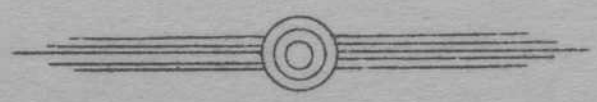


MSL 5

DEPARTMENT OF TRANSPORT  
RADIO DIVISION

REFERENCE DIAGRAM  
AND  
OPERATING INSTRUCTIONS  
FOR

MARCONI LONG WAVE RECEIVER  
TYPE M.S.L.-5



DEPARTMENT OF TRANSPORT  
RADIO DIVISION

OPERATING INSTRUCTIONS

FOR

MARCONI LONG WAVE RECEIVER

TYPE M.S.L.5

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*Recd Nov 2/41*

## WAVERANGE

Switch position 1,	1775	to 575	Kcs.	( 169 to 522 m.)
" "	2, 652	to 206	"	( 460 to 1450 m.)
" "	3, 246	to 80.5	"	( 1220 to 3730 m.)
" "	4, 98	to 32	"	( 3060 to 9370 m.)
" "	5, 51	to 15.6	"	( 5900 to 19300m.)
Crystal range	786.5	to 274.5	"	( 322 to 1090 m.)

## TUBES

(Positions reading from left to right)

Tuned R.F.	- RVC-6K7
Untuned R.F.	- RVC-6K7
Detector & regenerator	- RVC-6F7
Output pentode	- RVC-38

## POWER SUPPLY (D.C. OPERATION)

- 1 - 6 volt storage battery
- 2 - 45 volt heavy duty dry batteries.

## POWER SUPPLY (A.C. OPERATION)

- 1 - type PPR-1 43142 power unit with
- 1 - RVC-84 tube.

Note: The slotted head voltage adjusting screw should be turned until the H.T. voltage at the receiver terminals is 90 volts with the receiver switched on and operating normally.

## POWER CONSUMPTION (A.C. OR D.C.)

- Heaters - 1.2 amperes at 6 volts.
- Plate supply - 15 milliamperes at 90 volts.

## CRYSTAL OPERATION

Batteries are not required for crystal operation as this circuit is designed for emergency use only. Modulated signals may be received between 400 and 1000 metres from comparatively nearby stations. The earth lead should be connected to the terminal marked "GND" at the back of the set, as for valve reception, and the aerial lead to terminal "CRYS". Plug the headphones into the jack "CRYS.PHONES" at the left side of the front panel. Signals may now be received and are brought to resonance by means of dial marked "AERIAL TUNING".

The crystal is mounted inside the receiver at the top centre and is easily accessible for adjustment by raising the lid. The "cat whisker" contact should be adjusted for a sensitive point using a fairly firm contact.

## TUBE OPERATION

The batteries or power unit should be connected to the four terminals at the back of the receiver as per markings in front of terminals. Make sure that all connections are clean and tight.

If using batteries, the polarity of the storage battery leads connected to the receiver terminals is immaterial.

## AERIAL-EARTH

The aerial lead should be connected to terminal marked "VAL" and the earth lead to terminal "GND". The earth lead should be as short as possible and connected to a good earth or ground connection. A good antenna is essential for long distance reception, but if it is too long it may cause trouble with interference from unwanted signals. The selectivity of the MSL-5 receiver is quite good for the general purpose type of circuit used, but it must be remembered that two tuned circuits will not give the selectivity of a superheterodyne and for this reason it will often be found advantageous to use a somewhat shorter aerial where bad interference is likely to be experienced.

## ON-OFF SWITCH

D.C. operation: The switch serves to open or close both the heater and H.T. circuits.

A.C. Operation: The 110 volt A.C. supply to the power unit may be switched on or off by means of the switch located on the side of the power unit, or it may be controlled from the receiver on-off switch, in which case the power unit switch is left in the "on" position. For receiver control it is necessary to connect the two terminals on the receiver shelf marked "SW" to the two power unit terminals marked "SWITCH", making sure to remove the small wire jumpers on the power unit terminals. Use twisted pair for this connection. An auxiliary pair of contacts on the on-off switch function to break the power supply when connected as above.

## ON-OFF H.T.

This is an auxiliary switch located in the high tension lead only, the purpose being to enable the receiver to be made inoperative when transmitting. The filament switch is not suitable for this purpose due to the time required for the tubes to heat up after being switched on.

## HEADPHONES

High resistance headphones should be used and are to be plugged into the jack marked "PHONES", located at centre bottom of panel. If it is desired to use a loudspeaker, it should be of the high resistance magnetic type.

## WAVERANGE SWITCHES

Both waverange switches should be placed at the same number, depending upon the range desired.

## TUNING DIALS

The aerial tuning dial tunes the aerial radio frequency amplifying stage. The detector tuning dial tunes the detector stage. When tuned to resonance with an incoming signal, both dials will read approximately the same. Wavelength increase is indicated by a higher setting of the dials.

## REACTION

The reaction knob controls a special reaction tube which functions as follows. The signals which are applied to the detector grid are also applied to the grid of the reaction tube. Signals are amplified in the plate circuit of the reaction tube and are coupled back into the detector tuning inductance in the correct phase so that regeneration or oscillation may take place. The reaction knob controls the potential applied to the screen grid of the reaction tube, thus controlling the amplitude of the

signals that are fed back to the detector grid. Both detector and reaction tubes are enclosed in the 6F7 glass envelope, but may be considered as two separate tubes as regards their functions.

Reaction is very smooth and the knob should be carefully manipulated for maximum amplification. When the reaction is turned to zero (anti-clockwise) the detector then functions as a straight grid leak detector with no regeneration or feed-back.

#### VOLUME CONTROL

This control varies the amount of signal applied to the grid of the output tube and allows any value of signal to be obtained in the headphones from maximum to almost zero.

#### NOTE FILTER SWITCH

When the note filter switch is turned to the "IN" position, an audio frequency filter is connected between the detector output and the audio input circuits. This consists of a sharply tuned circuit resonating around 1100 cycles, which allows this frequency to pass but tends to reject signals of other frequencies.

When using this filter for continuous wave reception, the detector tuning dial should be carefully tuned so that the beat note will be resonant with the note filter. Only when it is resonant will maximum response be obtained. Interfering signals with beat notes of different audio frequency from that of the wanted signal will be materially reduced in strength due to the action of the filter. When trying to eliminate interference it is advisable to try the beat note each side of zero beat and to select the side which gives most freedom from interference. Very often induction and static may be reduced by the use of the note filter.

#### MAINTENANCE

Tubes should be checked from time to time and replaced whenever necessary.

High tension batteries should be replaced when the voltage has dropped to 35 volts. Storage batteries should be charged at regular intervals and not allowed to become completely discharged. A battery hydrometer should be used to ascertain the condition of the storage battery.

In cases of trouble in the receiver itself, the chassis may be drawn out of the case and the batteries or power unit re-connected. In this manner the wiring and circuits may be inspected under working conditions.

All wiring and components are easily accessible and may be tested for continuity by means of a battery and voltmeter.

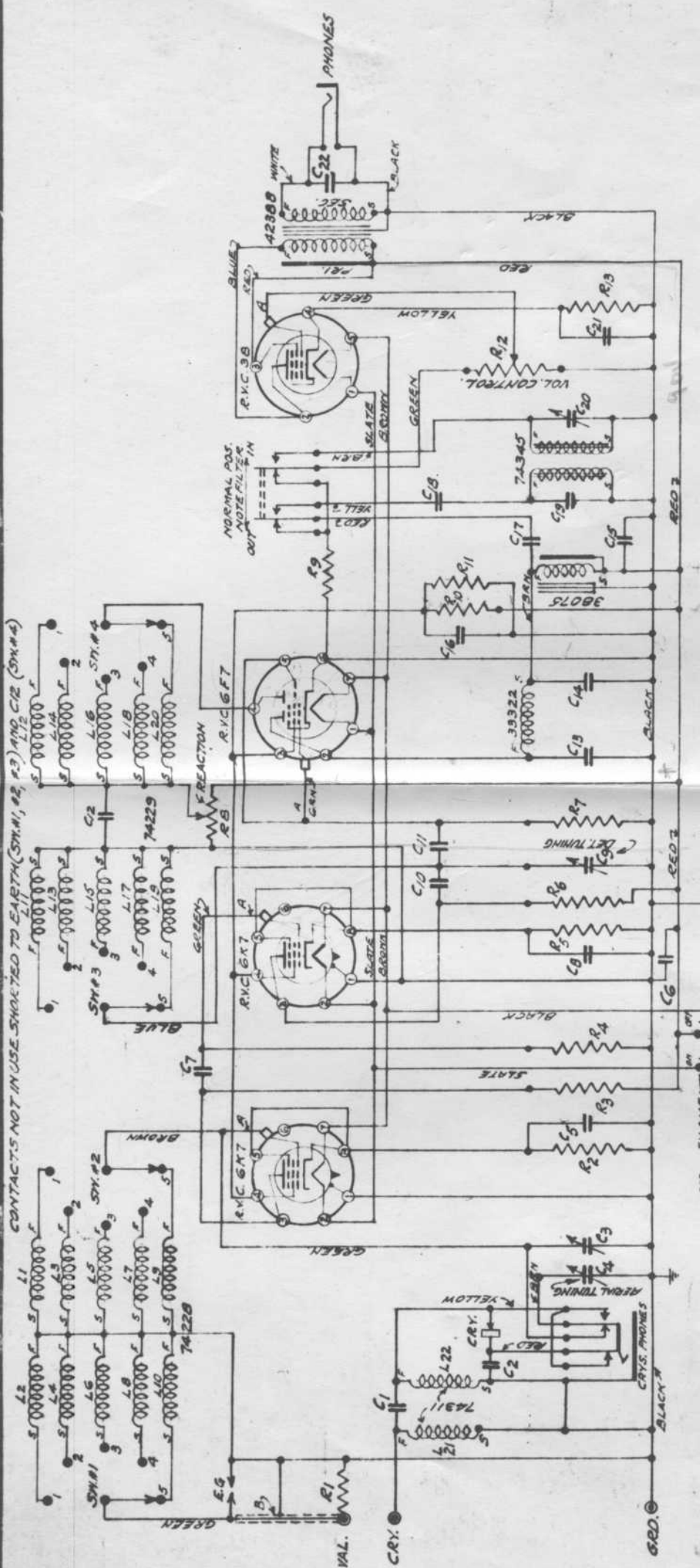
Developed primarily for ship and coast station use where the utmost in reliability is essential, this receiver combines rugged construction, simplicity of operation and high performance in a design that embodies the knowledge and experience we have acquired in over three decades in the marine communication field.

#### CONSTRUCTION

All components are mounted on the front panel and may be readily removed as a unit for servicing. The circuits are fully shielded and all metal parts carefully rustproofed. Transformers, coils and condensers are thoroughly impregnated against moisture. The cabinet is of steel with hinged lid and is finished in St. James Grey enamel.

#### FEATURES

170 to 19,000 Metres.  
Smooth Reaction.  
Stable Operation.  
Rugged construction.  
2 stage R.F. Amplification.  
Note Filter Circuit.  
Emergency crystal Receiver Circuit.  
Operation from Batteries or A.C. Power Unit.  
Low power Consumption.  
Width 17" Depth 8 $\frac{1}{2}$ " Height 12" Weight 40 lbs.



RADIO DIVISION  
DEPT. OF TRANSPORT,  
OTTAWA, - ONT.

VALVES SUPPLIED TO TEST  
TO REMAIN IN SET.

DIAGRAM OF CONNECTIONS  
**RECEIVER**  
TYPE M.S.L.5

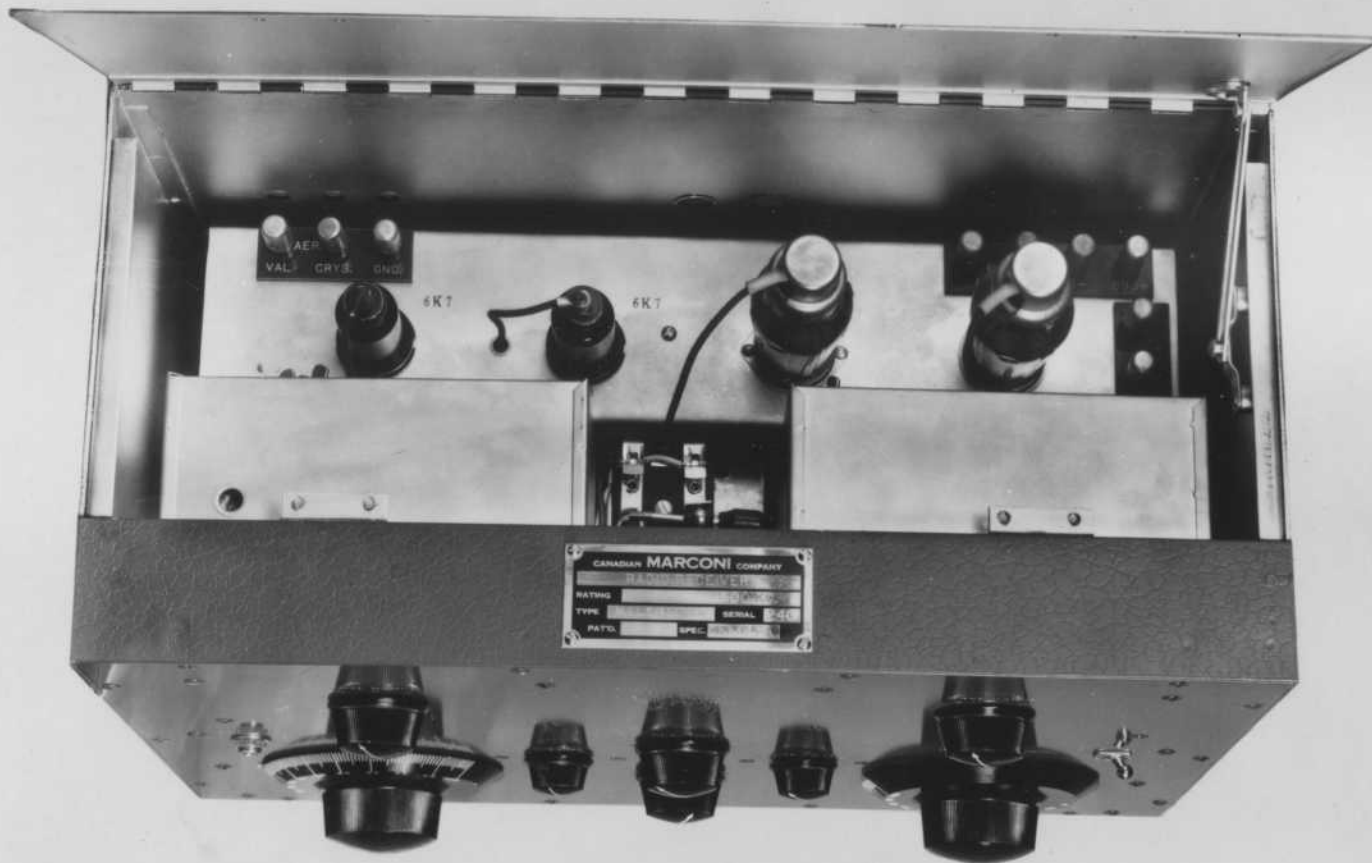
WIRE LEGEND.  
A - #2066. FLEX. - Y.R. G.A.  
B - #35897 CABLE.  
C - #20 - TWIN 'CODE 8'  
UNLESS OTHERWISE SPECIFIED  
ALL LEADS TO BE #20 G. SOLID.  
K.S.R. 36.

CONTACTS NOT IN USE SHORTED TO EARTH (SW#1, #2, #3) AND C12 (SW#4)

CONDENSERS		RESISTORS	
23	0.1UF. 200V. TUBULAR	13	1500 OHMS - 1/4 WATT
22	2000 U.L.F. AEROVOX #1460	12	.5 MEGOHM. #43566 - CONTROL
21	1.0 U.F. AEROVOX 207	11	50000 OHMS - 1/4 WATT.
20	500-200 U.L.F. #6365.9	10	25000 "
19	1.0 U.L.F. AEROVOX #1460	9	250000 "
18	0.01 "	8	50,000 "
17	0.01 "	7	2 MEGOHMS - 1/2 WATT.
16	1.0 "	6	20,000 OHMS - 1 "
15	0.1 "	5	400 "
14	0.02 "	4	1.0 MEGOHM - 1/2 "
13	2000 U.L.F. AEROVOX #1460	3	4-40 U.L.F. #42812
12	1.0 U.L.F. AEROVOX 207	2	2000 "
11	250 U.L.F. AEROVOX #1460	1	30 U.L.F. AEROVOX #1467
10	.5 "		
9	1000 " NATIONAL		
8	#33643 - 1 SECTION.		
7	1/5 U.L.F. AEROVOX #1467		
6	#33643 - 1 SECTION.		
5	#33643 - 1 "		
4	1000 U.L.F. NATIONAL		
3	4-40 U.L.F. #42812		
2	2000 "		
1	30 U.L.F. AEROVOX #1467		



#1



RADIO DIVISION *Marconi*  
DEPT. OF TRANSPORT, 670  
OTTAWA, - ONT.





RADIO DIVISION  
DEPT. OF TRANSPORT  
OTTAWA, - ONT.  
Sylvania  
CANADA  
668

#2