Northern Electric
RADIO PIONEERS

INSTRUCTIONS FOR INSTALLING AND OPERATING THE MULTI-WAVE PORTABLE RECEIVER MODELS 52 AND 52-A

DIAL OF PLEASURE

INCLUDES

LOG OF CANADIAN AND U.S. NORMAL WAVE BROADCASTING STATIONS

LOG OF SHORT WAVE STATIONS SHOWN BY FREQUENCY

TO THE DEALER: It is most important to see that the purchaser of this Instrument is presented with a copy of this book.

ANTENNA

The Model 52 Receiver will operate satisfactorily with an antenna of only fifty feet including lead-in. This length should not be exceeded in towns where a broadcasting station is located. In rural areas well away from any broadcasting station, a longer antenna will be found satisfactory. In event that a long antenna is used when strong local signals are received, your Dealer or Serviceman should be consulted as to the installation of some simple device for limiting the signal if the best quality of reproduction is to be obtained. The antenna decided upon should be carefully insulated and erected well above and clear of trees, buildings, electric and telephone wires and all other antennae. The wire should be in one piece and where an insulated type of lead-in wire is used, it should be soldered to the portion of the antenna which runs parallel to the roof.

LEAD-IN STRIP: At the point where the lead-in wire enters the house we would recommend the use of a porcelain tube run through the layers of wood forming the bottom jamb of the window casement, in preference to the usual type of window lead-in strips which, for the most part, are unsatisfactory for normal wave or ordinary broadcast reception and impossible for the short wave band of 2.35 to 6.4 megacycles (127.6 to 46.9 metres) to which the Model 52 or 52-A receivers can be tuned. When the lead-in wire has been brought inside the house, it should be connected direct to the red antenna lead of your receiver. The lead must not be tacked or stapled on to the wall or floor in any way and should not be bunched or twisted. A lightning arrester should be connected between the lead-in and ground.

IMPORTANT NOTE: Reception on the short wave band of the Model 52 or 52-A receivers may be seriously impaired or even rendered impossible if a plain shielded wire lead-in without matching coils at both antenna and receiver is used. Short wave results should not be expected if the set is to operate in an apartment block where the antenna and ground wires are fitted into receptacles in the wall, indicating that they are piped in metal conduits from either a common aerial or a group of aerials on the roof.

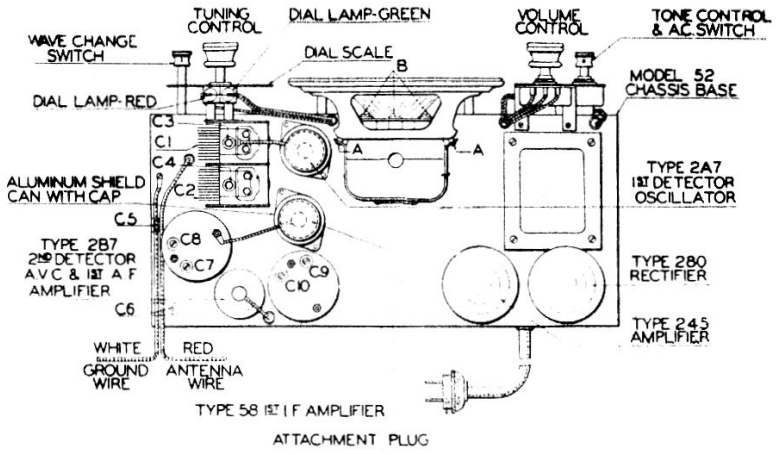
It will be found that close adherence to our recommended antenna as given above will result in very much improved reception on the normal broadcast band.

GROUND: Equally important to the antenna is the ground connection and too much care cannot be exercised both in choosing a satisfactory ground and in preparing the actual connection. It is usually preferable to employ a cold water pipe for the ground, but if this choice makes a long ground lead necessary it may be well to try a connection to a near-by radiator pipe or a hot water pipe. Gas pipes are in practically all cases ungrounded and should, therefore, never be used for ground connections. When making the ground connection, both the clamp and the pipe should be scraped sufficiently to ensure a good metal-to-metal contact. The ground lead should be kept separate from the antenna lead-in as much as possible, and while it may cross, it certainly should not parallel it for any distance. The ground lead should be joined to the white wire coming out from the back of the chassis.

LINE VOLTAGE

The Northern Electric Model 52 Receiver is designed for operation from house lighting system current at 105 to 120 volts and a frequency of 60 cycles.

The Model 52-A is intended for a similar line voltage but is designed for 25 cycles although it will perform equally well on 60 cycle current. The reverse of this does **not** apply, however, and care should be taken to see that a set designed for 60 cycle operation is not operated on 25 cycle current. The type of set and frequency required for its operation is plainly indicated on the metal plate fitted to the back of the chassis. The power consumed by the Model 52 chassis is 58 watts at 115 volts while the 25 cycle model 52-A takes 57 watts at a similar pressure.



(Fig. 1)

Chassis Layout Model 52 Receiver

TUBES

The chassis used in the Model 52 receiver employs five tubes having the following type numbers and functions:—

1—Type 2A7—Pentagrid Super-Control Converter—"Electron coupled" Autodyne detector and oscillator.

1—Type 58—Super-control R.F. Pentode—Intermediate frequency amplifier.

1 Type 2B7—Duplex Diode Pentode—Diode 2nd detector; Automatic volume control and first audio amplifier.

1—Type 45—Triode Power Amplifier—Output Amplifier.

1—Type 80—Full Wave Rectifier—Power Rectifier.

All the tubes used in the Model 52 Receiver can be replaced without the necessity of removing the chassis from the cabinet. Should this be found necessary, however, remove the four screws from the base and take off the control knobs from the front of the cabinet. The tuning and volume control knobs may be pulled off their shafts by pressure exerted away from the cabinet, while the tone control knob on the lower left and the wave change switch knob on the lower right may be taken off by loosening the set screw and then unscrewing the knob to the left. The chassis may then be slid out from the back.

The type 2-A-7 and the type 58 tubes are covered by shields which must be properly fitted over the shield base after the tube itself has been placed in the socket. Care should be taken to see that the lead with the metal clip at its end is connected so that the clip fits securely against the terminal on top of the glass bulb of the tube.

INSTALLATION

The receiver comes to you with all tubes in place. It is only necessary, therefore, to make the antenna connection to the red wire coming from the back of the receiver, the ground lead to the white wire which also comes from the back of the set and that the 110-volt A.C. attachment plug be fitted into a wall or floor receptacle in order to make the set ready for operation.

OPERATION

The Model 52 chassis is particularly outstanding for its ability to operate on such an extensive short wave band in addition to the normal broadcasting frequencies. There is nothing complicated in its adjustment. Two large knobs are used for volume and tuning control, while the two lower knobs of the small metal type operate the combined tone control and power switch, and the wave change switch.

TONE CONTROL AND POWER SWITCH: The A.C. power "on-off" switch is fitted to the tone control in such a manner that at the treble position further rotation will operate the switch and shut off the power. Mounting the switch on the tone control in this way makes it possible for the set to be turned off or on without disturbing the volume. The tone control permits the brilliance of the treble notes to be maintained or brings out the depth of the base response as dictated by the individual preference of the listener. The tone control and power switch is the small lower left-hand knob.

VOLUME CONTROL: The top left hand knob varies the intensity of sound coming from the loudspeaker. The question of proper degree of volume is one which should be carefully noted and decided upon for the future, for if the correct adjustment is made to the control and one in line with the acoustic qualities of the room in which the set is being played, much more pleasing and enjoyable results will be obtained. Care should be taken to see that the volume is not turned so high as to cause overload distortion. Automatic control of volume holds the station being received at a constant strength.

TUNING KNOB OR STATION SELECTOR: The large knob on the upper right-hand side of the cabinet face is the single tuning control which also operates the indicator dial through a vernier reduction motion. The dial scale reads the actual frequency of the broadcasting stations excepting for omission of the final decimal place. For instance, if the station being received is transmitting on 730 kilocycles the tuning position will be shown as .73. Similarly for the lower police band, such as the City of Montreal, the indication will be 1.7, the actual transmitting frequency being 1.712 megacycles. On the short wave band (switch pulled out and red light showing on dial) a reading of 5.5 on the dial will indicate 5.5 megacycles. This system facilitates logging stations, as there is an association between the published newspaper and magazine lists of radio stations and their frequencies and the readings shown on the dial.

WAVE CHANGE SWITCH: The lower right-hand small metal knob controls a two position switch. At the "IN" position the set is adjusted to operate on a frequency range from .55 to 1.74 megacycles and to show a green light on the dial. When pulled to the "OUT" position, the set is adjusted to operate on a short wave band of from 2.35 to 6.4 megacycles and to show a red light behind the dial. When the green light is turned on for the standard broadcast band with the switch in the "IN" position the lower figures on the dial turn pale and become indecipherable, making it easy to read the upper black figures. When the switch is pulled out and the red light is turned on for the short wave band, the lower figures on the dial stand out and the broadcast band figures fade until indistinguishable.

SHORT WAVE OPERATION AND TUNING

GENERAL: To get the full enjoyment from the diversified entertainment and novel interest which short wave reception offers certain important considerations must be given careful attention. These concern, more particularly, the installation

and the operation of the receiver itself. The tuning of a short wave receiver is much sharper and more critical than the ordinary broadcast receiver, and although the theoretical features associated with both types of reception are substantially the same, their practical adaptation differs in the names they have been given and in the manner of tuning.

TUNING IN A STATION: The recommendation that the tuning control knob be rotated very slowly cannot be over-emphasized, for rapid tuning introduces the possibility of passing station after station, even when the signals are fairly strong, without the slightest indication of the presence of a signal. Short wave stations can be tuned in and out within a very small fraction of one division on the dial scale and therefore it is essential that the control knob be turned very slowly with frequent stops and backward movements of the knob to make certain that a station has not been passed over. If one particular short wave station, which has not been heard before, is desired and the broadcasting frequency in megacycles is known, see that the small wave change switch knob is in the correct position (OUT) and then turn the dial to the figure indicated in the log of short wave stations given elsewhere in this book.

The normal wave range obtained with the wave change switch pushed in' also covers some of the police bands, as it is capable of tuning up to 1740 kilocycles' Montreal, Chicago, Detroit, Pittsburg, Rochester, Syracuse, and San Francisco Police Departments all operate within this band, which is located on the set tuning dial at approximately 1.7 on the figured scale. With the switch pulled "out," the short wave reception made available covers the higher police broadcasting bands around 2400 kilocycles, amateur radio-telephone, important Canadian and U.S. short wave Broadcasting Stations, and certain bands reserved for aircraft use.

Short wave reception is unlike reception on the regular broadcast band in several respects, the principle one of which we have already covered in our instructions to tune slowly. Another most important point to bear in mind is that certain transmitting stations are heard better during the daytime, some in the early evening and others at night. The difference in time must also be considered when endeavoring to pick up distant stations. Many broadcast stations transmit both on regular and short waves. In many cases the shortwave transmission will provide more satisfactory reception.

FADING: The very high frequencies of short wave transmission result in a peculiar type of fading and distortion in quality, the former much deeper and at certain times more persistent than the fading experienced in normal broadcast reception. Another phenomenon of short wave reception is what has been termed "skip distance effect." This is indicated when you are able to receive a station at a great distance while a nearby station on the same channel may be inaudible. These peculiarities of short wave reception, however, are subject to wide variation according to the time of day and the season of the year.

Only experience can familiarise the short wave enthusiast with all of the varying factors associated with short wave reception, and as the technique of operation is improved the results also will improve in their consistency and the ease with which they are obtained.

CANADIAN BROADCASTING STATIONS

Call Letters	Location	Frequency in Kilocycles	Channel Number on your Receiver
CFCY	Charlottetown, P.E.I.	630	.63
CHNS	Halifax, N.S.	1050	1.05
CFBO	St. John, N.B.	1210	1.21
CHRC	Quebec, Que.	930	.93
CFCF	Montreal, Que.	600	.60
CHLP	Montreal, Que.	1120	1.12
CKAC	Montreal, Que.	730	.73
CRCM	Montreal, Que.	910	.91
CRCO	Ottawa, Ont.	880	.88
CKCO	Ottawa, Ont.	1010	1.01
CKNC	Toronto, Ont.	1030	1.03
CRCT	Toronto, Ont.	960	.96
CFRB	Toronto, Ont.	690	.69
CKLW	Windsor, Ont.	840	.84
CKOC	Hamilton, Ont.	1120	1.12
CFPL	London, Ont.	730	.73
CKY	Winnipeg, Man.	910	.91
CKX	Brandon, Man.	1450	1.45
CKUA	Edmonton, Alta.	580	.58
CJCA	Edmonton, Alta.	730	.73
CFAC	Calgary, Alta.	930	.93
CFCN	Calgary, Alta.	1030	1.03
CJCJ	Calgary, Alta.	690	.69
CFQC	Saskatoon, Sask.	1230	1.23
CKCK	Regina, Sask.	1010	1.01
CJGX	Yorkton, Sask.	630	.63
CJOR	Sea Island, B.C. (Vancouver)	600	.60
CRCV	Vancouver, B.C.	1100	1.10

IMPORTANT U.S. STATIONS

WPG	Atlantic City, N.J.	1100	1.10
WOR	Newark, N.J.	710	.71
WJZ	New York, N.Y.	760	.76
WEAF	New York, N.Y.	660	.66
WABC	New York, N.Y.	860	.86
WBZ	Springfield, Mass.	990	.99
WTIC	Hartford, Conn.	1060	1.06
WGY	Schenectady, N.Y.	790	.79
WJR	Detroit, Mich.	750	.75
WGN	Chicago, Ill.	720	.72
WLW	Cincinnati, O	700	.70
WTAM	Cleveland, O	1070	1.07
KDKA	Pittsburgh, Pa.	980	.98
KSTP	St. Paul, Minn.	1460	1.46
WOWO	Fort Wayne, Ind.	1160	1.16
KMOX	St. Louis, Mo.	1090	1.09
KOA	Denver, Col.	830	.83
KEX	Portland, Or.	1180	1.18
KFI	Los Angeles, Cal.	640	.64
KGO	San Francisco, Cal.	790	.79

CANADIAN POLICE BROADCASTING STATIONS

Name and Location of Station	Call Letters	Frequency in Megacycles
Montreal, Que.	VYR	1.712
Winnipeg, Man.	VYW	2.416
Vancouver, B.C.	CGZ	2.452
Saint John, N.B.	CJW	2.416

SHORT WAVE LOG OF STATIONS LISTED BY FREQUENCY IN MEGACYCLES

Frequency in Megacycles	Call Letters	Name and Location of Station
6.667	TGW	Guatemala City, Guatemala
6.438	PBF5	The Hague, Holland
6.00	RW59	Moscow, U.S.S.R.
6.43	PCM	The Hague, Holland
6.425	W3XL	Bound Brook, N.J.
6.420	RV62	Minsk, U.S.S.R.
6.383	XIF	Mexico City, Mexico
6.383	CT3AG	Funchal, Madeira
6.38	HC1DR	Quito, Ecudor
6.25	HKC	Bogota, Columbia
6.2	W3XL (WENR)	New York, N.Y.
6.17	HRB	Tegucigalpa, Spanish Honduras
6.16	HKA	Barranquilla, Columbia
6.16	VE9CL	Winnipeg, Man.
6.147	VE9CS	Vancouver, B.C.
6.14	W8XK	Pittsburgh, Pa.
6.14	KA1XR	Manila, Philippine Islands
6.14	KZRM	Manila, Philippine Islands
6.14	W8XK	Pittsburgh, Pa.
6.122	PPU	Rio de Janeiro, Brazil
6.122	——	Toulouse, France
6.122	F31CD	Chi Hoa, Indo-China
6.12	PTH	Rio de Janeiro, Brazil
6.12	EAR25	Barcelona, Spain
6.119	W2XE (WABC)	New York, N.Y.
6.11	VVB	Bombay, India
6.1	VQ7LO	Nairobi, Kenya
6.1	W2XAL (WJZ)	Bound Brook, N.Y.
6.1	W3XAL (WJZ)	New York, N.Y.
6.098	VE9GW	Bowmanville, Ont.

SHORT WAVE LOG OF STATIONS—(Continued)

Frequency in Megacycles	Call Letters	Name and Location of Station
6.09	VE9VJ	Saint John, N.B.
6.09	OXQ	Copenhagen, Denmark
6.083	W6XAL	Westminster, Cal.
6.08	W2XCH	Newark, N.J.
6.08	HS2PJ	Bangkok, Siam
6.08	W9XAA	Chicago, Ill.
6.075	W2XCK	Kearney, N.J.
6.072	UOR2	Vienna, Austria
6.07	SAJ	Motala, Sweden
6.061	VE9CL	Winnipeg, Man.
6.06	W9XU	Council Bluffs, Iowa
6.06	W8CAL (WLW)	Cincinnati, Ohio
6.06	W3XAU	Philadelphia, Pa.
6.05	GSA	Daventry, Gr. Britain
6.04	PK3AN	Suravaya, Dutch East Indies
6.039	W9XAL (WMAQ)	Chicago, Ill.
6.039	W2XAL (WRNY)	New York, N.Y.
6.036	W2XAL	Coytesville, N.J.
6.024	XEW	Mexico City, Mexico
6.02	DJC	Zeesen, Germany
6.02	W2XBR (WAWZ)	New York, N.Y.
6.005	VE9DR	Drummondville, Que.
6.	PK2AF	Djockjokarta, Dutch East Indies
6.	HRD	Tegucigalpa, Spanish Honduras
6.	ZL3ZC	Christchurch, New Zealand
6.	EAR25	Barcelona, Spain
6.	EAJ25	Malaga, Spain
6.	RV59	Moscow, U.S.S.R.
5.97	HVJ	Vatican City, Rome
5.928	HKO	Medillem, Colombia
5.875	CN8MC	Casablanca, Morocco
5.855	XDA	Mexico City, Mexico
5.553	W8XJ	Columbus, Ohio
5.514	RV38	Moscow, U.S.S.R.
5.503	W2XBH (WBBC, WCGU)	New York, N.Y.
5.455	F8BP	Ruggles, France
5.172	FYR	Lyons, France
5.172	PMY	Bandoeng, Java
5.17	OK1MPT	Prague, Czechoslovakia
5.000	———	Bratislavia, Czechoslovakia
5.000	XCTE	Shanghai, China
4.975	W2XAV	Long Island, N.Y.
4.918	F8GC	Paris, France
4.8	W2XV	Long Island City, N.Y.
4.795	W9XAM	Elgin, Ill.
4.784	UZA	Drummondville, Que.
4.610	H1X	Santo Domingo, Dominican Republic
4.43	DOA	Doeberitz, Germany
4.412	OK1MPT	Prague, Czechoslovakia
4.354	W2XBT	New York, N.Y.

SHORT WAVE LOG OF STATIONS—(Continued)

Frequency in Megacycles	Call Letters	Name and Location of Station
4.28	AHK2	Vienna, Austria
4.274	RV15	Khabarovsk, U.S.S.R.
4.11	WGBN	Deal, N.J.
4.11	WGBN	Deal, N.J. (Tele. to ships)
4.098	W8X1	Pittsburgh, Pa.
4.	PK1AA	Weltevreden, Dutch East Indies
3.750	——	Rome, Italy
3.750	FM8KR	Constantine, Algeria
3.750	F8AV	Nogent, Paris
3.75	NAA (Time Signals)	Arlington, Virg., U.S.A.
3.66	OZ7RL	Copenhagen, Denmark
3.62	DUO	Doeberitz, Germany
3.488	HB9XD	Zurich, Switzerland
3.124	WOO	Deal, N.J.
3.000	EAJ25	Malaga, Spain
2.85	W2XR	New York, N.Y.
2.832	W6XAN	Los Angeles, Calif.
2.676	W6XAF	Sacramento, Calif.
2.609	PK2AG	Samarang, Dutch East Indies
2.398	W9XL	Chicago, Ill.
2.392	W10XAL	New York, N.Y.
2.392	W2XCZ	New York, N.Y.
1.712	F8FY	Cannes, France
1.712	WMP	Framingham, Mass.
1.607	W9XAL	Chicago, Ill.
1.604	W3XCD	Passaic, N.J.

Standard
Radio Guarantee
of the
Northern Electric Co.
LIMITED

The Northern Electric Company agrees to furnish a new part in exchange for any part of any unit of its manufacture which, under normal installation, use and service, becomes inoperative as a result of any defect in material or workmanship, provided the unit is delivered intact by the owner or his accredited agent within (ninety) days from date of sale to the first user, with proof of the date of sale and with all transportation charges prepaid, to the Dealer from whom the set was purchased, and further provided it is found by the Company to be thus defective. The Company will not accept responsibility for parts or sets returned to it unless permission to do so has first been obtained from the Company.

The Company is not responsible for failure of any of its products due to ordinary wear or to neglect, misuse, accident, incorrect wiring or improper installation, and is not responsible for any consequential damage; nor is the Company responsible for any repair when other than spare parts supplied by it are used, or when any repair, replacement or adjustment has been made by other than its Official Radio Dealers or its factory; or when any component part or assembly is delivered for examination independently of the unit to which it belongs.

Any part of the unit approved for exchange hereunder shall be exchanged by the Official Radio Dealer without charge for the part to the user or his accredited agent, but any charge for labor incurred in disassembling, assembling or testing the unit or in removing or installing the unit, or incurred for transportation of the unit, duty or tax thereon, or any other contingent expense will not be assumed by the Company.

The Company is not responsible for any liability for any damage or injury to any person or part resulting directly or indirectly from design, material, workmanship or installation of any of its products.

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