

VHF FM TRANSCEIVER

# Marker Luxury

50-144 MHz 12 CHANNEL

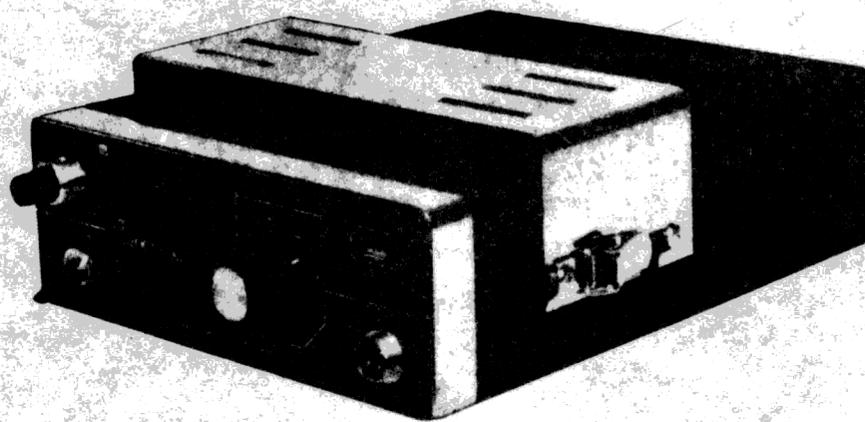
**SEIWA CORPORATION**

**TOKYO, JAPAN**

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# Marker Luxury

50/144 MHz 12 CHANNEL



— KURANISHI —

HOW MARKER/LUXURY WAS DESIGNED

MARKER/LUXURY is a crystal controlled 12-channel FM transceiver for 50 or 144MHz. It has built-in AC/DC power supply circuit for easy 2-way operation for mobile and base. Various problems seen in VHF transceivers on the market have been overcome through the development of this model. Followings are aims and features of engineering design of MARKER/LUXURY.

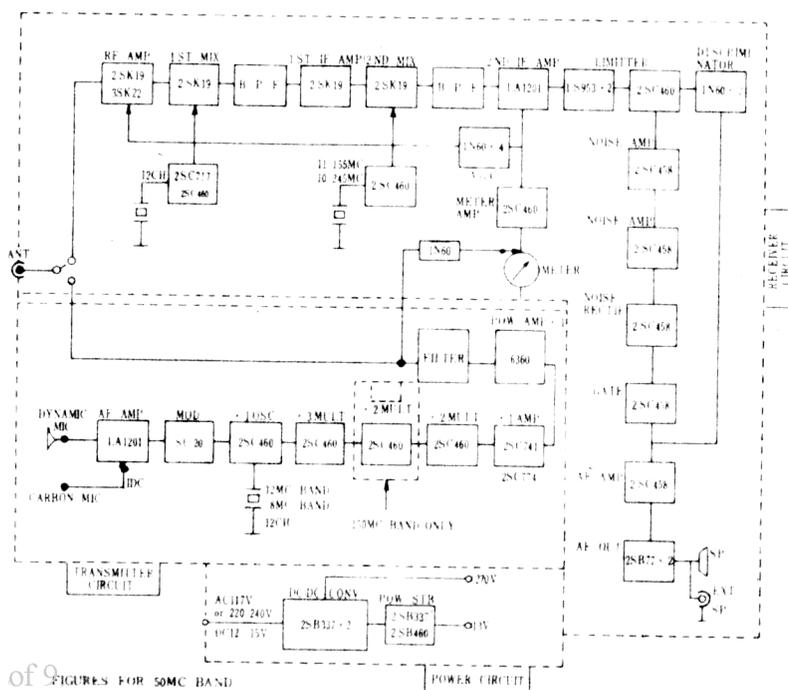
The most important point of design was spurious emission factors. In order to eliminate TVI and other interferences, trouble-making spurious emission of transmitter circuit has been reduced as low as to meet requirements for commercial applications. Spurious suppression ratio is more than 80 db at rated output of 10Watts/50 ohms, backed-up by a high-reliability low-spurious-emission valve at the final stage and a selected mechanical filter.

Spurious sensitivity of receiver circuit is also being suppressed to lower than -80db. Under high field strength mainly in city area where heavy commercial communication waves exist, elimination of un-pleasant interferences had generally been difficult by incoming spurious signals. This anti-pulse noise factor was improved by means of bandpass filter, making RF and first IF circuit narrow band, together with using FET's at all amplifier and mixer circuits before second IF filter stages, improving two-signal characteristics.

Stability of squelch sensitivity has been secured. Advanced circuit combination with selected parts made the critical point of squelch perfectly stable, keeping sensitivity of -10db in the ambient temperature range of -10°C to +60°C. This has brought stable and easy mobile operations.

In transmitter, unwanted spread of bandwidth is no longer worried by reasonably designed IDC circuit. This could increase average modulation ratio without loss of audio distortion for higher readability.

Easiness of AC/DC 2-way use is also one of the major features of MARKER/LUXURY. Built-in AC power circuit does not require external AC power pack. Simple and quick mounting and dismounting to and from dashboard now assured by one-touch rigid fastener will energize you for more active and economical mobile and base operations.



## SPECIFICATIONS

## GENERAL

CARRIER FREQUENCY	: 2m band in 144-148 MHz or up to 170 MHz, 6m band in 50-54 MHz or up to 56 MHz, Maximum bandwidth used to be 1 MHz.
NUMBER OF CHANNEL	: 12 channels.
MODULATION	: Frequency Modulation with IDC circuit.
TRANSMITTING SYSTEM	: Press-to-talk system.
POWER DRAIN	: DC ... 500mA for RX, 4A for TX. AC ... 6 Watts for RX, 50 Watts for TX.
POWER SOURCE	: AC 200/220V or 117V(factory adjusted) or DC 13.5V. Plus or minus 10%.
OPERATING TEMPERATURE	: -10°C to +60°C.
DIMENSIONS	: 200mm(W) x 260mm(D) x 70mm(H) (7-7/8" x 10-1/4" x 2-3/4")
WEIGHT	: 3.7 Kg. (8.14 lbs.)
STANDARD ACCESSORIES	: Dynamic microphone, Antenna connector plug, External speaker plug, AC cord, DC cord and Mobile mount w/mic. hook.

## TRANSMITTER

TRANSMITTER POWER (OUTPUT)	: 10 Watts.
FREQUENCY DEVIATION	: 15 KHz max.
FREQUENCY STABILITY	: $\pm 0.001\%$ or less.
SPURIOUS RADIATION	: More than 80 db below carrier.
FREQUENCY MULTIPLICATION	: 2m band ... 12 times. 6m band ... 6 times.

## RECEIVER

RECEIVER CIRCUIT	: Crystal controlled, double superheterodyne.
INTERMEDIATE FREQUENCY	: 1st ... 10.7 MHz      2nd ... 455 KHz.
INPUT IMPEDANCE	: 50 to 75 ohms.
SENSITIVITY	: 0.5uV or less (20 db QS) 1uV or less (30 db S/N at 10 KHz deviation with 1 KHz AF)
INTERMODULATION	: More than 80 db at 40 KHz separation.
SPURIOUS SENSITIVITY	: More than 80 db.
AUDIO OUTPUT	: 0.5 Watt (less than 10% distortion).

## HOW TO OPERATE YOUR MARKER/LUXURY

## POWER SOURCE

Connect to power source with supplied power cord. Be sure to connect in correct polarity in case of DC, although a protective circuit is incorporated. Red line to positive and black line to negative. The circuit of MARKER/LUXURY is floating from chassis, thus only you should take care of is polarity of DC cord to car battery. If connected incorrectly, a fuse will melt. Adjust voltage regulator of your car to have voltage not to rise over 15 volts.

Fuses installed are of 6A for DC and 2A for AC.

## ANTENNA

Output circuit of MARKER/LUXURY is being adjusted to 50 ohms at factory. When connected to 75 ohm antenna without adjustment, efficiency will be reduced slightly, although it may be an acceptable amount. A careful antenna matching is recommended to avoid life shortening by increased loss of final stage tube in case VSWR becomes over 2. An instruction for adjustment to 75 ohms is shown later.

## RECEIVE &amp; SQUELCH ADJUSTMENT

Connect power and antenna, turn the power switch on, then a pilot lamp at channel selector dial lights. Turn the squelch knob to the extreme left (squelch off), and set volume knob to the point where moderate jarring noises are heard. Turn the squelch knob gradually to right (clockwise), then you will find a point where the noises fade away suddenly. Stop squelch knob at this point. Now you are ready for reception. Squelch circuit is a circuit to suppress audio amplifier, utilizing noises produced in the receiver during no signal input comes in. Therefore for very weak signals close to noise level, squelch should be kept off (knob to position extreme left). Signal strength is shown on Meter.

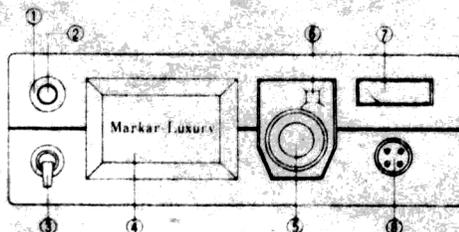
## TRANSMIT

Connect microphone to MIC jack. Confirm antenna being firmly connected. Push the button of microphone to talk and speak into microphone with moderate loudness of voice. As the supplied microphone has high sensitivity, you are not required to speak loudly. Transmitting condition can also be confirmed by Meter.

## TEMPERATURE RANGE

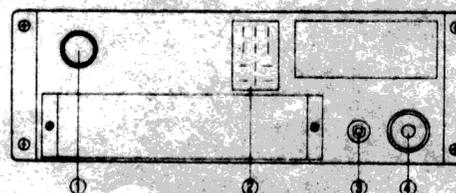
MARKER/LUXURY is guaranteed to work correctly as published in the ambient temperature range of  $-10^{\circ}\text{C}$  to  $+60^{\circ}\text{C}$ .

FRONT VIEW



1. Squelch
2. Volume
3. Power SW.
4. Speaker
5. Channel Selector SW.
6. Channel Indicator
7. Sig. Power Indicator
8. Microphone Connector

REAR VIEW



1. AC Fuse
2. AC/DC Power Connector
3. EXT. SP. Connector
4. Antenna Connector

**CARBON MICROPHONE**

The supplied microphone is a dynamic microphone, but you may replace it with a carbon microphone with simple change of connection at microphone plug as shown below. (Fig. 3)

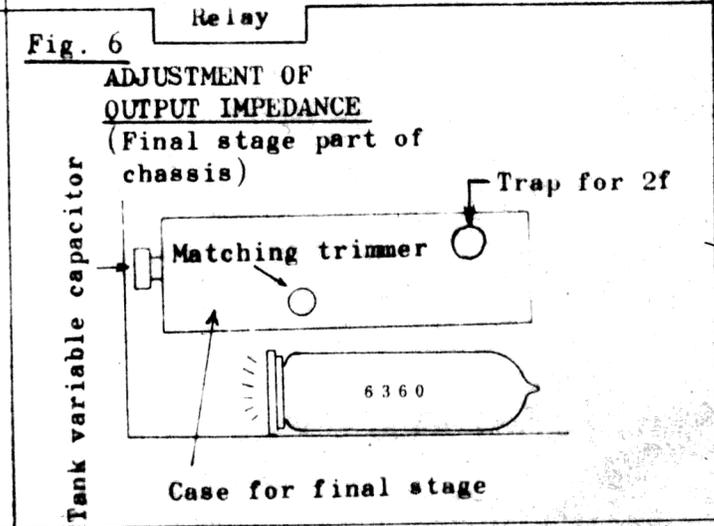
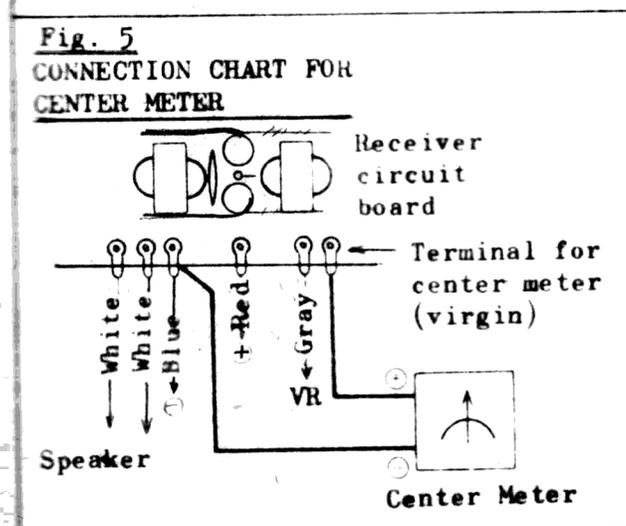
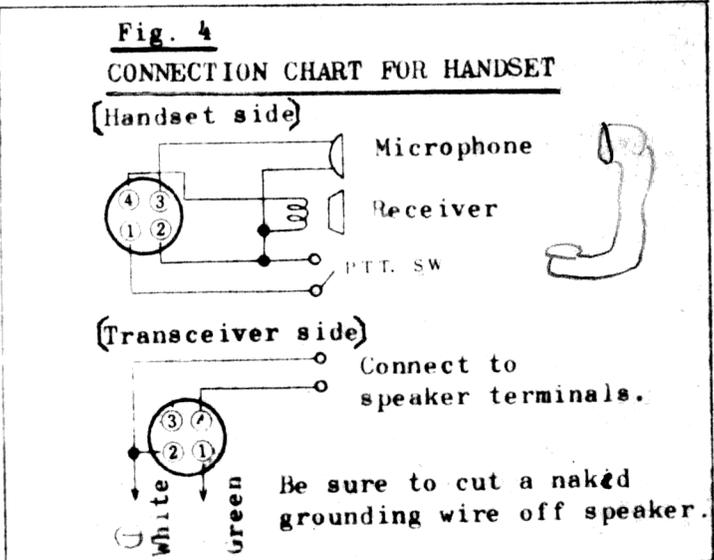
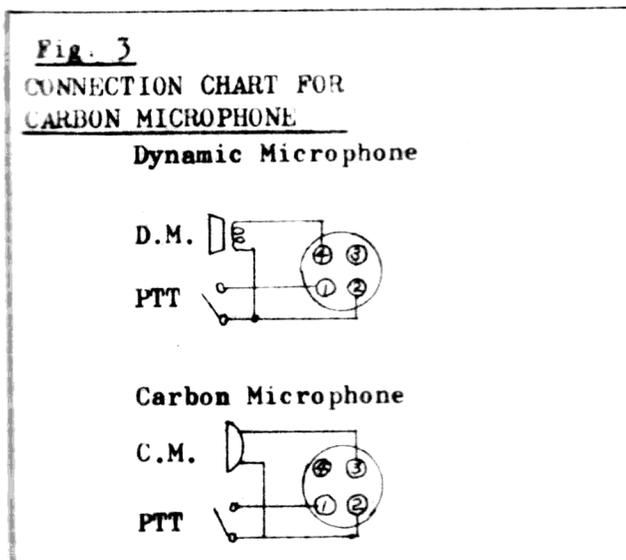
**HANDSET MICROPHONE** A handset microphone may also be used by changing connections at microphone plug and jack as circuit shown below. (Fig. 4)

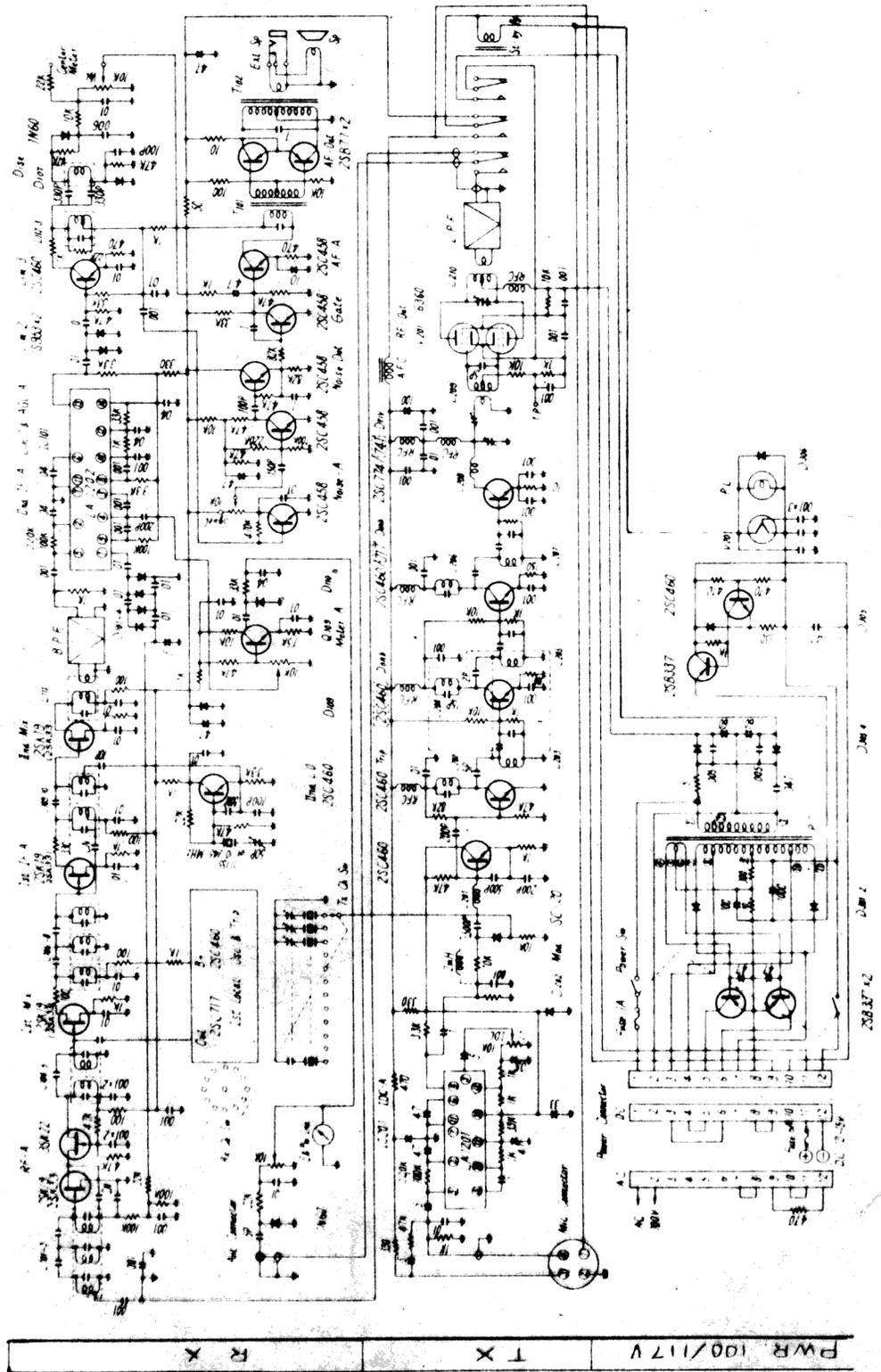
**EXTERNAL SPEAKER** A jack is provided on the rear side of the set for external speaker, ~~on necessity~~. Impedance of 8 ohms. No speaker or headphone of less than 8 ohms should be used. A plug for external speaker jack is supplied as a standard accessory.

**CENTER METER** A connection terminal for Center Meter is provided on receiver circuit board. You may check in-coming or out-going carrier frequency deviation by using an external meter. A center meter of  $\pm 25\mu A$  (50 $\mu A$  full scale) suits this purpose. See connection chart shown below. (Fig.5)

**ADJUSTMENT OF OUTPUT IMPEDANCE TO 75 OHMS**

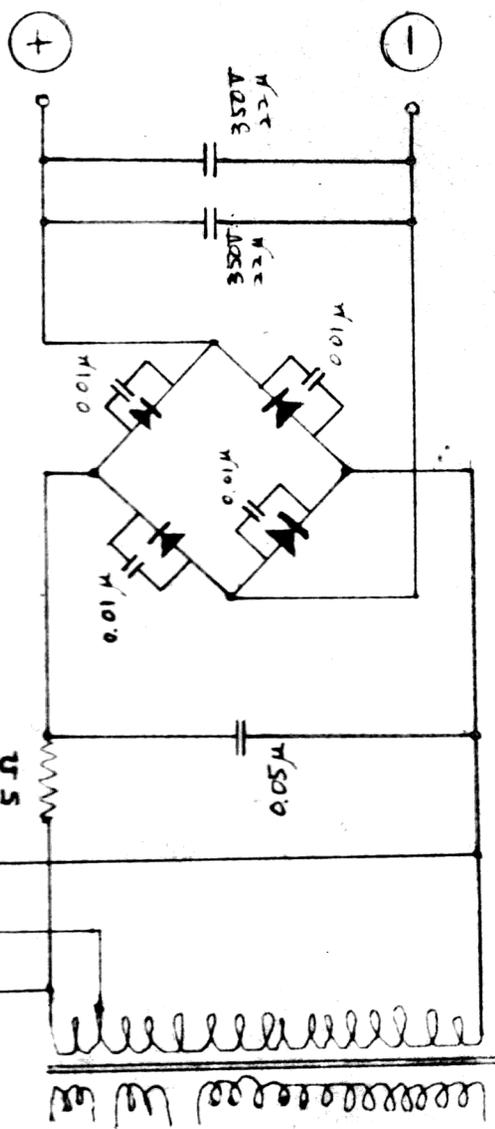
Connect a 75 ohm dummy load or a terminal type power meter to the output terminal, and adjust final stage tank variable capacitor and matching trimmer alternately so that the power meter shows maximum output. Adjustment with direct connection to antenna is not recommendable because it may cause unwanted wave emissions or increase of standing wave. Antenna adjustment should be made separately. (Fig.6)





SEIEM-8  
X 4

290-280 V



- \* C and R without ratings are those adjustments are needed or those differ depending on 6m or 2m band.
- \* Surrounded by dotted lines are for 2m only.
- \* First local oscillator circuit of receiver is patent-applied. Local oscillator frequency can be fine-adjusted.
- \*  $\frac{1}{2}$  marks mean grounded to chassis.  $\frac{1}{2}$  means connection to -12V line.

SPECIFICATIONS FOR CRYSTALS

For the case you obtain crystals for additional channels from local source of supply, specifications for crystals are shown as follows.

	TX	RX
Type of Holder	HC-25/U	
Oscillation Frequency	$F_0 \times 1/12$	$(F_0 - 10.7) \times 1/3$
Harmonic of Quartz Vibration	Fundamental	3rd Overtone
Frequency Tolerance	$\pm 1.5 \times 10^{-5}$ at room temperature	
Operation Temperature Range	$-10^{\circ}$ to $+50^{\circ}$ C	
Load Capacitance	35pF	Series Resonance centered at +2KHz
Drive Level	5mA max.	2mA max.
Max. Effective Resonance Resistance	20 ohms	12 ohms
Pin-to-Pin Capacitance	7pF max.	
Insulation Resistance	30 M ohms min.	
Oscillator Circuit	Refer circuit diagram of MARKER	

