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A. *Plainly the original copyright of the content has expired, or we have obtained permission to copy them. What we copyright is our own edition of the document.*

Q. Surely your "own edition" is identical to the original document, so cannot be copyrighted?

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Q. Why do you not just give your manuals away, as so many do via the internet these days?

A. *We do make all our manuals available free of charge (in soft copy) to VMARS members. These members have already covered the costs of running the archive via their subscriptions. The only time members are charged for copies is when they request them on paper, in which case charges are restricted to the cost of paper, ink and postage.*

The VMARS archive is not a "shoe-string" operation. Money is spent on computing facilities to make copies available, and on shipping original documents securely (usually costing several pounds per shipment) to carry out the scanning. As members have already contributed to these costs, it is only reasonable that non-members should do likewise – and thus a very moderate charge is levied for copies provided to non-members. With typical commercial photocopying charges starting at 5 pence per A4 side, it will be evident that paying 4 pence for our equivalent on paper is excellent value (amounts current at Spring 2004). We also think "you get what you pay for" – we invite you to make the comparison and draw your own conclusions!

Despite the above, we will be making copies of essential technical information (circuit diagram, parts list, layout) freely available to all via our website from late 2004 onwards. This will be done to try and encourage and enable the maintenance of our remaining stock of vintage electronic equipment.

Guidance on using this electronic document

Acrobat Reader version

You need to view this document with Acrobat Reader **version 5.0** or later. It is possible that the document might open with an earlier version of the Acrobat Reader (thus allowing you to get this far!), but is also likely that some pages will not be shown correctly. You can upgrade your Acrobat Reader by direct download from the internet at http://www.adobe.com/products/acrobat/readermain.html or going to http://www.adobe.com/ and navigating from there.

Printing the document on A4 paper

You should note first that virtually all original documents are in double-sided format, i.e. printed on both sides of the paper. Accordingly, our copies are similarly double-sided., and the best results are obtained if the document is printed double-sided. You can print out on one side only, but you will find that you get a number of blank sheets (which can just be removed and reused), and where margins vary in width between left-hand and right-hand pages, there is a danger of the text disappearing into the binding of your printed copy.

This document is of fairly simple format in that it can be made to print out using an A4 format printer (this is the common paper size available in UK and Europe, which measures 29.7cm by 21.0cm). By "simple" I mean that there are no large diagrams on fold out sheets, which will require multiple A4 pages to print out at full size.

Original document sizes do vary a lot – from the small manuals, which approximate to A5 size (21.0 x 14.8 cm) up to the now obsolete foolscap size (21.6 x 33.0 cm). US documents tend to use their "letter" size paper (21.6 x 27.9 cm). All these sizes can be printed on A4 paper by simply getting Acrobat to shrink or enlarge the pages as necessary. This is done as follows:

1. Select "File – Print" or click on the printer icon. This will bring up the print dialog box.
2. Select the correct printer if necessary.
3. Select the pages you want to print – even if you want to print all of the document, you will probably not want to print this notice and help page, so start the printing at page 3.
4. In the "Page Handling" area, next to "Page Scaling", select "Fit to paper". The press "OK"

Printing the document on an US Letter format printer

Since A4 and US Letter sizes are similar, it is expected that this document should print satisfactorily on the latter format paper. This has not been tested however, and is not guaranteed. Follow the steps as for A4 printing, and make doubly sure that "Fit to paper" is selected (step 4).

Any other problems?

Please get in touch with me at archivist@vmarsmanuals.co.uk.

Richard Hankins, VMARS Archivist, Summer 2004

W O R K I N G INSTRUCTIONS

RECEPTION SET (CANADIAN) R.103 MK.1

(MADE IN CANADA)

Published by:

The Directorate of Electrical and Communication Design, Master General of Ordnance Branch Department of National Defence, Ottawa, Canada.

Approved by:

The Chief of The General Staff, Department of National Defence, Ottawa, Canada.

H.Q.S. 9070-12-4

1st Dec., 1943

Table of Contents

1.00 WEIGHTS AND DIMENSIONS

1.01 *Unit*	*With Packing*	*Less Packing*	*Over Packing*	*Less Packing*
Receiver	37½ lbs.	33 lbs.	21" x 10" x 9"	20¼" x 9" x 8"
Unit Spares	9½ lbs.	8 lbs.	10¼" x 10" x 9"	9⅜" x 7¼" x 7¾"
Accessories	6 lbs.	3½ lbs.	31¼" x 10" x 2"	—
Carton of 3 units	51 lbs.	44½ lbs.	32" x 11½" x 11½"	—
4 Boxed Units	323 lbs.	238 lbs.	39" x 29" x 29"	—

2.00 GENERAL DESCRIPTION

2.01 Purpose

Reception set (Canadian) type R.103 MK.1 is of the superheterodyne type, and has been designed for use in Staff Cars for the reception of radio telephone and continuous wave signals.

2.02 Frequency Range

This receiver covers the frequency range from 1 to 16 M.C. in three bands as follows:

1. Band I covers the range from 1 — 2.6 M.C.
2. Band II covers the range from 2.5 — 7 M.C.
3. Band III covers the range from 6 — 16 M.C.

2.03 Receiver Circuit

This is a seven tube superheterodyne, designed to operate from a 6 volt battery. The circuit employed in all ranges consists of one stage of R.F., a mixer and H.F. oscillator, one stage of I.F., second detector, and A.F. amplifier resistance coupled to a beam power output tube. A specially designed A.V.C. is provided, series fed to the I.F. stage and is shunt fed to the R.F. stage. An R.F. gain control is provided in addition to the audio gain control. A beat frequency oscillator is provided for C.W. reception, and this circuit utilizes the triode portion of a 7B6 tube. It is designed to generate a signal of approximately the same frequency as the I.F. namely 465 K.C. With the I.F. stages tuned to 465 K.C. and the B.F.O. tuned to 464 or 466 K.C., a 1000 cycle

note will be produced. The tone may be varied by adjusting the B.F.O. tuning knob to the desired pitch. The permanent magnet dynamic speaker is matched to the output stage of 5500 ohms by means of the output transformer.

2.04 Sensitivity

Sensitivity is such that less than ten microvolts input to the receiver is required to produce one-half watt output on all bands.

2.05 Antenna

The receiver is designed for use with a 7 foot - 4 section telescopic rod antenna. This antenna has a dull finish to prevent light reflection.

2.06 Antenna Lead-In

The receiver is equipped with a ten foot shielded antenna lead-in. The capacity of the shielded lead shunts the antenna capacity, and tends to reduce the apparent pick-up. For this reason the antenna lead-in may be shortened to advantage to accommodate the particular installation. This may be accomplished as follows: Remove the metal cap from the stand off mounting insulator and disconnect the lead-in from the antenna. Shorten the lead to the desired length leaving at least 6 inches of slack and reassemble as before.

2.07 Panel Controls

This receiver has a disc type friction driven dial, illuminated by two (2) specially coloured lamps, varied in brilliance by a light intensity control. The tuning range of the dial is covered by twenty-seven (27) revolutions of tuning knob. Note that the tuning knob has a crank arm for convenience in rotating the dial quickly. This crank arm should not be left extended when not in use, during operation of the receiver.

The panel controls are as follows:—

Band Switch	Audio Gain
On-Off Switch	R.F. Gain
B.F.O. Switch	Light Control
Tuning	Phone Jack
B.F.O. Tone	Fuse Holder

3.00 OPERATION (Ref. Fig. 1)

3.01 On-Off Switch

The power switch is located near the bottom left-hand corner of the front panel. Press this switch to position "ON".

3.02 Band Switch

The band switch is controlled by the knob at the lower right hand corner of the front panel. Select the band on which it is desired to receive signals, after referring to Par. 2.02 by turning this knob to the desired position.

3.03 Tuning

Tuning of the receiver is accomplished by means of the large knob to the left of, and above the Band Switch. This tuning knob is provided with a crank arm for ease in tuning rapidly across the band. The dial, immediately above the tuning knob, is calibrated with three scales corresponding to the three positions of the Band Switch.

3.04 R.F. Gain

The R.F. gain control is below and to the left of the tuning knob. It should be turned full on (clockwise) except when receiving extremely strong nearby signals.

3.05 Audio Gain

Audio Gain Control should be used for normal control of volume of the received signals.

3.06 B.F.O. Switch

The B.F.O. switch is located immediately below the tuning knob. When receiving C.W. signals this switch should be turned "ON".

3.07 B.F.O. Tone

This control is situated between the Audio and R.F. gain controls, and should be adjusted while receiving a C.W. signal, to give a tone satisfactory to the operator.

3.08 Light Control

This control is used to adjust the intensity of the dial illumination. Illumination is maximum when the control is turned fully clockwise.

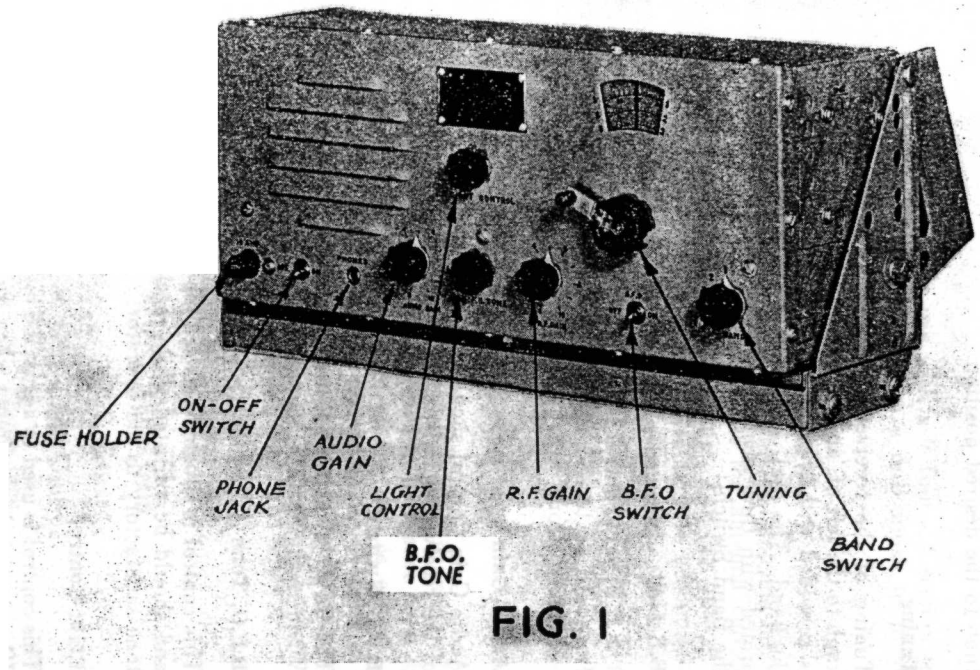

FIG. 1

FRONT VIEW OF RECEIVER SHOWING CONTROLS

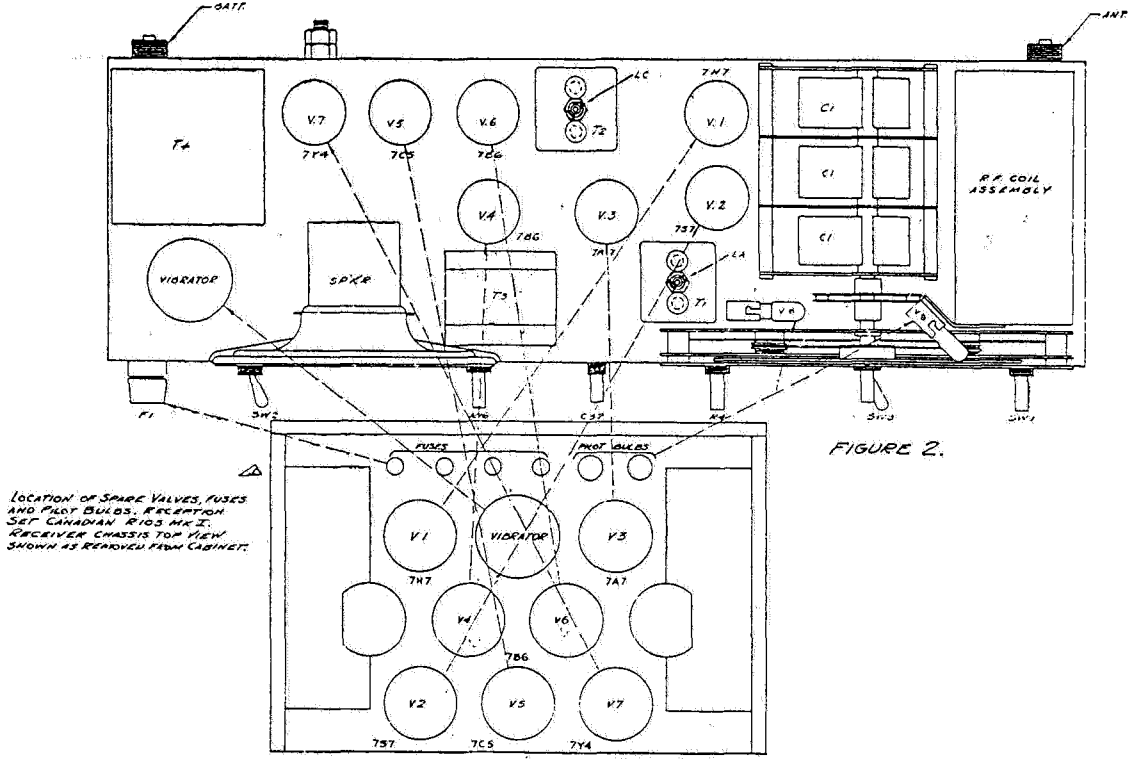

FIGURE 2.

LOCATION OF SPARE VALVES, FUSES AND PILOT BULBS. RECEPTION SET CANADIAN R103 MK II. RECEIVER CHASSIS TOP VIEW SHOWN AS REMOVED FROM CABINET.

TOP VIEW OF CHASSIS SHOWING REPLACEMENT OF SPARES