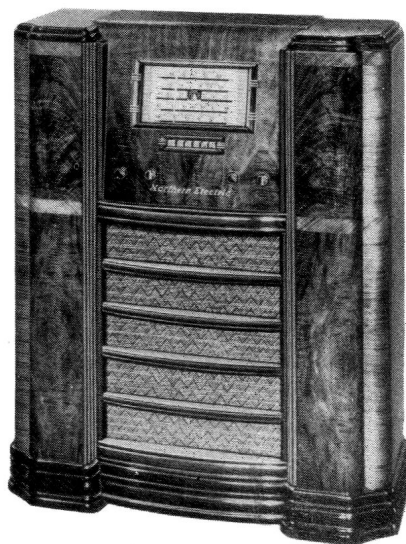


# Model 851-A Console

## A-C Superheterodyne Radio Receiver



### Specifications

#### Frequency Range:

- Five: (1) Broadcast .54 to 1.71 mc.  
(2) Shortwave 19 M. 14.9 to 15.45 mc.  
(3) Shortwave 25M. 11.4 to 12.05 mc.  
(4) Shortwave 31 M. 9.2 to 9.8 mc.  
(5) Shortwave 49 M. 5.8 to 6.3 mc.

#### I.F.:

470 kilocycles

#### Tubes:

| Type      | Position                          |
|-----------|-----------------------------------|
| 6SA7      | Converter                         |
| 6SK7      | I-F Amplifier                     |
| 6SQ7      | 2nd det. AVC & 1st A.F. Amplifier |
| 6J5-G     | Phase Inverter                    |
| 6F6-G (2) | Push-Pull Output                  |
| 5Y4-G     | Rectifier                         |
| 6U5       | Tuning Eye                        |

#### Power Supply:

110-125 volts A-C, 25-60 cycles.

#### Power Output:

8 watts.

#### A.V.C.:

Applied to 6SA7 converter and 6SK7 I-F Amplifier.

#### Audio System:

First A-F section of type 6SQ7 resistance-capacitance coupled through 6J5-G Phase Inverter to an output stage of two 6F6-G tubes in push-pull.

#### Antenna:

Rotatable loop located in loudspeaker chamber. Special antenna mounted above chassis for shortwave. Provision is also made for use of external antenna.

#### Controls:

- Four (left to right).  
(1) Volume Control  
(2) Wave Band Switch  
(3) Tuning Control  
(4) Tone and On-Off Switch

#### Loudspeaker:

10" E.D. enclosed in "Mirrophonic" Tone Chamber.

#### Automatic Tuning:

Six mechanically-operated pushbuttons for selection of stations.

#### Phono Radio Terminals:

Provision is made for use of receiver as an electric phonograph.

#### Dimensions:

Chassis: 18½" long, 6" wide and 3⅜" high.  
Cabinet: 37¼" high, 29⅛" wide and 12" deep.

[illegible]

**SCHEMATIC DIAGRAM  
MODEL 651-A RADIO RECEIVER  
A-C SUPERHETERODYNE**

## REPLACEMENT PARTS LIST

| Item | Description                                                 | Part No.                       | Item | Description                                            | Part No.                       |
|------|-------------------------------------------------------------|--------------------------------|------|--------------------------------------------------------|--------------------------------|
| 1A   | Broadcast Loop Assembly.....                                | K-5862                         | 57A  | 25 M. Osc. Coil Secondary                              | } Complete<br>Assy..... K-5782 |
| 2A   | Shortwave Loop Assembly.....                                | K-5624-3                       | 57B  | 25 M. Osc. Coil Primary                                |                                |
| 3    | Broadcast Loop.....                                         | K-5572-9                       | 57C  | 25 M. Osc. Coil Iron Core                              |                                |
| 4    | Terminal Strip (Ant. & Gnd.) Part Of.....                   | K-2986                         | 58A  | 31 M. Osc. Coil                                        | } Complete<br>Assy..... K-5781 |
| 5    | Trimmer 1.5-10 mmf.....                                     | K-1458-5                       | 58B  | 31 M. Osc. Coil Iron Core                              |                                |
| 5A   | Loop Coil.....                                              | K-5990-4                       | 59A  | 49 M. Osc. Coil                                        |                                |
| 6    | Terminal Strip (B.C. Loop).....                             | K-3749-3                       | 59B  | 49 M. Osc. Coil Iron Core                              | } Complete<br>Assy..... K-5780 |
| 7    | Terminal Strip (S.W. Loop).....                             | K-5691-5                       | 60A  | B.C. Oscillator Coil                                   |                                |
| 8    | Loop Switch.....                                            | K-4029-3                       | 60B  | B.C. Osc. Coil Iron Core                               |                                |
| 9A   | Antenna Switch } Complete Band                              | K-5789-2                       | 61   | Capacitor, mica: 550 mmf.....                          | K-1611-43                      |
| 9B   | Oscillator Switch } Switch Assembly.....                    |                                | 62   | Capacitor, mica: 10 mmf.....                           | K-1611-40                      |
| 10   | Capacitor, mica: 100 mmf.....                               |                                | 63   | Capacitor, mica: 5 mmf.....                            | K-1611-54                      |
| 11   | Capacitor, mica: 5 mmf. (Part of K-3831-7)                  | K-4235-1                       | 63A  | Capacitor, mica: 5 mmf.....                            | K-1611-54                      |
| 12A  | B.C. Ant. Trans. Primary } Complete                         | K-3831-7                       | 63B  | Capacitor, mica: 5 mmf.....                            | K-1611-54                      |
| 12B  | B.C. Ant. Trans. Secondary } Assembly                       |                                | 64   | Capacitor, mica: 250 mmf.....                          | K-1611-14                      |
| 12C  | B.C. Ant. Trans. Iron Core } Assembly                       |                                | 65   | Capacitor, mica: 100 mmf.....                          | K-1611-25                      |
| 13   | Trimmer: 10-55 mmf. (B.C. Antenna).....                     | K-1458-3                       | 66   | Capacitor, mica: 90 mmf.....                           | K-1611-48                      |
| 14   | Tuning Gang (B.C. Ant) 590 mmf. Part of                     | K-5787-2                       | 67   | Capacitor, mica: 80 mmf.....                           | K-1611-47                      |
| 15   | Tuning Gang (B.C. Preselector & S.W. Ant.) 590 mmf. Part of | K-5787-2                       | 68   | Capacitor, mica: 60 mmf.....                           | K-1611-46                      |
| 16   | Trimmer: 3-25 mmf. (Preselector).....                       | K-4793-3                       | 69   | Tuning Gang (Osc.) 590 mmf. Part of.....               | K-5787-2                       |
| 17   | Capacitor, mica: 15 mmf.....                                | K-1611-45                      | 70   | Trimmer, 10-55 mmf. (Osc.).....                        | K-1458-3                       |
| 17A  | Capacitance Coupling 2 mmf.....                             | K-5941                         | 71   | Capacitor, mica: 50 mmf.....                           | K-1611-1                       |
| 18   | Capacitor mica: 1000 mmf.....                               | K-1611-23                      | 72   | Resistor-1 meg. ½ watt, Part of 6U5 Tuning Eye Socket. | K-5813-3                       |
| 19A  | B.C. Preselector Coil } Complete                            | K-5310-2                       | 73   | On-Off Switch, Part of.....                            |                                |
| 19B  | B.C. Preselector Coil Iron Core } Assembly                  |                                | 74   | { Buffer Capacitor, Double Unit } Complete             |                                |
| 20   | Capacitor: .1 mf. 400 volt.....                             | K-2228-9                       | 75   | { (Line Filters) .025 mmf. } Assy.....                 | K-5073                         |
| 21   | 1st I.F. Trans. Assembly Complete.....                      | K-4609-2                       | 76   | Power Transformer (25-60 cy.).....                     | K-3242-7                       |
| 21A  | } 1st I.F. Trimmers only.....                               | K-2134-6                       | 77   | } Dial Lamps (6.3 volts).....                          | K-2589-3                       |
| 21B  |                                                             |                                | 78   |                                                        |                                |
| 21C  |                                                             |                                | 79   |                                                        |                                |
| 21D  | 1st I.F. Coils only.....                                    | K-4610                         | 80   | Resistor: 30,000 ohms, ½ watt.....                     | K-2226-44                      |
| 21E  | Resistor, 1000 Ohms, ½ watt.....                            | K-2226-16                      | 81   |                                                        |                                |
| 22   | 2nd I.F. Trans. Assembly Complete.....                      | K-4545-2                       | 82   | Resistor: 50,000 ohms, 2 watts.....                    | K-3352-14                      |
| 22A  | } 2nd I.F. Trimmers only.....                               | K-2932-1                       | 83   | Resistor: 50,000 ohms, 2 watts.....                    | K-3352-14                      |
| 22B  |                                                             |                                | 84   | Resistor: 150 ohms, 2 watts.....                       | K-3352-12                      |
| 22C  |                                                             |                                | 85   | Capacitor (dry) 20 mf. 500 volts, Part Of...           | K-5871                         |
| 22D  | } 2nd I.F. Coils Only.....                                  | K-4585                         | 86   | Capacitor (dry) 20 mf. 450 volt. Part of...            | K-5871                         |
| 22E  |                                                             |                                | 87   | Capacitor (wet) 16 mf. 550 volt.....                   | K-5308                         |
| 22F  |                                                             |                                | 88   | Speaker Socket.....                                    | K-1924-1                       |
| 22G  | Resistor, 50,000 ohms, ½ watt.....                          | K-2226-6                       | 89   | Speaker Plug.....                                      | K-2678                         |
| 23   | Resistor, ½ meg. ½ watt.....                                | K-2226-3                       | 90   | Capacitor: .001 mf. 600 volt.....                      | K-5660-1                       |
| 24   | Trimmer: 3-25 mmf.....                                      | K-4793-3                       | 91   | Capacitor: .001 mf. 600 volt.....                      | K-5660-1                       |
| 25   | Trimmer: 3-25 mmf.....                                      | K-4793-3                       | 92   | Output Transformer Assembly.....                       | K-2718-16                      |
| 26   | Trimmer: 3-25 mmf.....                                      | K-1458-6                       | 93   | Loudspeaker Field (900 ohms) Part Of.....              | K-5839                         |
| 27   | Capacitor: .03 mf. 400 volt.....                            | K-2228-18                      | 94   | Hum Coil (not replaceable) Part Of.....                | K-5839                         |
| 28   | Resistor: ¼ meg. ½ watt.....                                | K-2226-4                       | 95   | Voice Coil and Diaphragm Assem.....                    | K-5839                         |
| 29   | Resistor: 20,000 ohms, ½ watt.....                          | K-2226-8                       |      |                                                        |                                |
| 30   | Capacitor: .1 mf. 400 volt.....                             | K-2228-9                       |      |                                                        |                                |
| 31   | Capacitor: .05 mf. 200 volt.....                            | K-2227-8                       |      |                                                        |                                |
| 32   | Resistor: 13,500 ohms, 2 watts.....                         | K-3352-11                      |      |                                                        |                                |
| 33   | Resistor: 2 meg. ½ watt.....                                | K-2226-1                       |      |                                                        |                                |
| 34   | Capacitor: .02 mf. 200 volt.....                            | K-2227-7                       |      |                                                        |                                |
| 35   | Terminal Strip (Phono. Conns.) Part Of.....                 | K-2986                         |      |                                                        |                                |
| 36   | Metal Strap (Phono. Conns.).....                            | K-3291-3                       |      |                                                        |                                |
| 37   | Resistor: 10 meg. ½ watt.....                               | K-2226-74                      |      |                                                        |                                |
| 38   | Capacitor, mica: 100 mmf.....                               | K-1611-2                       |      |                                                        |                                |
| 39   | Capacitor: .02 mf. 200 volt.....                            | K-2227-7                       |      |                                                        |                                |
| 40   | Volume Control, 2 meg.....                                  | K-3858-8                       |      |                                                        |                                |
| 41   | Capacitor: .02 mf. 400 volt.....                            | K-2228-7                       |      |                                                        |                                |
| 42   | Resistor: 15,000 ohms, ½ watt.....                          | K-2226-9                       |      |                                                        |                                |
| 43   | Resistor: ¼ meg. ½ watt.....                                | K-2226-4                       |      |                                                        |                                |
| 44   | Resistor: 5,000 ohms, ½ watt.....                           | K-2226-12                      |      |                                                        |                                |
| 45   | Resistor: 1 meg. ½ watt.....                                | K-2226-2                       |      |                                                        |                                |
| 46   | Resistor: 15,000 ohms, ½ watt.....                          | K-2226-9                       |      |                                                        |                                |
| 47   | Resistor: 2,500 ohms, ½ watt.....                           | K-2226-13                      |      |                                                        |                                |
| 48   | Tone Control, ¼ meg (with switch).....                      | K-5813-3                       |      |                                                        |                                |
| 49   | Capacitor: .003 mf. 600 volt.....                           | K-5660-3                       |      |                                                        |                                |
| 50   | Capacitor: .1 mf. 200 volt.....                             | K-2227-9                       |      |                                                        |                                |
| 51   | Resistor: 100,000 ohms, ½ watt.....                         | K-2226-5                       |      |                                                        |                                |
| 52   | Resistor: 100,000 ohms, ½ watt.....                         | K-2226-5                       |      |                                                        |                                |
| 53   | Resistor: 20,000 ohms, 1 watt.....                          | K-1870-16                      |      |                                                        |                                |
| 54   | Capacitor: .003 mf. 600 volt.....                           | K-5660-3                       |      |                                                        |                                |
| 55   | Capacitor: .1 mf. 400 volt.....                             | K-2228-9                       |      |                                                        |                                |
| 56A  | 19 M. Osc. Coil Secondary                                   | } Complete<br>Assy..... K-5783 |      |                                                        |                                |
| 56B  | 19 M. Osc. Coil Primary                                     |                                |      |                                                        |                                |
| 56C  | 19 M. Osc. Coil Iron Core                                   |                                |      |                                                        |                                |

## MISCELLANEOUS

|                                                   |          |
|---------------------------------------------------|----------|
| Tube Socket.....                                  | K-1924-1 |
| Tuning Eye Socket.....                            | K-5803   |
| Dial Scale.....                                   | K-5773-1 |
| Dial Indicator Assembly.....                      | K-5905   |
| Pushbutton Rod.....                               | K-5995-2 |
| Cord (small pulley) 18" long (order by feet)..... | K-4636   |
| Cord (large pulley) 42" long (order by feet)..... | K-5752   |
| Spring (small dial pulley).....                   | K-3804-2 |
| Spring (large dial pulley).....                   | K-3790   |
| Pulley (wood).....                                | K-5717   |
| Shaft.....                                        | K-5664-2 |
| Sleeve } Tuning                                   | K-5665   |
| Clamp } Mechanism.....                            | K-5666   |
| "C" Washer.....                                   | K-2895   |
| Knob (Tuning & volume).....                       | K-5176-1 |
| Knob (Tone and On-Off).....                       | K-5955-1 |
| Knob (Band).....                                  | K-5955-2 |
| Knob (Loop Control).....                          | K-4168   |
| Knob (Pushbutton).....                            | K-5707   |
| Standoff (single terminal).....                   | K-2594-1 |
| Dial Lamp Socket (11" leads).....                 | K-5723-2 |
| Dial Lamp Socket (19" leads).....                 | K-5723-1 |
| Station Names Sheet.....                          | K-5731   |

## REALIGNING DETAILS

**I.F. ALIGNMENT:**

Connect the high generator lead to the 6SA7 grid through a 0.1 mf. capacitor. Connect the low side to ground. Set the generator to 470 kilocycles and adjust items 21A, 21B, 22A and 22B (on I-F Cans) for maximum output.

**R.F. ALIGNMENT:**

**Note 1:** See diagram on schematic for coil and trimmer locations.

**B.C. BAND WITH EXTERNAL ANTENNA:**

Set Antenna Switch to "Ext. Ant." and connect the high signal generator lead through a 100 mmf. capacitor to antenna terminal (A) on the rear of the chassis. Connect the low side to the ground terminal (G). Since the dial is fastened to the cabinet, it is necessary to use the alignment scale on dial frame. With the gang capacitor closed, check that the pointer is at 1" on the scale. Set the generator to 1600 kc. and the receiver to  $5\frac{7}{8}$  ins. Adjust the osc. trimmer, item 70, for maximum signal. Adjust antenna trimmer, item 13 and preselector trimmer, item 16, for maximum output while rocking the gang. Set the signal generator to 600 kc. and the receiver to  $1\frac{7}{8}$  inches. Adjust the oscillator iron core, item 60-B, for maximum output. Adjust antenna and preselector iron cores, items 12C and 19B for maximum output. Recheck at 1600 kc.

**B.C. BAND WITH LOOP:**

Set antenna switch to "Int. Ant." and locate generator leads near the receiver but do not attach. Set the generator at 1000 kc. and receiver  $4\frac{3}{8}$  inches and adjust B.C. loop trimmer, item 5, for maximum output.

**Note 2:** It is important to align the S.W. bands in the order shown below. If this order is changed, some of the short-wave bands will be completely out of alignment. If it is necessary to realign one of the bands, all of the bands of a higher frequency than the first one realigned, must be realigned also.

**S.W. 49 M. BAND**

Connect the generator through a 400-ohm resistor to antenna and ground terminals (A & G) on rear of receiver chassis. Set antenna switch to "Ext. Ant.". Set the generator at 6.0 mc. and receiver at  $3\frac{3}{8}$  inches. Adjust iron core, (item 59-B) of 49 M coil for maximum signal. (See Note 3 below). Adjust antenna trimmer, (item 26), for maximum signal rocking the gang while doing so.

**S.W. 31 M. BAND**

Set the generator at 9.50 mc. and receiver at  $3\frac{3}{4}$  inches and adjust iron core (item 58B) of 31 M. coil for maximum signal. (See note 3 below). Adjust antenna trimmer, item 25, for maximum signal, rocking the gang while doing so.

**S.W. 25 M. BAND**

Set the generator at 11.70 mc. and receiver at  $3\frac{1}{2}$  inches and adjust iron core (item 57-C) of 25 M. coil, for maximum signal. (See note 3 below). Adjust antenna trimmer, item 24, for maximum signal, rocking the gang while doing so.

**S.W. 19 M. BAND**

Set the generator at 15.20 mc. and receiver at  $2\frac{23}{32}$  inches and adjust iron core (item 56-C) of 19 M. coil, for maximum signal. (See note 3 below). Set the generator at 15.45 mc. and tune in the signal. Adjust antenna trimmer, item 23, for maximum signal, rocking the gang while doing so.

**Note 3:** Check carefully for the correct peak. To do this adjust to aligned frequency for each band as described above, then turn generator to the approximate frequency as shown in table below and increase input. At this point a signal will be heard if the oscillator setting is correct. If no signal is heard, return to aligned frequency and turn the iron core adjusting screw counter-clockwise until a second peak is reached. Recheck for image at proper frequency per table below.

| Band  | Image Frequency |
|-------|-----------------|
| 49 M. | 6.94 M.C.       |
| 31 M. | 10.44 M.C.      |
| 25 M. | 12.64 M.C.      |
| 19 M. | 16.14 M.C.      |

**Note 4:** On early production sets it is necessary to install a small coil, item 5A, to ensure proper B.C. loop performance. If the coil is not present in the set, it may be obtained "No Charge" from the Northern Electric Company Limited.

**IMPORTANT:**

Receivers having a **yellow painted stripe** on the shelf on which the chassis is mounted, do **not** require this coil.

To install this coil proceed as follows:

Remove the black loop lead from terminal No. 1 on the rear of the chassis and connect it to the coil bracket with the screw. Slide the other coil bracket under the No. 1 terminal from which the black lead was removed and tighten the screw. Realign the B.C. loop per alignment instructions.

