LIST PRICE OF KIT SET £19/10/-

1—Chassis wtih terminal strips 12-89.
1—Radiokes all-wave box 5-89.
1—S/carlson 2 gang cond. AC type "D".
1—Radiokes 23 plate midget condenser.
1—Block condenser (4 x .25 1 x .5 mfd.) Wetless or Hellesby.
8—.1 mfd. (Chanex or Solar).
1—5 mfd. (Dulytic) 60 volt working.
1—.01 mfd. T.C.C. only.
1—.001 mfd. T.C.C. only.
1—.0005 mfd. T.C.C. only.
1—.00025 mfd. T.C.C. only.
1—.0001 mfd. T.C.C only.
4—.5 meg. Ohiohm, I.R.C. or Continental.
1—.05 meg.
1—.1 meg.
3—.01 meg.
1—Radiokes 5,000w 50 m.a.
1—25mfd. (Dulytic).

If the home constructor is to duplicate these results with his "International," it is essential that the receiver should be built from high efficiency components. The valves must be good. The gang condenser must be correctly aligned. The I.F. transformers must be highly efficient and preferably of the air dielectric type, accurately tuned. This is one of the most important considerations, as the intermediate channel is the heart of the receiver. Several well known brands are now on the market. These leave the factory tuned to 460 k.c. but it is advisable, in order to obtain the utmost from them, to give slight re-adjustment in the completed receiver. One must

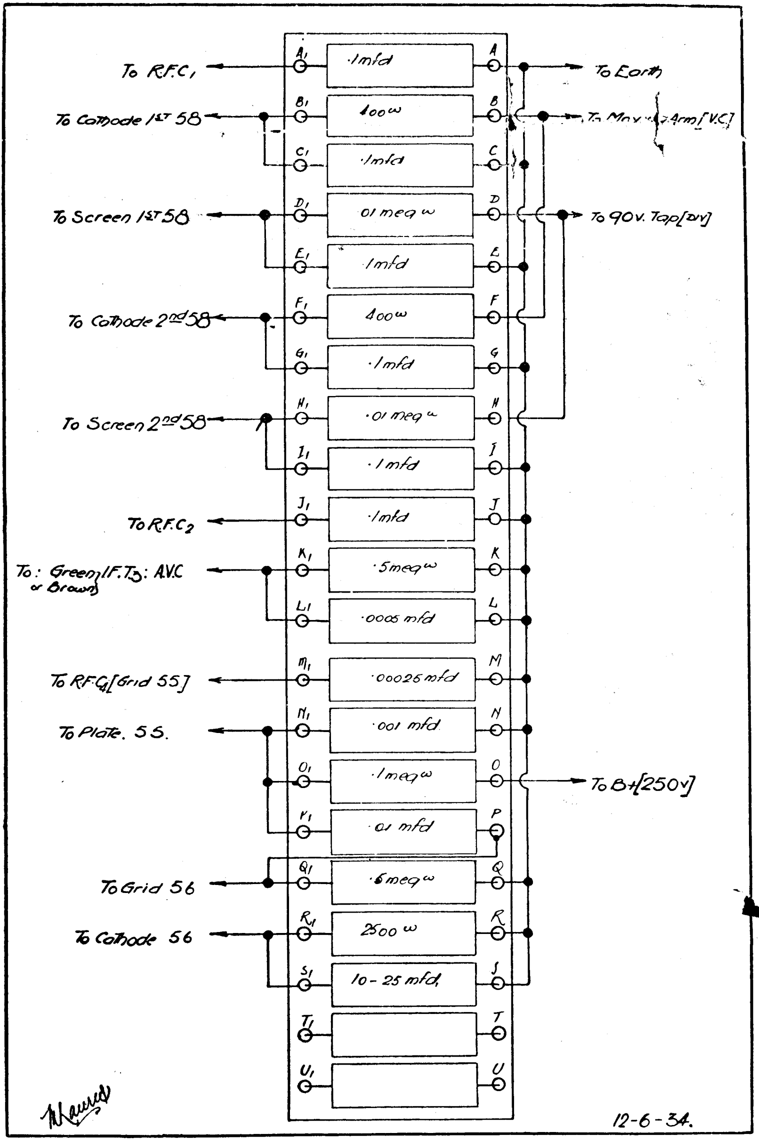
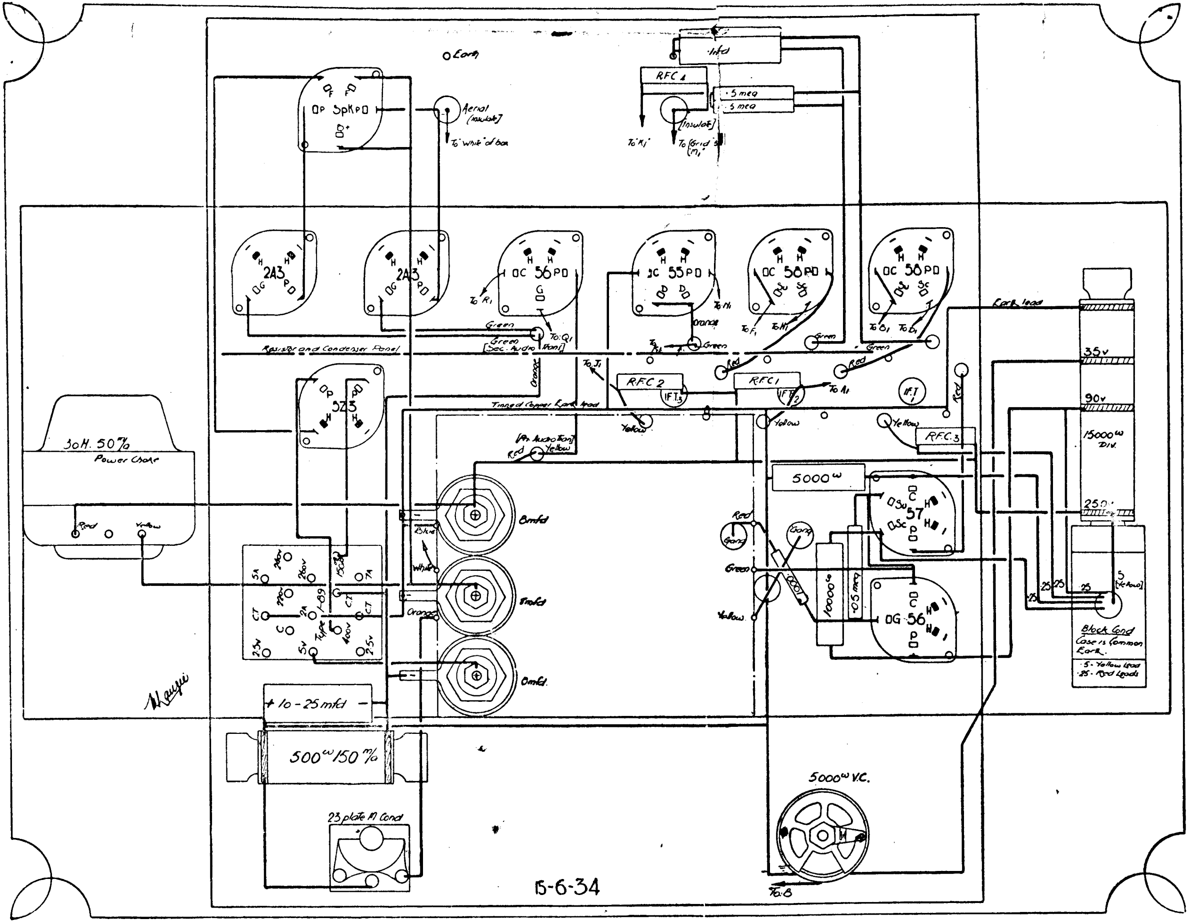

To R.F.C1
To Cathode 1ST 58
To Screen 1ST 58
To Cathode 2nd 58
To Screen 2nd 58
To R.F.C2
To: Green/Brown I.F.T3: A.V.C
To R.F.C4 [Grid 55]
To Plate. 55.
To Grid 56
To Cathode 56
To Earth
To 90V. Tap [D/V]
To B+ [250V]
A1 A ·1mfd
B1 B 400ω
C1 C ·1mfd
D1 D ·01 megω
E1 E ·1mfd
F1 F 400ω
G1 G ·1mfd
H1 H ·01 megω
I1 I ·1mfd
J1 J ·1mfd
K1 K ·5megω
L1 L ·0005 mfd
M1 M ·00025 mfd
N1 N ·001 mfd
O1 O ·1megω
P1 P ·01 mfd
Q1 Q ·5megω
R1 R 2500ω
S1 S 10-25 mfd.
T1 T
U1 U
12-6-34.

Fig. 3.



Earth
Aerial (insulate)
To 'white' of box
RFC 4
·1 mfd
·5 meg
·5 meg
To 'K1'
[insulate]
To Grid 'S M1'
2A3
2A3
56
55
58
58
5Z3
30H. 50 m/a
Power Choke
Red
Yellow
Resistor and Condenser Panel
Green
Green [Sec. Audio Trans]
Orange
Tinned Copper Earth lead
R.F.C 2
R.F.C 1
R.F.C 3
I.F.T. 3
I.F.T. 2
I.F.T. 1
Earth lead
35v
90v
15000 ω DIV.
250v
5000 ω
57
56
10000 ω
·05 meg
8 mfd
8 mfd
8 mfd
Blue
White
Orange
+ 10-25 mfd -
500 ω 150 m/a
23 plate M Cond
5000 ω V.C.
To B
Block Cond
Case is Common Earth.
·5 - Yellow lead
·25 - Red leads
15-6-34

Fig. 2.

Start off by thoroughly reading all directions and becoming familiar with layout details. For smallest details, we refer you to the wiring diagram.

Wiring and Assembly Instructions:

Mount the following parts on the Chassis:

All sockets (be careful to mount the 56 osc. socket ¼in. from chassis with spacing washers provided).

The power transformer, the intermediate transformers, the audio transformer and the electrolytic condensers. (The electrolytic condensers must be all mounted on insulating washers, otherwise the top of condensers (B+) may touch the coil box). Also mount the gang condenser on the chassis, (Before mounting the gang, solder two leads to the stators then bring through holes provided in chassis).

Turn the set upside down, carefully packing it up to balance securely. Mount RFC 1-2-3 in the positions shown in the wiring diagram. Fig. 2.

Wiring:

(Note: Keep all wiring as close to chassis as possible (except oscillator section). Commence with the filament wiring, use hook up wire twisted similar to power flex.)

Wire the 2 2A3 sockets and connect to 2.5v 5a. winding. Next wire together the 56-57, 2-58, 55 and 56 and connect to 2.5v.7a. winding. Finally wire the 5Z3 to the 5.v.3a. winding. It will be found an advantage to run a bare tinned copper lead from different positions on the chassis so that it runs close to the sockets, transformers, etc. (see daigram.) This can be used for all earth connections.

Connect the 2.5v filament centre taps together and connect to earth. The 500w 150 m/a resistor may be mounted on front of chassis (holes provided under the midget condenser) and wired from 385v CT to earth, also connect a 5 to 25 mfd. electrolytic condenser across this resistor. (Red-earth).

Now connect the plates of the 5Z3 to the outside connections of the HT sec. Connect the power flex to the tapping which is closest to the supply voltage. The 30h 50 m/a choke may now be mounted. This is mounted on side of chassis over power transformer (holes provided).

Now take a lead from one of the 5v. filament lugs and connect to + (positive) of electrolytic condenser (insulated nearest front of chassis). Continue this lead to one side of speaker field on socket at rear of chassis. The lug (–) that connects to the case of this electrolytic is connected to CT 385v. sec. The lugs (–) on the other 2 condensers connect to earth.

The other side of field is connected to "+" (positive) of second electrolytic condenser and then to one side of power choke. This same side of field connects to B+ on speaker socket.

The other side of the filter choke goes to "+" (positive) of the 3rd electrolytic condenser. This side also connects to "O" on panel and to the plate supply RFC's and on to one end of voltage dividers—the other end of divider going to earth.

When the speaker, valves, aerial and earth are fitted the power can be turned on. The band switch should be turned to number one position for broadcast reception. The 5Z3 valve should be watched for any blue glow or flashes and if these occur switch off the power and look for short circuits, but if the filaments heat up slowly to a dull red and you have H.T. voltage, the dial can be rotated and stations should be tuned in.

The trimmers on the gang should be left about two thirds out and the padder likewise. The set is tuned to some station on a low wave length such as 2CH or 2SM, with the volume control adjusted so that the signals are faint, the trimmer on the left hand of aerial gang should be adjusted for best results. such as 2FC, 3AR or 5CK and adjust the padder to give best

TO ASSEMBLE THE KIT.

The plate of one 2A3 goes to "plate" on speaker socket. The plate of other 2A3 goes to remaining "plate" lug on speaker socket. The grids of the 2A3 s each go to the outside connections of the audio transformer **secondary.** The centre tap connection goes to centre tap connection of power transformer 385v. secondary.

One side of primary goes to plate 56, the other goes to B+ 250v. A lead about 4in. long is connected to the grid and cathode of the 56 and other ends left unconnected (to the connected panel later on).

Next connect the orange of I.F.T.3 to the two diode plates on the 55 and green is left to connect to panel at K1L1. The red goes to the plate of 2nd 58 (one nearest 55) and the yellow goes to opposite side of R.F.C.2 (one nearest 55 socket) as B+ 250v. This also connects to J1 on panel.

R.F.C.4 is mounted on the earth terminal of pick up terminals at rear of chassis. Mount this after a lead has been taken from the insulated terminal to green or brown of I.F.T.3 and another about 2in. long left loose on it. This lead connects to one side of the R.F.C. a lead from the other side go in through hole in socket (drilled between two filament contacts) to Grid of 55.

A lead is also taken from here to M.1 on panel (leave lead about 4in. long).

I.F.T.2 may now be wired:

Red goes to 1st 58 plate, yellow goes to opposite side of R.F.C.2 as B+, and also to A1 on panel. (Leave lead about 5in. long) orange goes to Grid (cap) of 2nd 58. Green goes to .5 meg. resistor also to .1 mfd. condenser to earth. (See drawing for position of .5 meg. resistor), on 58 socket (58 No. 2).

Connect suppressor to cathode.

Connect a lead 4in. long to cathode (to connect to panel).

Connect a lead 4in. long to screen (to connect to panel).

On socket 58, (No. 2).

Connect suppressor to cathode.

Connect a lead 4in. long to cathode (to connect to panel).

Connect a lead 4in. long to screen (to connect to panel).

Connections to I.F.T.1.

Connections to I.F.T.1.

Yellow to opposite side of R.F.C. as B+ 250v. and also to .25 mfd. connection on block condenser.

Orange to Grid (cap) 1st 58.

Green or brown of I.F.T.3 through .5 meg. resistor, also through .1 mfd. condenser to earth.

On 57 socket.

Connect suppressor to cathode 56, also leave a lead about 4in. long connected to suppressor of 57.

Connect cathode through 5,000w resistor to earth.

Also connect .25 mfd. section of block condenser to cathode.

Connect screen through 10,000w resistor to plate 56.

Also connect .25 mfd. section of block condenser to plate 56, grid (cap) goes to trimmer lug on gang condenser section nearest valve.

TESTING AND ALIGNING.

results. Remember, do not adjust the aerial gang trimmer, this is only adjusted on the lower wave lengths. As the padder screw is turned, the dial should be rocked back and forth across the station until the best results are obtained. Then turn back to the low wave length station, check the alignment of the aerial gang trimmer, then back to the top and check the padding. No further adjustments are necessary for the short wave bands. The aerial coupling screw should be adjusted for best results on the short waves.

You have only to turn the band switch to numbers two, three or four. The left hand control is automatically switched into circuit on the three short wave bands and is adjusted on each station for best results. It does not operate on the broadcast band.

On 56 socket, (make sure all leads are as short as possible).

Connect .05 meg. resistor from grid to Cathode.

Connect plate to 90v. tap on divider.

Connect .0001 condenser to Grid (make sure that this condenser is not placed close to any metal object—chassis condenser block etc.) Connect a lead about 3in. long to other side of condenser for connection to box.

The Block condenser, voltage divider, panel, volume control (make sure to insulate from chassis) 23 plate midget condenser may now be mounted. The panel is mounted with A1—U1 lugs nearest chassis.

Connections to be made to panel:—

A1—To R.F.C.2 in plate circuit of first 58.

B1—To Cathode 1st 58.

D1—To Screen 1st 58.

F1—Cathode 2nd 58.

H1—Screen 2nd 58.

J1—R.F.C.3 in plate circuit of 2nd 58.

K1—Green or brown I.F.T.3 and AVC.

M1—R.F.C.4 in Grid circuit of 55.

N1—Plate 55.

Q1—Grid 56.

R1—Cathode 56.

These connections are made with the leads left unconnected to their respective lugs.

A—To earth.

B—Moving arm of volume control.

D—90v. tap on vlotage divider.

O—B+ 250v.

For connections on panel see drawing.

Wire the block condenser as described above. Then wire the volume control and voltage divider. The end clip on voltage divider nearest back of chassis connects to earth, the next clip (35v.) connects to one side of volume control, the next clip (90v.) connects to D on resistor panel. The max. 250v. clip goes to B+ side of plate supply R.F.C.3.

The centre lug of the volume control (moving arm) connects to B of resistor panel. The remaining lug connects to earth.

The coil box may now be mounted.

Connections to coil box:—

Red goes to .0001 mfd. condenser and also section of gang nearest dial.

Green connects to lead from suppressor of 57.

Yellow connects to lead from section of gang nearest valves 56 and 57.

Blue connects to earth.

White connects to aerial terminal (insulated).

Orange connects to fixed plates of 23 plate midget condenser.

Note:—Be sure to earth brass lugs on gang condensers, close to gang.

Most of the international stations will be found on band four and a few on band three. Any amount or amateur 'phone stations will be heard on bands two and three at night. Any international stations heard in daylight should be looked for in band four.

The screen grids should be adjusted to 90-100 volts and the volume control clip to .30-45 volts.

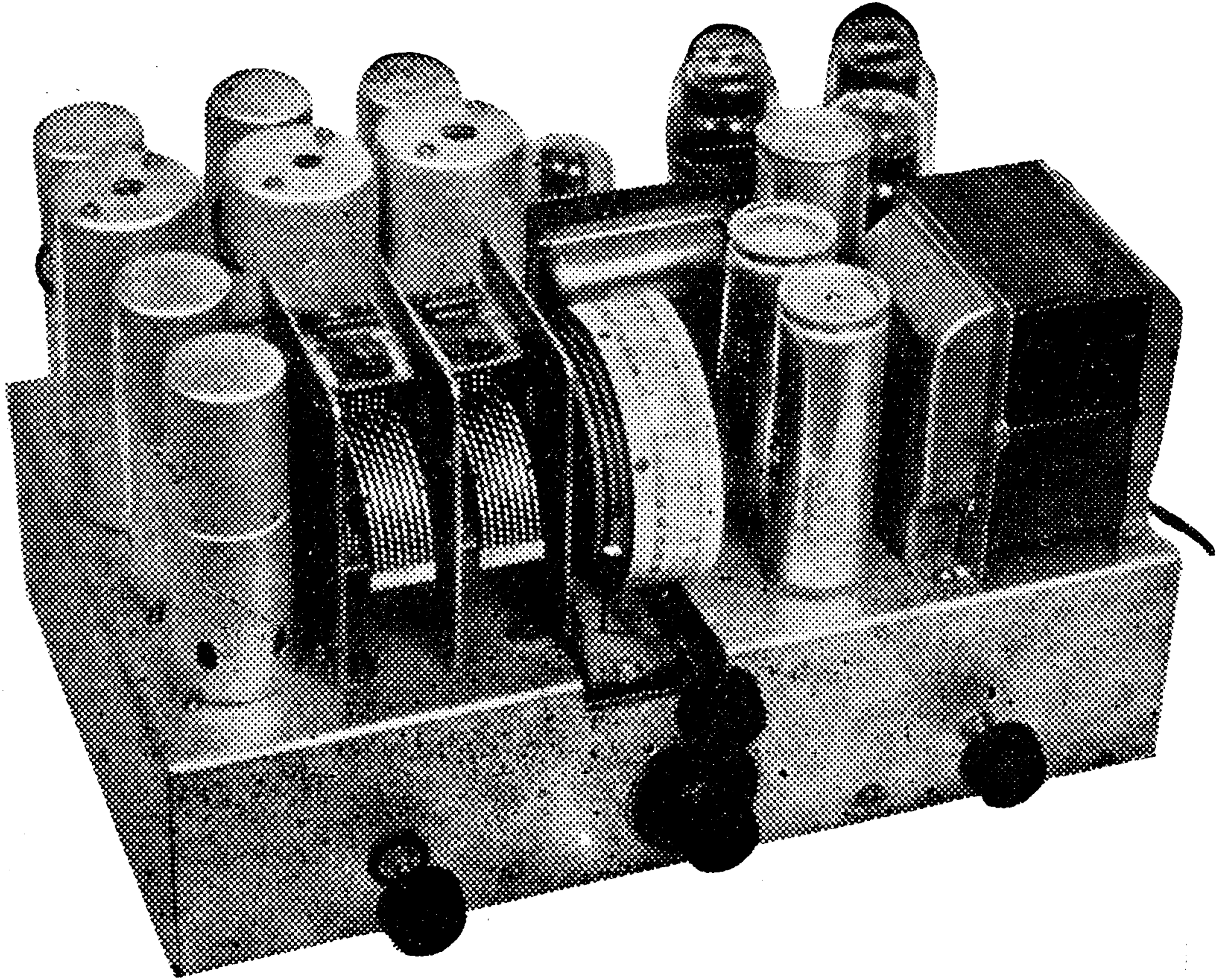
SETTING THE DIAL.—The condenser trimmer screws should be adjusted so that a station of known frequency, about the middle of the dial, is tuned in at the correct frequency indicated by the dial. The dial can be then checked at the bottom and top of the bands.

Radiokes De Luxe International Super, Type 12-89

Pirce £19 10 0, without Valves, Speaker or License Plate

LIST OF PARTS FOR 8/9 INTERNATIONAL ALL-WAVE DE LUXE RECEIVER.

1—Radiokes 2,500w 50 m.a.
1—Radiokes 500w 150 m.a. special resistor.
2—Radiokes 400w 50 m.a. maxomes.
1—Radiokes 5,000w potentiometer with insulating washer.
1—Radiokes 15,000w vol. divider 4-24 only.
3—Electrolytic cond. (large Solar 500v.) with insulating washers.
1—Radiokes special p.p. audio trans. 3-19, wide range.
1—Radiokes calibrated drum dial 7-10K.
3—Radiokes special air dielectric I.F.T. 465 k.c. type 5-24.
3—4 pin Tasma sockets only.
3—5 pin Tasma sockets only.
4—6 pin Tasma sockets only.
5—New type valve cans No. 4.
4—Grid clips.
4—N.p. terminals.
3—Knobs, plain, Marquis.
1—Rubber grummit.
1—T. 36 panel.



2—T. 36 pillars.
1—Radiokes 30H 50 m.a. choke, type 2-1.
1—Radiokes special power transformer 150 m.a. 1-89.
4—Radiokes R.F. chokes type 3-21.
3—Yds. power flex.
40—3-8in. x 1-8in. R.H. screws.
55—1-8in. hex. nuts.
4—5-32in. x 1-4in. R.H. steel screws.
6—1-2in. x 1-8in. R.H. screws
24—5 BA brass washers, tinned.
12—Soldering lugs.
10—Yds. hook-up wire.
3—Yds. tinned copper wire.
For 6.3 volt model use 1-89-6 power transformer.

Valves Required:

2.5V. Model: 1/56, 1/57, 2/58, 1/55, 2/2A3, 1/5Z3.
6.3V. Model: 1/37, 1/77, 2/78, 1/85, 2/2A3, 1/5Z3.

Speaker:

Amplion dual with two parallel 1500 ohm. (750w) fields. Output for 2A3 push pull with semi fixed bias. Type "DQ 15."

Features

Special electron coupled Hartley oscillator.

Laboratory type air dielectric transformers used in two stage stabilised intermediate channel.

Four wave bands covering 15 to 550 metres.

Automatic volume control without any disadvantages.

Diode detection and visual tuning, if required.

Laboratory type radiometal alloy wide range audio transformer drives 2A3's in "A" class P.P. with semi-fixed bias.

Special dial calibrated in kilocycles.

Users of the "International" super are so enthusiastic and the receiver so successful that we have produced a "De Luxe" model to satisfy the needs of those who want all that it is possible to get from any one receiver.

Months of testing and laboratory investigations have convinced us that the 56 Hartley type electron coupled oscillator stands alone for low noise level and reliability on both the short waves and broadcast band. The air tuned two stage I.F. amplifier provides more gain than is required, the sensitivity being a fraction of a microvolt, therefore it is essential that the oscillator mixer system should be that which supplies the lowest noise to signal ratio possible, in order that those distant stations above the noise level will be tuned in clearly and easily.

Every station in the world that is above the noise level can be logged on this receiver.

On the broadcast band in Sydney, Perth and Manilla are received regularly and often French and Japanese and American stations.

The selectivity is sufficient to separate 3UZ and 3DB from the local "B" class stations with dial space to spare.

The laboratory type I.F. transformers are air tuned and Litz wound; the coils have the exceptional Q of 115, a coupling co-efficient of 0.77 and provide a gain in excess of 200 per stage with unequalled selectivity.

A.V.C. is used in conjunction with bias control so that the advantages of A.V.C. are had without the objectionable noise between stations that is usual.

Visual tuning is provided by tuning meter as an extra to the kit if desired.

The 55 duo-diode triode feeds a 56 which drives a pair of 2A3 valves in class "A" P.P. The push pull coupling transformer is a new wide range type using the new radiometal alloy core and has a remarkable audio response.

The Radiometal nickel alloy has an exceptionally high permeability which permits a high inductance primary with much fewer turns than is usual with ordinary silicon steel cores, a new method of winding the two secondaries ensures perfect matching and low distributed capacity. In short, the audio amplifier is equipped with a laboratory type transformer designed to give the most perfect possible fidelity.

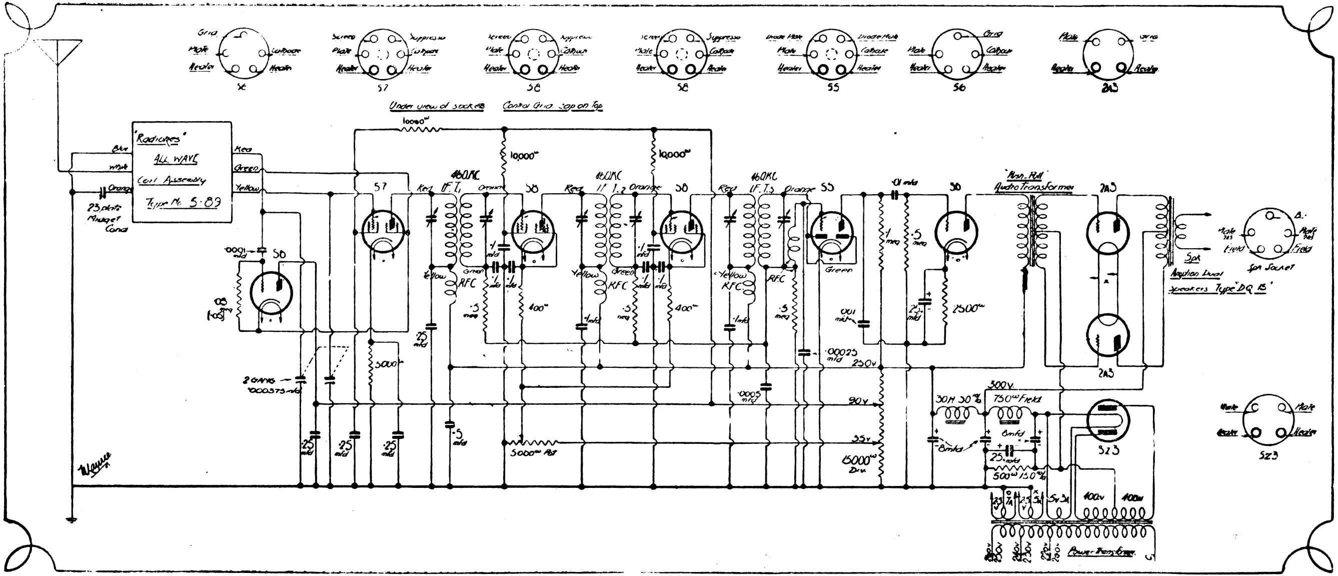
GETTING THE BEST OUT OF THE DE LUXE INTERNATIONAL SUPER.

Among the users of this set are professionals who have tried many different receivers. One of the facts they always mention about the set is that it has done more than has been claimed for it. If this is not direct praise of the set, it is at least an expression of satisfaction with the performance.

Why it is the performance of this set outstanding? We could explain it by saying it is more sensitive than other similar sets, but that would hardly be the correct explanation, because many sets are so sensitive that they dip away below the noise level even when this level is at its lowest. To go far below the noise level is useless, for it is not noise we are after but the clear signals. The correct explanation is the ease with which stations can be tuned in with certainty. There is no complicated tuning mechanism resembling the intricacy of a time combination lock which only the initiated can open at the proper time. There is but one main control for station selection and it requires no more skill than that required turning a knob.

During our tests we have found that the receiver was of high sensitivity and excellent selectivity so that we had no trouble at all in logging any of the short-wave broadcasting stations of the world while they were on the air. Even the most distant stations from the far-flung corners of the earth came in with plenty of volume on the loud speaker; while reports from home constructors of the "International" tell of the surprising ease with which stations in Europe, Russia, Great Britain, America, etc., are received regularly.

The performance on the broadcast band is really excellent. Sufficient selectivity is available to separate such stations as 2-UZ and 3-DB from the local Sydney "B" class station and enough power to bring in even 6-WF Perth. Reports have from Manly and Rose Bay of reception of Japanese and French stations on the broadcast band. Of course, thousands of amateur and Morse code stations can be received on the short wave bands as in most short wave receivers.



56
57
58
58
55
56
2A3
Under view of sockets
Control Grid cap on Top
"Radiokes"
ALL WAVE
Coil Assembly
Type No. S-89
23 plate Midget Cond
10000ω
10,000ω
460KC
I.F.T. 1
I.F.T. 2
I.F.T. 3
RFC
400ω
5000ω
2 GANG ·000375 mfd
5000ω Pot
15000ω Div.
250v
90v
35v
Push-Pull Audio Transformer
2A3
30H 30%
750ω Field
300v
8mfd
5Z3
500ω 15.0%
Power Transformer
Spk
Spk Socket
Amplion Dual speakers Type "DQ 13"

Fig. 1.

exercise great care to note the position of the adjusting screws before turning them. Adjustment should be made on the broadcast band. If an oscillator is not available then tune to some station of low wave length, e.g. 2-CH, and, with the volume turned very low and the station tuned in accurately, adjust the I.F. transformer screws, until signals are loudest, as though you were manipulating a dial.

It is desirable that the padding adjustment should be carried out with an insulated screw driver. If this cannot be arranged good results can be obtained with an ordinary screw-driver but, as each adjustment is made to the padder, the screw-driver should be lifted away from the screw while the dial is rocked, so that there is no capacity effect to cause a false adjustment. The padder screw can be turned a little at a time as the dial is rocked back and forth and the effect noted. The padding effects only the broadcast band. On the short waves the padder is automatically switched off and the twenty-three plate trimmer condenser is switched into circuit, padding being unnecessary on the short waves. To increase the effect control of the potentiometer the voltage divider clip, to which it is connected can be moved further towards the high voltage end of the divider.

When tuning on the short waves, the volume should be turned on more than the broadcast band and the dial turned very slowly and carefully, otherwise the stations for which you are searching might easily be mised. Once you are accustomed to the sharper tuning of the short waves, you will be able to tune in London and Paris as easily as you can 2-BL and 2-FC. Most of the world's broadcasting stations will be found between twenty and sixty degrees on short waves band number one.

By looking up "Short Wave Flashes" each week in "Wireless Weekly" you can get some idea which international stations can be heard in Australia.

Use a short aerial for short wave reception, about twenty-five to thirty-five feet inclusive, depending upon your locality. During our tests a twenty-seven foot aerial was used for both short-wave and broadcast reception.

The "International" super is not a very difficult receiver to build and adjust if built from efficient components. Complete kits of the "International" can be obtained, including drilled chassis and tested components down to the last screw and nut, and complete with assembly, wiring and testing instructions and diagrams, and with the resistor panels designed to so simplify the construction that even a novice can build a chassis which, when completed, has the appearance of a high grade commercially produced receiver.