

# SERVICE BULLETIN



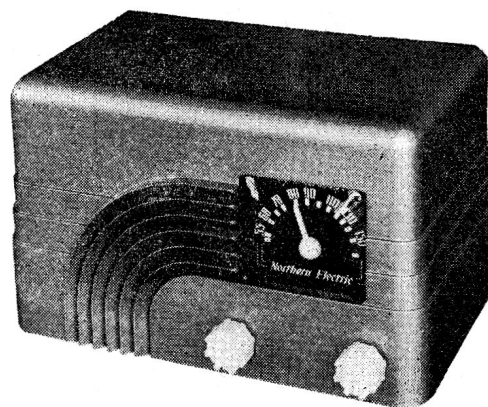
# Northern Electric RADIO

## Model 4104

### 4-Tube Mantel Model

### Battery Operated Radio Receiver

## SERVICE INFORMATION



## SPECIFICATIONS

GENERAL: 4-Tube Superheterodyne Battery Operated Radio Receiver, housed in table model plastic cabinet available in five colours.

### MODEL

|       |       |
|-------|-------|
| B4104 | Ivory |
| B4104 | Green |
| B4104 | Gold  |
| B4104 | Blue  |
| B4104 | Rose  |

### 1. FREQUENCY RANGE

Broadcast band — 540 to 1600 K.C.

### 2. INTERMEDIATE FREQUENCY

455 K.C.

### 3. TUBES

| Type  | Function                                     |
|-------|----------------------------------------------|
| 1A7GT | Converter                                    |
| 1N5GT | I.F. Amplifier                               |
| 1H5GT | 2nd Detector, A.V.C. and 1st Audio Amplifier |
| 3Q5GT | Output Amplifier                             |

### 4. A.V.C.

On 1A7GT Converter

### 5. POWER SUPPLY

"A" Battery — 1½ Volts, 250 Milliampères  
"B" Battery — 90 Volts, 10 Milliampères

### 6. POWER OUTPUT

250 Milliwatts

### 7. ANTENNA

An external antenna is required for the operation of this set. Connect to terminal "A" on back of cabinet. Use single wire 40 to 100 feet in length including lead-in.

### 8. GROUND

Connect to terminal "A" on back of cabinet.

### 9. AUDIO SYSTEM

Audio portion of 1H5GT resistance — capacity coupled to 3Q5GT power output tube.

### 10. LOUDSPEAKER

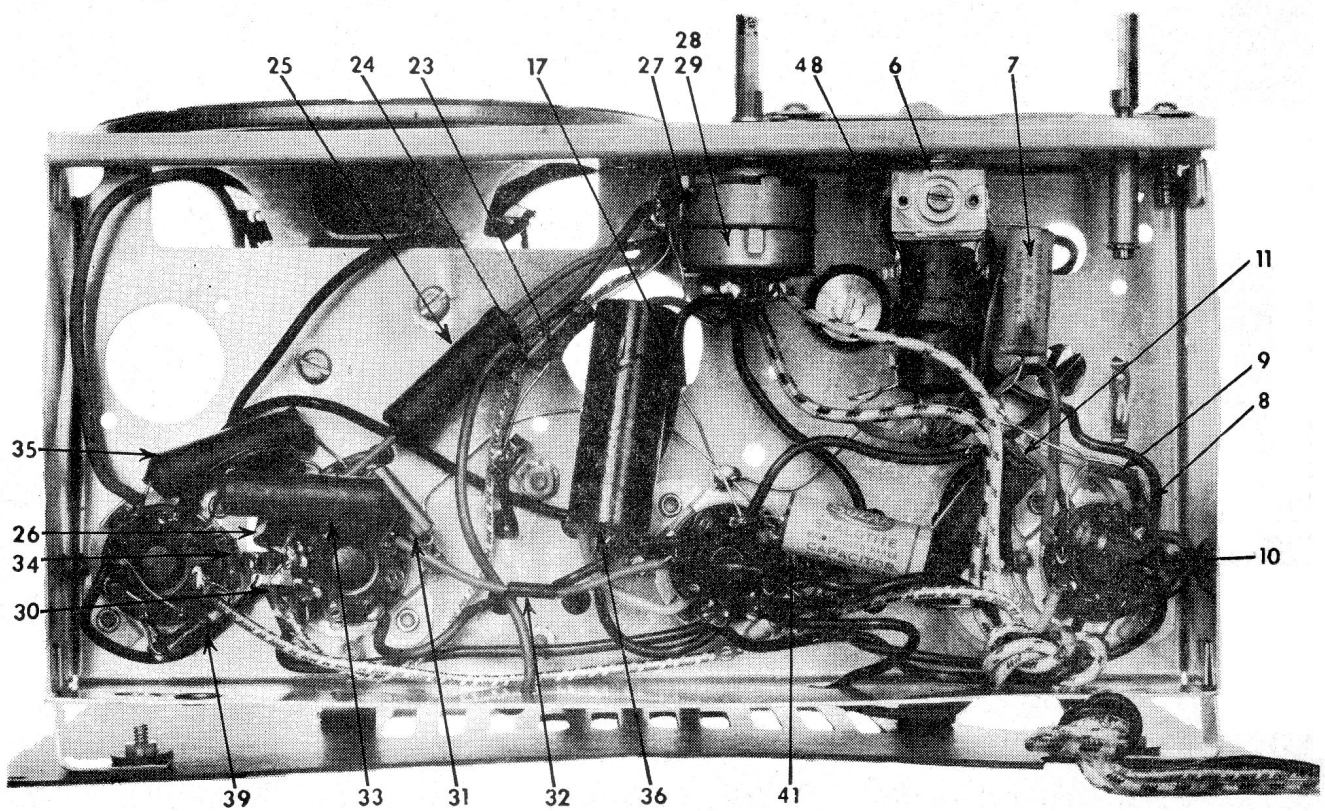
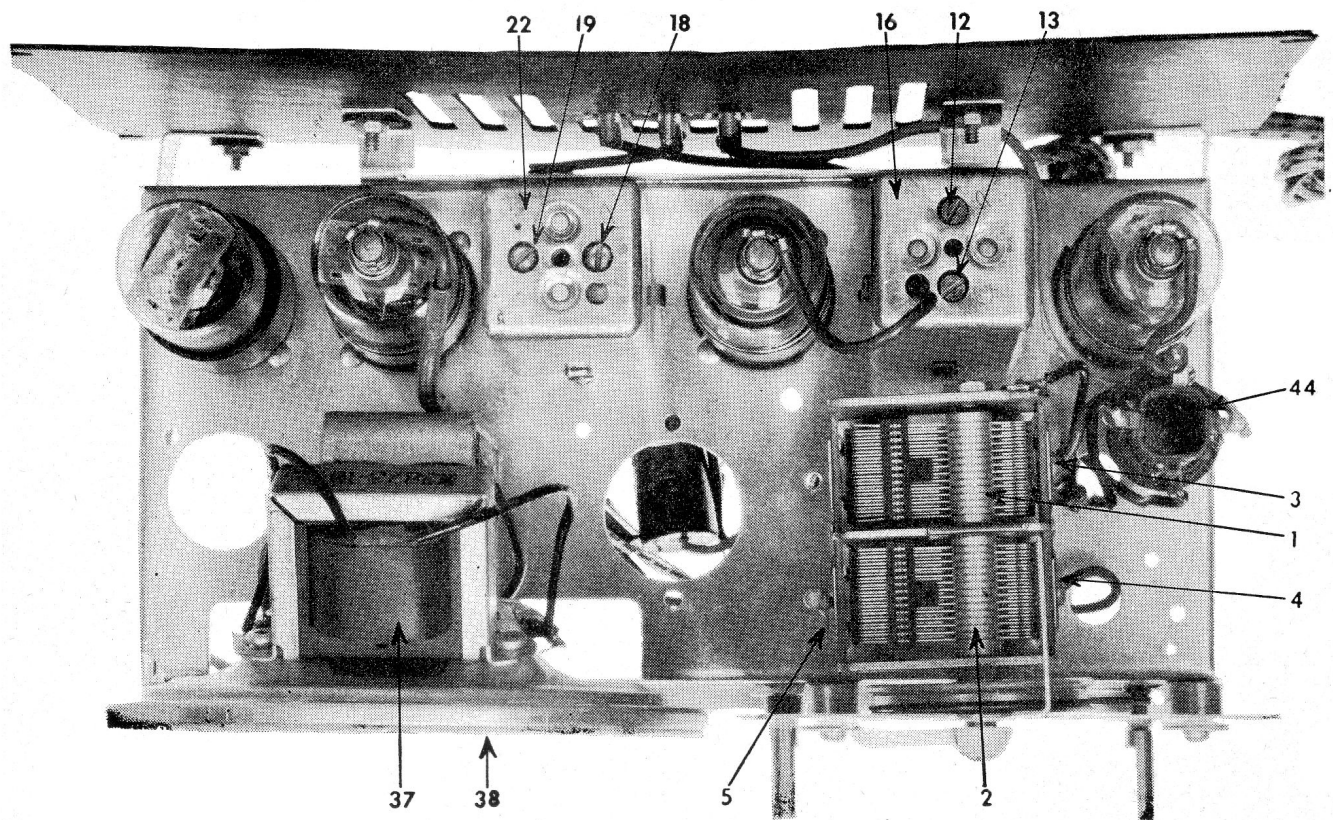
5" permanent magnet

### 11. CONTROLS

Left — Volume Control and ON-OFF Switch.  
Right — Tuning Control.

### 12. DIMENSIONS

Chassis, Assembled (excluding shafts)  
Length 10 11/32", Width 5 5/8",  
Height 5 15/16"  
Cabinet, Overall (including knobs)  
Length 10 3/8", Width 6 1/4",  
Height 6 9/16".



## ALIGNMENT

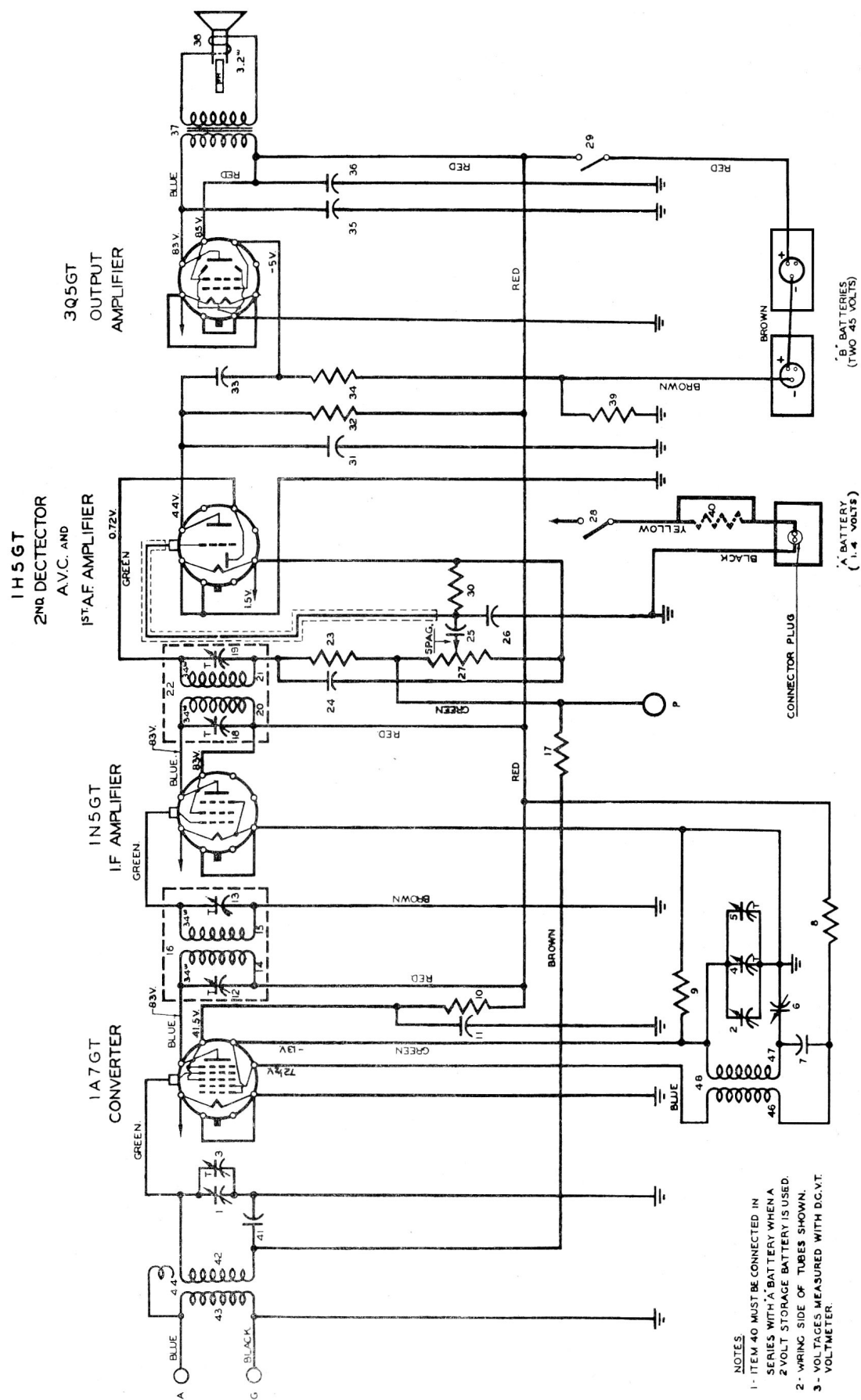
Alignment procedure should be carried out according to the following table and in the order shown.

| Alignment Frequency | Dummy Antenna    | Receiver Connection | Items to be Adjusted for Maximum output and their location                       |
|---------------------|------------------|---------------------|----------------------------------------------------------------------------------|
| I.F. 455 KC         | 0.1 Mfd. (Paper) | 1A7GT Grid Cap      | I.F. Trimmers, Items 18, 19, 13 and 14 on I.F. cans (tuning gang open)           |
| B.C. 1400 KC        | 100 Mmf (Mica)   | Antenna Terminal    | Oscillator trimmers on gang items 4 and 5, antenna trimmer on gang, item 3.      |
| B.C. 600 KC         | 100 Mmf (Mica)   | Antenna Terminal    | Oscillator lag trimmer, item 6, adjust while rocking gang.<br>Recheck at 1400 KC |

IMPORTANT NOTE:—When a 2-volt storage battery is used, a 2.2 ohm resistor, item 40, must be installed as shown.

## REPLACEMENT PARTS LIST

| Item    | Description                                                | Part No.    | Item | Description                                          | Part No.    |
|---------|------------------------------------------------------------|-------------|------|------------------------------------------------------|-------------|
| 1       | Capacitor, Gang, Antenna Section, 420 Mmf, Part of.....    | R12734      | 37   | Transformer, Output.....                             | K3873-16    |
| 2       | Capacitor, Gang, Oscillator Section, 420 Mmf, Part of..... | R12734      | 38   | Loudspeaker.....                                     | R12791      |
| 3       | Capacitor, Trimmer, 1.5-20 Mmf, Part of.....               | R12734      | 39   | Resistor, 430 Ohm $\frac{3}{4}$ W.....               | K10003A-431 |
| 4       | Capacitor, Trimmer, 1.5-20 Mmf, Part of.....               | R12734      | 40   | Resistor, 2.2 Ohm $\frac{1}{2}$ W.....               | K10003B-22  |
| 5       | Capacitor, Trimmer, 1.5-20 Mmf, Part of.....               | R12734      | 41   | Capacitor, Paper, .05 Mfd 400 V.....                 | K10129-503  |
| 6       | Capacitor, Trimmer, 225-750 Mmf (Part of R13472).....      | K1458-13    | 42   | Coil, Antenna, Secondary, Part of.....               | R13376      |
| 7       | Capacitor, Paper, .002 Mfd 600 V.....                      | K10128-202  | 43   | Coil, Antenna, Primary, Part of.....                 | R13376      |
| 8       | Resistor, 10,000 Ohm $\frac{1}{2}$ W.....                  | K10000C-103 | 44   | Coil, Antenna.....                                   | R13376      |
| 9       | Resistor, .22 Meg $\frac{1}{2}$ W.....                     | K10000C-224 | 46   | Coil, Oscillator, Plate, Part of.....                | R13015      |
| 10      | Resistor, 68,000 Ohm $\frac{1}{2}$ W.....                  | K10000B-683 | 47   | Coil, Oscillator, Grid, Part of.....                 | R13015      |
| 11      | Capacitor, Paper, 0.1 Mfd 200 V.....                       | K10130-104  | 48   | Coil, Oscillator.....                                | R13015      |
| 12      | Capacitor, Trimmer, 20-150 Mmf, Part of.....               | R15375      |      | Miscellaneous                                        |             |
| 13      | Capacitor, Trimmer, 20-150 Mmf, Part of.....               | R15373      |      | Cord, Dial.....                                      | K10301      |
| 14 & 15 | Coils, 1st I.F.....                                        | —           |      | Spring, Dial Cord.....                               | R13898      |
| 16      | Transformer, 1st I.F.....                                  | R15375-2    |      | Dial Scale Assembly.....                             | R8258-24    |
| 17      | Resistor, 2.2 Meg $\frac{1}{2}$ W.....                     | K10000C-225 |      | Shaft, Tuning Drive.....                             | R12727      |
| 18      | Capacitor, Trimmer, 20-150 Mmf, Part of.....               | R15373      |      | Socket, Octal Tube.....                              | K10145-36   |
| 19      | Capacitor, Trimmer, 20-150 Mmf, Part of.....               | R15373      |      | Dial Indicator Assembly.....                         | R16281      |
| 20 & 21 | Coils, 2nd I.F.....                                        | —           |      | Bezel.....                                           | R12951      |
| 22      | Transformer, 2nd I.F.....                                  | R15307-2    |      | Plain Knob Assembly (Ivory).....                     | R15348-1    |
| 23      | Resistor, 47,000 Ohm $\frac{1}{2}$ W.....                  | K10000C-473 |      | Plug, "A" Battery.....                               | K4781-2     |
| 24      | Capacitor, Mica, 100 Mmf 500 V.....                        | K10134C-101 |      | Plug, "B" Battery.....                               | K4780-2     |
| 25      | Capacitor, Paper, .01 Mfd 600 V.....                       | K10128-103  |      | Battery Cable Assembly, Detail 2.....                | R13377      |
| 26      | Capacitor, Mica, 100 Mmf 500 V.....                        | K10134C-101 |      | Cabinet, Ivory.....                                  | R13357A     |
| 27      | Control, Volume, Part of.....                              | K4754-5     |      | Cabinet, Ornamental Green Finish.....                | R13357C     |
| 28      | Switch, "A" Battery, Part of.....                          | K4754-5     |      | Cabinet, Ornamental Gold Finish.....                 | R13357E     |
| 29      | Switch, "B" Battery, Part of.....                          | K4754-5     |      | Cabinet, Ornamental Blue Finish.....                 | R13357G     |
| 30      | Resistor, 10 Meg. $\frac{1}{2}$ W.....                     | K10000C-106 |      | Cabinet, Ornamental Rose Finish.....                 | R13357J     |
| 31      | Capacitor, Mica, 100 Mmf 500 V.....                        | K10134C-101 |      | Cabinet Back Assembly.....                           | R8258-23    |
| 32      | Resistor, 1 Meg $\frac{1}{2}$ W.....                       | K10000C-105 |      | Terminal Strip, Single.....                          | K10120-1    |
| 33      | Capacitor, Paper, .01 Mfd 600 V.....                       | K10128-103  |      | Trimmer and Bracket Assembly (including Item 6)..... | R13472      |
| 34      | Resistor, 2.2 Meg $\frac{1}{2}$ W.....                     | K10000C-225 |      | Speed Nut (Bezel Mounting).....                      | R12979      |
| 35      | Capacitor, Paper, .005 Mfd 600 V.....                      | K10128-502  |      | Indicator Knob Assembly (Ivory).....                 | R13372-1    |
| 36      | Capacitor, Electrolytic, 15 Mfd 150 V.....                 | K10124-13   |      | Stud, Gang Mounting.....                             | K10298-3    |



SCHEMATIC DIAGRAM MODEL B4104 BATTERY OPERATED RECEIVER