



GENERAL SUPPLEMENT No. 1

TO

NORTHERN ELECTRIC SERVICE MANUAL

CORRECTIONS

Page 13, "BASE MANUAL"—Vacuum tube characteristics—Type 224 (1) "Screen Current"—read "Not over 1/3 plate current" instead of "not over—of plate current." (2) "Heater Current"—read "1.75 amperes" instead of 175 amperes."

Page 17, "LUCERNE MANUAL"—"Broken 2750-250 ohms Tapped Resistor" reverse A and B to read—"A—if 2750 end is open signals will only come through when volume control is turned on full."—"B—if 250 end is open no signals at all will be heard."

Page 15, "LUCERNE MANUAL"—Fig. 7—"Main transformer (T-3) Terminal Strip." This sketch represents the transformer terminal strip as it looks when chassis is turned upside down in such a way that transformer is located in the top right hand corner.

Page 12, "LUCERNE MANUAL"—Piece Part List—"Screws—No. 101699—Screw for attaching choke assembly to transformer cover"—Replace by "No. 101700."

Page 13, "LUCERNE MANUAL"—Piece Part List—"Type 74 (25 cycles) No. 101838—Housed filter condenser"—read "bottom" instead of "top".

Page 7, "MINAKI MANUAL"—Service Parts List—Condensers—"No. 102178 By-pass condenser assembly"—change to read "three .05 mfd., two .25 mfd., two .01 mfd., one 1.0 mfd." . . . "No. 101881 Filter condenser assembly" (In large upright housing): Add "C-20" to "C-19 and C-21". . . Add to "screws"—"No. 102441 Set Screw for dial" to be used for "99990" (If the latter item is called for on Service orders it will be supplied until stock exhausted when orders will be filled from 102441).

SERVICE PART NUMBER CHANGES

Amend "MINAKI" and "NIPIGON" Service Parts Lists as follows:—

Part Number	DESCRIPTION
102070	Antenna coil assembly—Replace by No. 102248.
102069	R.F. Coil Assembly complete—Replace by No. 102249.
102006	Three gang variable condenser—Replace by No. 102427.
102080	Radio harness—Replace by No. 102206.
53101	Screw for fastening speaker housing to bracket plate—Replace by No. 102132.
102309	Cover for output transformer on "NIPIGON" Model Speaker—Replace by No. 102319.
102353	Loudspeaker assembly—Replace by No. 102309.
102023	Chassis (60 cycle) complete with tube shield but without knobs (MINAKI)—Replace by No. 102210.
101761	Loudspeaker assembly (MINAKI)—Replace by No. 102354.
102297	Diaphragm and moving coil assembly—Replace by No. 102395.

All of the above new series numbers are interchangeable with the old. In the case of the R.F. Coils and Antenna Coil, however, care should be taken to see that the new number

coil is replacing an identical number, for the old series coil differed in turns ratio and unless the same types of coils are used in the complete set of three some difficulty may result in peaking for balance. Such a possibility while not improbable is hardly anticipated, however, for only in a few of the early production models can the old coils be found. Where difficulty is experienced in peaking after a new R.F. or antenna coil has been fitted, it will be necessary to remove the remaining coils and replace them also. This latter point of course is subject to the reservation that all other factors contributing to such a fault have been eliminated.

At Montreal stocks of the new series numbers only will be maintained. It is recommended that dealers' service men alter their records accordingly, showing the new numbers when purchasing their stock of service parts.

IMPROVEMENTS

Resistors; Earlier production "MINAKI" Receivers used a colour code differing from the Standard R.M.A. Code. Production for some time past, however, has been consistently R.M.A. Standard as follows:—

R2—300 ohms—Orange, Black, Brown—same.

R12—400 ohms—Yellow, Black, Brown—Now vitreous enamel.

R11—10,000 ohms—Blue, Yellow—Now Brown, Black, Orange.

R3-9-10—50,000 ohms—Green, White—Now Green, Black, Orange.

R7—100,000 ohms—Blue, White—Now Brown, Black, Yellow.

R6—500,000 ohms—Gray—Now Green, Black, Yellow.

R5—1 meg.—Black—Now Brown, Black, Green.

R4—2 megs.—Black and White or Red, Black, Green.

The above colour code change applies to the "NIPIGON" also, only insofar as the R.M.A. Color Code is considered and not to the "R" designations of the resistors.

Page 4; "MINAKI"—Filter condenser: In place of the paper filter condenser block P.P. 101881, an electrolytic condenser of 8 mfd. capacity and a separate condenser C-21 capacity 2 mfd. are now used. This entails some structural change, but leaves the wiring change clear and very easily traceable. On all "MINAKI" Models having this change, dating from Serial No. 1600 on, it will be found that C-20, .08 mfd. has been eliminated.

FAULTS

While the utmost satisfaction has been universally expressed at the ability of these Northern Electric Radio Models to stand up under long periods of steady operation without breakdown, it is not the policy of this Company to ignore trouble where it has been discovered. On the contrary the prompt acknowledgment of this, together with a speedy means of acquainting the service man, has been adopted by us as a vital factor in service work. So far, only two electrical defects, one on the "LUCERNE" the other on the "MINAKI" (the latter also duplicated on the "NIPIGON") have come to light: as follows:—

"LUCERNE":—R. F. Plate by-pass condenser "C-16"—.05 mfd. puncturing, allowing full 300 volts plate current flow

through R-8 resulting in complete burn out of latter. Remedy: Replace with similar type and capacity as defect appears only with a leaky C-16 which latter are infrequent. Resistor R-8 should also be replaced and if any burning is present on resistor strip the charred portion should be scraped clean: In addition to a defective C-16 causing this resistor burn out, a puncture through C-2, C-3 or C-4 will cause a similar high tension ground, which in the case of the C-2 and C-3 will cause R-8 to burn out and in the case of C-4 will cause the destruction of R-9. The puncturing of these R.F. Coupling capacities C-2, C-3 and C-4 is caused by fractional looseness in the R.F. coil structure coupled to a possible sharp edge on the brass strip, resulting in the empire cloth being chaffed through, and finally the insulation on the fine wire. This fault on service has been rare, although it has been caught occasionally on Production. Where this condenser is found to be shorted, the primary coil should be replaced.

"MINAKI" and "NIPIGON":—On this Model chassis (the similarity ends at this point) the detector screen resistor R-4 is 2 megohm. Although the detector screen current is low it was found that a certain make of resistor employed was opening up, a purely mechanical breakage and in no way attributable to surges or load in the circuit. Moisture appeared to enter into the pressed lead end, resulting in rupture of the resistor element. This has now been rectified and no trouble is being experienced from such a source. A "MINAKI" or "NIPIGON" Model showing no detector screen voltage on a test kit should be immediately diagnosed as a defective R-4, that is, of course, other readings being correct.

TOOLS

It has been decided to discontinue stocking the No. 420 Socket Wrench. This item is only used to dismantle the "local-distance"—"on-off" switch of the "BANFF" Model, which work can be easily performed by a long-nosed pair of pliers carefully handled. When the wrench is specifically demanded, however, it can still be procured, although an added delay of a week to ten days may ensue until it is obtained. Outside of this modification all Northern Electric Company tool items remain as specified on Page 13 of the "BASE" Manual with the definite addition of the chassis holding down bolt wrench used for chassis Nos. 73, 74, 58, 59, 20, 21, 31, 32.

Head Telephone Reception from the "MINAKI":—In response to requests which we have had for the information, we are including with this Amendment particulars of a modification which has proven of immense value in hospitals, offices and private homes, where use of a loudspeaker would not be permissible. The material required is as follows:—

- 1—Adapter to fit into 247 Tube Socket and making contact on plate prong only.
- 1—1 mfd. Fixed Condenser (400 V.)
- 1—Fixed Resistor 10,000 ohms.
- 1—1,500 ohm Single Receiver unit or
- 1—Pair head telephones—3,000 ohm, fitted with plug.
- 1—Telephone Jack.

The interconnection of the system is quite simple and the receiver chassis need not be disturbed to any extent. Leads are run between the new pieces of apparatus as follows:—
(1) Lead from plate prong of 247 output tube goes to one side of 1 mfd. condenser, (2) other side of the condenser goes to

one end of resistor, (3) same end of resistor connects to telephone jack (or to one telephone lead if permanent connection to telephone is desired), (4) other telephone jack terminal (or remaining telephone set terminal) connects to other end of resistor, (5) a lead is run from the chassis ground to free end of resistor, this being same end to which telephone jack or telephone set terminal as described in operation No. 4 as above is connected. It will not be necessary to disconnect the loudspeaker for the small portion of audio signal required to operate the telephones is much too low for the loudspeaker and consequently the latter is practically mute while a comfortable signal is being heard in the head set. It will be found that when no signal is passing hum will be present, but not to a degree which could be termed disturbing. The one mfd. condenser used should have a voltage rating of at least 400 for added security. It is possible to build the resistor, telephone jack and condenser into a nice compact unit which it should not be difficult to fit into or near the right hand corner of the cabinet.

Using the "LUCERNE" as a PHONO-RADIO COMBINATION:—The demand for this modification has resulted in a most satisfactory adaptation of the "LUCERNE" Chassis for operation from a record-reproducing pick-up. The procedure is as follows:—A hole is drilled in the front chassis wall (looking at the back of the cabinet), and in a position immediately underneath R.F. and detector tube sockets. A standard Northern Electric key, three or more blades on either side (two-way) is fitted into this hole and one blade connected by a very short strip of wire to the grid terminal on the detector socket. The wire which you took off the grid terminal of the detector socket (and which comes from the coil) should be connected to one side of the top set of key contacts while the other side of this top set of key contacts will go to the secondary of a standard input transformer the other end of the secondary of which is grounded. On the bottom set of key contacts, one contact will be left open while the third should be connected to ground through a 2200 ohm resistor. The centre contact of this bottom set should be connected to the cathode terminal of the detector socket. The effect of this latter change is to cut out the present detector cathode biasing resistor (R-5—25,000 ohms) and replace it with a resistor which will bias the tube normally for straight amplification without detection. This resistor, for all normal purposes, need not be exactly 2200 ohms, but can be either 2000 or 2500. The necessity of feeding the output of the pickup into the primary of a standard ratio input transformer is self-evident, as by this means much better impedance matching can be obtained. Great care should be taken to see that this transformer is placed in or around the set in such a way that an absolute minimum of hum will result. Placed in certain relations and at certain angles, a very loud hum can be obtained from this transformer, and service men making this modification should be most careful in procedure. Do not remove R-5, the present cathode biasing resistor, as of course this is necessary when the switch is turned to the radio position.

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