Marconi
CANADA
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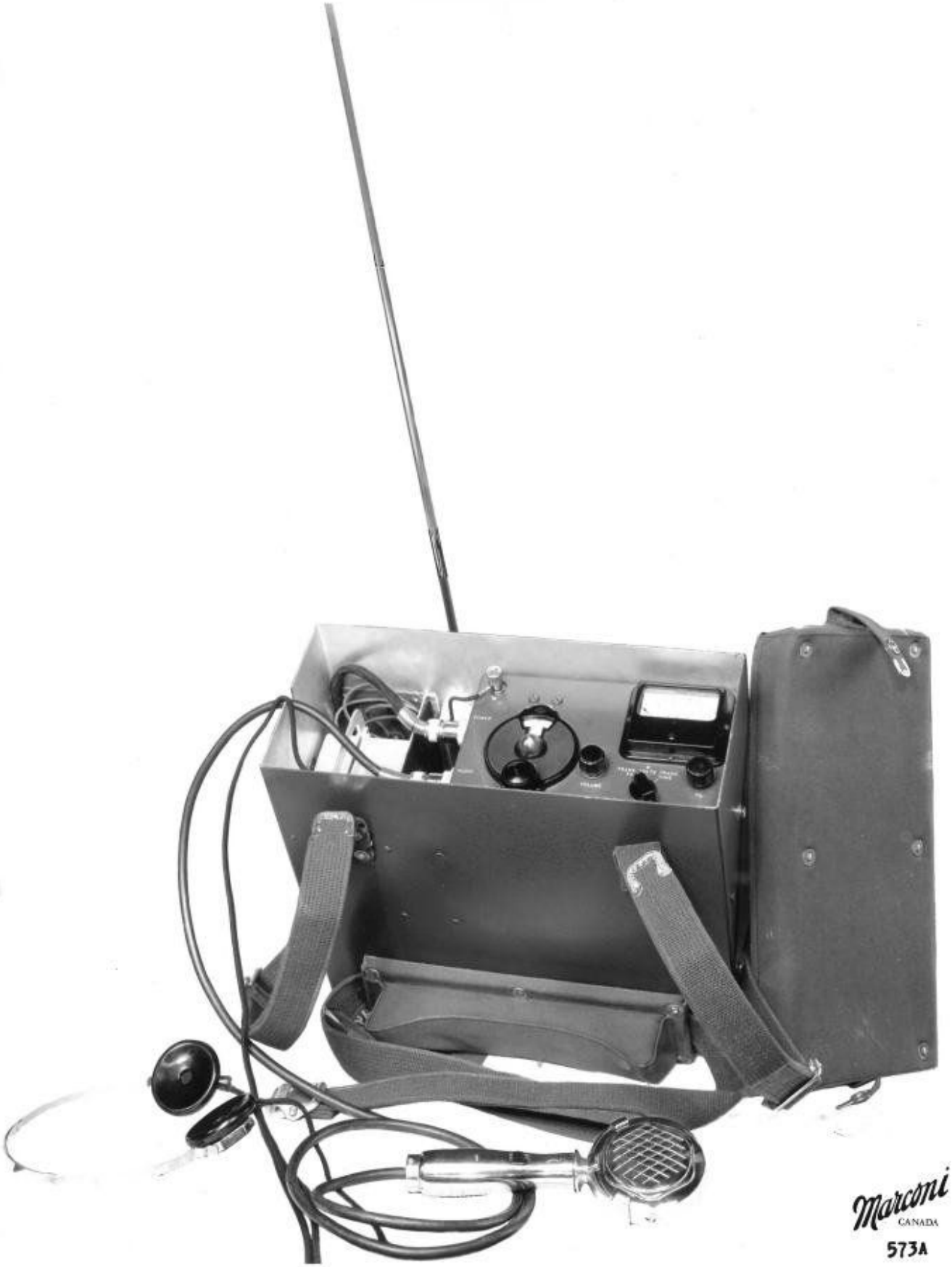
Marconi medium frequency portable transmitter-receiver for broadcast pick-up, 3 watts output type CB1.



Marconi medium frequency portable transmitter-receiver for broadcast pick-up, 3 watts output type CB1. (top open showing controls).

Marconi medium frequency portable transmitter-receiver for broadcast pick-up, 3 watts output, type CB1. (strapped on man's back).

DESCRIPTION AND OPERATING INSTRUCTIONS.

MARCONI TYPE CB-1 PORTABLE TRANSCEIVER, NO. 84272.

The type CB-1 Portable Transceiver is designed primarily for use as a mobile remote pick-up in radio broadcasting service. The equipment, comprising a low power radio transmitter, a "cue" receiver, a set of batteries, a head-set and a microphone is contained in a sheet aluminium case measuring approximately 12" high, by 13-1/2" wide, by 6" deep. The case is fitted with adjustable shoulder and waist straps for carrying the unit on the back. It is also fitted with a light canvas cover to make the unit shower-proof. A telescoping rod antenna, having a maximum extended length of 8 feet, is secured to the rear of the unit by split clamps and wing nuts so that the antenna may be quickly erected or dismantled.

The transceiver unit, which fastens into a compartment in the case, combines the transmitter and receiver on one chassis. The transmitter is crystal controlled and utilizes the following valves:-

1H4G - Crystal Oscillator.
1J6G - Parallel connected, Plate modulated, Power amplifier.
1B4P - Microphone pre-amplifier.
1F5G - Audio Amplifier.
1J6G - Push-Pull Connected Modulator.

The carrier level with fresh batteries is approximately 2 watts. The receiver utilizes a superheterodyne circuit and employs the following valves:-

1D5GP - R.F. Amplifier.
1D7G - 1st Detector and Oscillator.
1D5GP - I.F. Amplifier.
1D5GP - 2nd Detector.
1F5G - A.F. Amplifier.

The frequency range of the receiver normally supplied is approximately from 3 to 4 megacycles.

The transmitter is modulated by a good quality crystal microphone which connects to the transceiver through a plug at the left hand side of the panel. The same plug also serves as a termination for the "featherweight" head-set. Transfer from "Send" to "Receive" is accomplished through the operation of a small switch in the handle of the microphone which controls a telephone type relay in the unit. The unit panel mounts the receiver tuning and volume controls and a filament rheostat in addition to a meter and a meter switch.

Through the manipulation of this latter switch the meter can be made to read filament voltage, "B" battery voltage and transmitter P.A. plate current. The transmitter oscillator and antenna tuning controls are internal and are pre-set, but the transmitter P.A. tuning control is made available for external screw-driver adjustment through a small hole in the bottom of the case. A second hole immediately beside the one just mentioned provides access to a toggle switch which is wired into the filament circuit and which therefore serves as the On-Off control.

Power for the unit is obtained from a set of special portable batteries which fit into a second compartment in the case. Six batteries are required per working set, these being:-

2 - 3 Volt, Parallel connected, "A" batteries, Burgess type F-2-BP.

4 - 45 Volt, series connected "B" batteries, Burgess type X-30-X.

One set of the above batteries will provide approximately three hours' satisfactory operation of the unit.

A third compartment in the case is lined with felt and is intended as storage space for the microphone and headset when the latter are not in use.

OPERATION.

The receiver R.F. and I.F. stages are properly aligned at the factory before shipment of the unit, the only subsequent adjustments necessary being the selection of the signal to be received by the rotation of the Vernier controlled gang condenser.

The transmitter is also correctly adjusted for operation with a crystal of the specified frequency before shipment, but since the length of antenna to be used is seldom known, a re-adjustment of the P.A. and antenna tuning circuits will probably be necessary. In setting up the transmitter, the desired antenna length should first be decided upon and then on all future occasions, the antenna can be set to this length, so rendering unnecessary the tuning of the output circuit each time the unit is used.

The tuning of the transmitter can best be accomplished by the removal of the transceiver unit from the case.

The batteries and the microphone-headset cable can then be plugged in, and the antenna extended to the desired length, taking care that it does not come too close to any metal work or other objects. A short connection should be made between the unit antenna terminal and the base of the antenna. Note that this connection must be as short as possible if the adjustments are to remain the same when the unit is returned to the case. Note also that all adjustments should be made with the microphone held in one hand, since the body acts as the effective ground. Move the switch in the microphone handle so that the white dot is not visible.

Now turn the power on using the small toggle at the rear of the unit. With the meter switch set to TRANS. FIL. adjust the filament rheostat until the meter pointer rests on the red line which corresponds to 2 volts. Now move the meter switch to the TRANS. TUNE position and, using a screwdriver, rotate the variable condenser at the extreme rear of the unit (P.A. tuning condenser) until the meter reading reduces to minimum. Next manipulate the small semi-fixed condenser on the top of the long coil adjacent to the Antenna terminal, (Ant. tuning condenser) until the meter reading reaches a maximum. Then check that further adjustment of the P.A. tuning condenser will not reduce the value of current indicated by the meter. The correct adjustments will be indicated by a meter reading of from 3 to 3-1/2 large divisions, or from 30 to 35 milliamperes, when the output circuits have been properly tuned as outlined above. If the reading falls outside the above limits, the adjustment of the small, dual, semi-fixed mica condenser (Ant. Coupling condenser) located above the P.A. tuning condenser, should be changed slightly and the P.A. and Ant. tuning re-checked as before. This procedure should be followed until the stated meter reading is obtained.

If the microphone switch is now moved so as to bring the white dot into view, the relay will be observed to operate and the receiver will become operative.

The unit may now be shut down and replaced in the cabinet. The connections should be made as before except that now the proper antenna lead can be connected to the transceiver antenna terminal.

The unit should be put into operation as before and the P.A. tuning re-checked, access being through the aperture in the bottom of the cabinet. The minimum value of current, i.e. at resonance, should not have changed greatly but if it is outside the limits set forth above, some readjustment of the Ant. Coupling and/or the Ant. Tuning will

be necessary. The stated values of P.A. current will apply only when the batteries are fresh, i.e. when the meter reading in the B. VOLTS position is close to the 180 V. mark on the scale. The batteries should be discarded when this reading falls below 130 volts.

NOTES.

Always adjust the filament voltage with the unit in the Transmit condition. In the Receive condition, the voltmeter does not indicate the voltage actually on the valves.

The tuning of the P.A. stage will preferably be checked each time the unit is placed in service. Always adjust this control for a minimum meter reading.

Be careful not to short circuit the batteries when inserting them into the battery compartment. Make certain that all battery terminals are tight.

Always extend the antenna to a pre-determined length unless re-tuning of the Antenna circuits is carried out. When tuning up the set make sure that some contact between the frame of the unit and the body is maintained as this influences the adjustments to a large extent.

Owing to the high gain of the transmitter audio section, care should be taken to avoid banging the unit when talking as this tends to produce ringing noises in the transmission. Also owing to the high sensitivity of the crystal microphone the handle should not be moved around in the hand while transmitting.