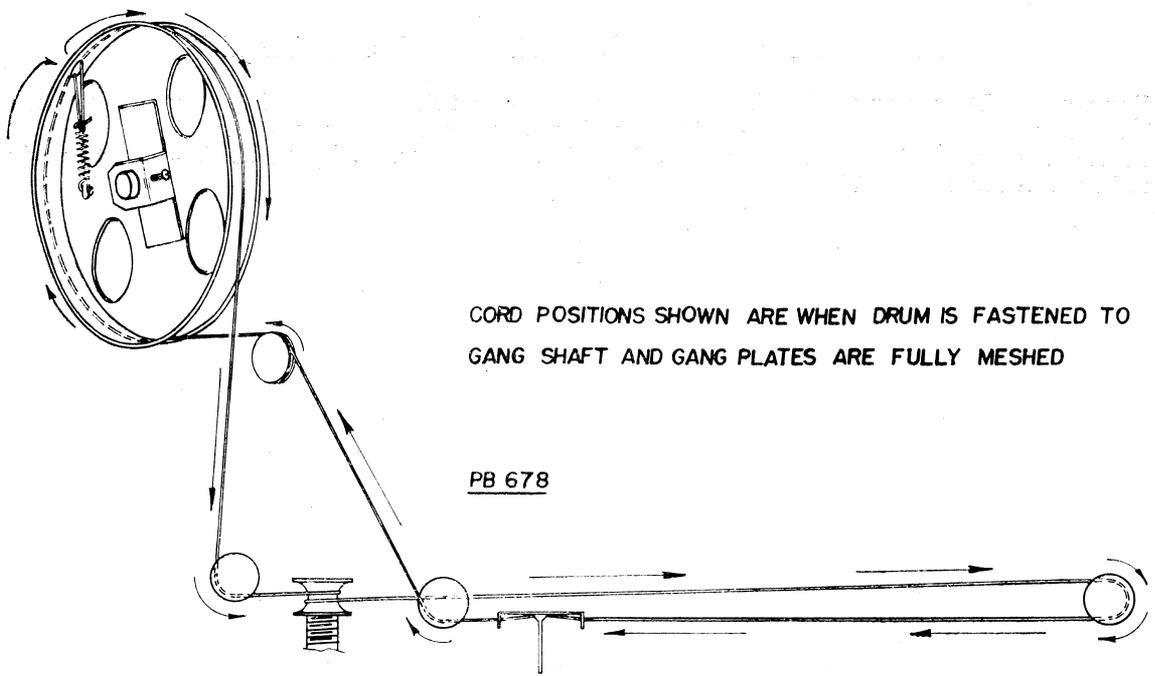


### 2nd IF. TRANS.



### CORDING OF DIAL DRIVE

Length of cord required is 5 ft. 6 ins., which includes about 8 ins. to spare for tying to tension spring.  
 Cord Part No. 34/754.  
 Tension Spring Part No. 27/87.



## PICK-UP ATTENUATION CIRCUIT CORRECTION

1. A quantity of Model "NK" receivers have been despatched from the factory with the pick-up attenuation circuit incorrectly wired, resulting in inferior tone from the receiver when used on gramo operation.
2. The incorrect wiring is that the .25 Meg resistor and .0003MF condenser are connected in parallel and wired across the output of the pick-up.
3. The correct wiring is that the .25 Meg resistor and .0003MF condenser should be connected in parallel, but wired in the active lead of the pick-up.
4. Chassis serial numbers affected and details for correction of the wiring are detailed below. The attenuation circuit is shown on page 4.
  - A. Model "NK" 1st production run chassis serial numbers 4001 to 4250.
  - B. Chassis serial numbers are visible through a small slot in the cabinet base.
  - C. Turn the cabinet over so that it lays on its lid; then remove the base board by unscrewing a screw in each of the four rubber mount feet.
  - D. Solder a three lug terminal strip part No. A103/509 on to the end of the  $\frac{1}{4}$ " x  $\frac{1}{4}$ " dia. rod protruding through the  $2\frac{1}{4}$ " x  $1\frac{1}{4}$ " width bracket at the base of the pick-up.
  - E. Disconnect the .25 Meg. resistor and .0003 MF condenser from the changer muting switch. Connect these two parts in parallel, then wire them between the two insulated lugs of the 3 lug terminal strip.
  - F. The shielded lead from the receiver is disconnected from the changer muting switch and then connected to the 3 lug term strip—shield braid to "earth" centre lug—inside shielded lead to one end of resistor and condenser.
  - G. Connect another shielded lead (Part No. WM1) to 3 lug term. strip—shield braid to "earth" centre lug—inside shielded lead to the other end of the resistor and condenser.
  - H. Connect shield braid of this lead (para. H) to thin blade lug of changer muting switch; then connect inside shielded lead to the thick blade lug of the muting switch.
  - I. Connect shield braid on lead from pick-up to thin blade lug on changer muting switch; then connect inside shielded lead from pick-up to the thick blade lug of the muting switch.
  - J. Refit base board and rubber mount feet.

## PICK-UP ATTENUATION CIRCUIT MODIFICATION

When a Collaro type 3RC521 record changer with a crystal cartridge turn-over type head is used on the Model "NK" a further tone improvement has been made by deleting the .0003MF cond. circuit No. 13, which is in parallel with the .25 Meg. resistor circuit No. 39.