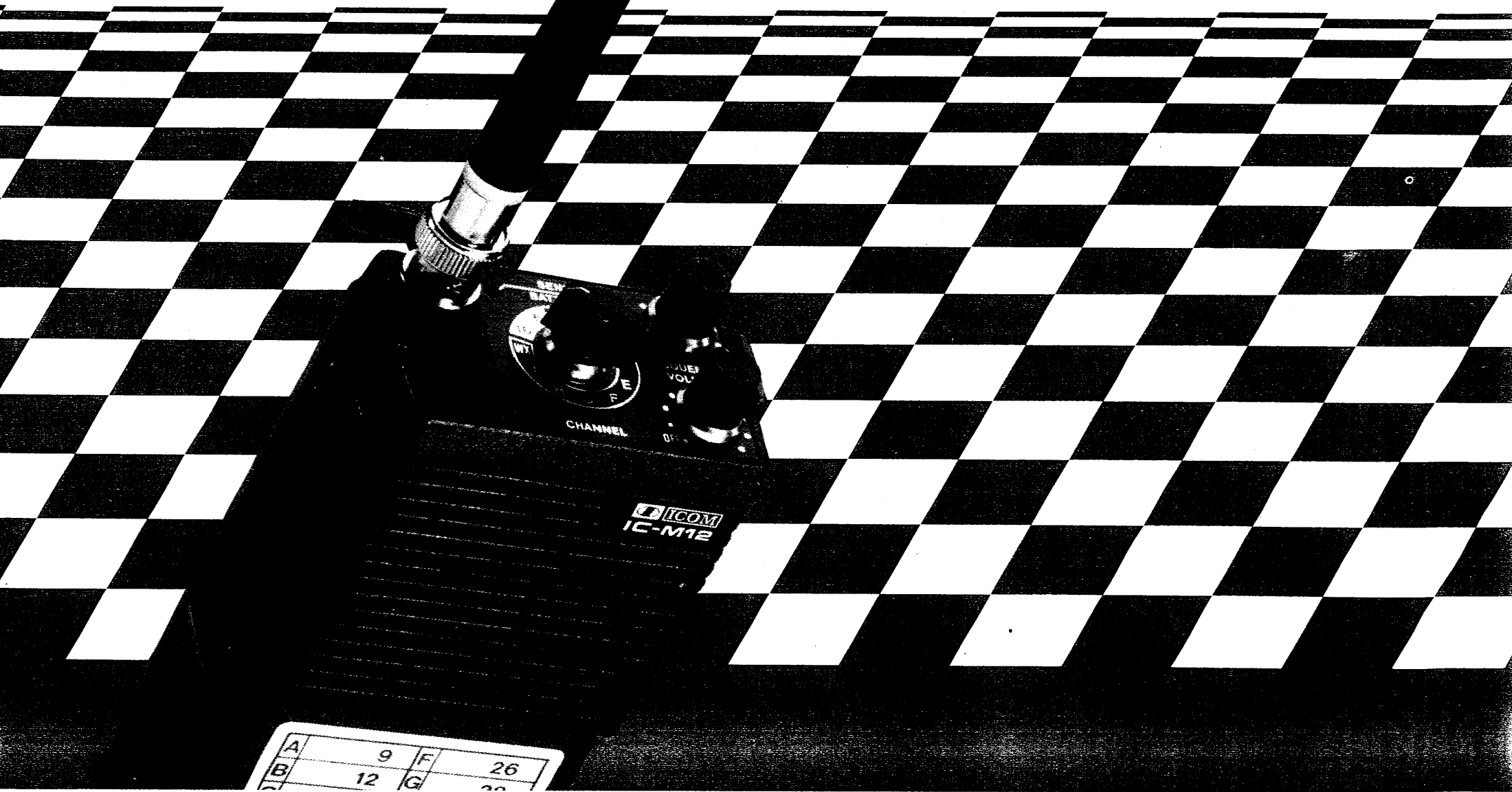
ICOM

VHF / MARINE / RADIO TELEPHONE

IC-M12

OWNERS MANUAL



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SECTION I INTRODUCTION

SYNTHESIZED HAND HELD TRANSCEIVER

The ICOM IC-M12 is a very compact VHF synthesized hand held transceiver. Using the latest in electronic design, the IC-M12 offers diode programming for frequency selection, eliminating the need, expense and delay in changing the channel configuration. Channels are easily installed or changed, any time, at your marine dealer, by changing diode positions on the matrix board. Offering rugged construction, extreme stability and frequency accuracy, the IC-M12 will give you years of troublefree operation.

VARIOUS POWER PACKS AVAILABLE

The Power Pack is slipped on the bottom of the radio very easily, and various power packs are available to suit your needs, for minimum size or longer use.

HIGHLY EFFICIENT FLEXIBLE ANTENNA

A highly efficient flexible antenna is supplied with the set. When the antenna is removed, its connector can be used for an external antenna connector.

SECTION II SPECIFICATIONS

GENERAL

Number of Semiconductors	Transistors	41
	FET	3
	IC	5
	Diodes	15 (not including diodes on the matrix board)
Number of Channels	12 programmable channels	
	Operation Simplex, Semi-duplex	
Channel Spacing	25 KHz	
Frequency Stability	0.0005 Percent	
Usable Temperature	–20 Degrees C to 60 Degrees C	
	(–4 Degrees F to 140 Degrees F)	
Antenna Impedance	50 ohms unbalanced	
Power Supply Requirement	DC 8.4V; with attendant power pack IC-CM3, DC 6 to 12V negative ground is acceptable	
Current Drain at 8.4V	Transmitting	
	At 1 watt output	Approx. 350mA
	Receiving	
	At max audio output	Approx. 130mA
	Squelched	Approx. 25mA
Dimensions	116.5mm(H) x 65mm(W) x 45mm(D) without power pack	
	Attendant power pack, IC-CM3: 49mm(H) x 65mm(W) x 35mm(D)	
Weight	510g including power pack, IC-CM3 and flexible antenna	

RECEIVER

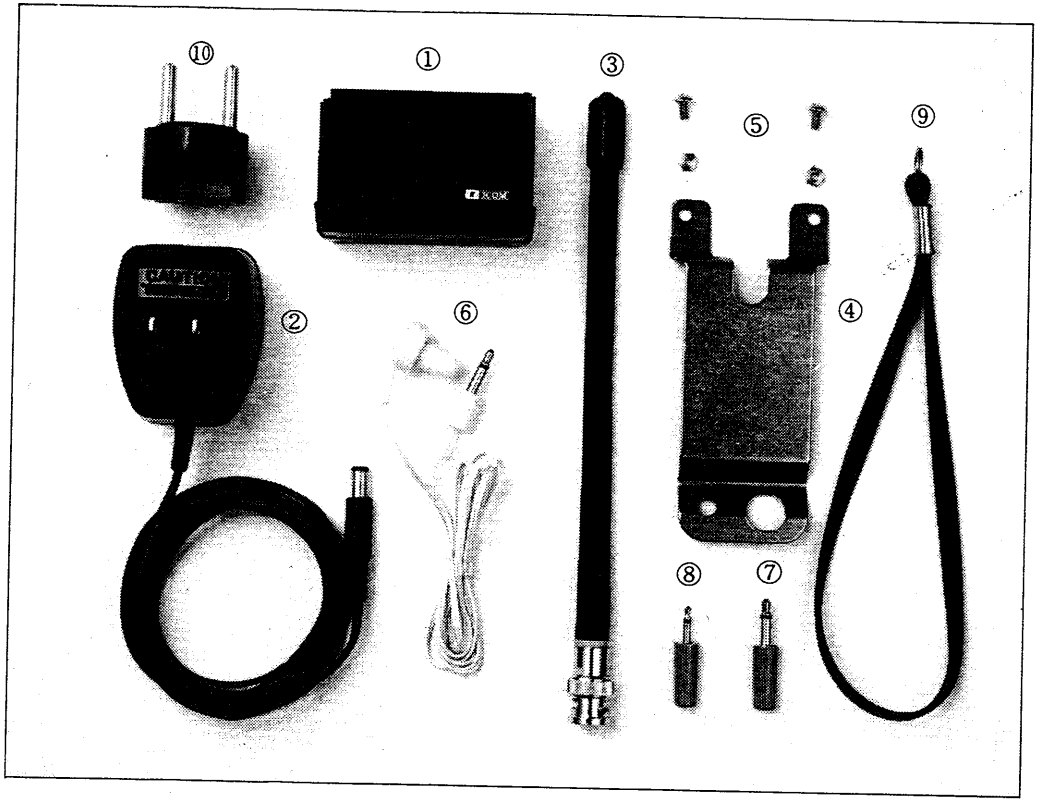
Frequency Range	156.3 ~ 157.425MHz and 160.875 ~ 162.550MHz
Receiving System	Double-conversion superheterodyne
Modulation Acceptance	$16F_3$ ±7.5KHz
Intermediate Frequency	1st: 10.695MHz
	2nd: 455KHz
Sensitivity	Less than 0.5μV for 20dB Noise quieting
	Less than 0.4μV for 12dB SINAD
Squelch Sensitivity	Less than 0.4μV
Spurious response rejection ratio	More than 50dB
Selectivity	More than 65dB at adjacent channel
Intermodulation Rejection Ratio	More than 60dB
Audio Output Power	More than 300mW at 10% distortion
Audio Output Impedance	8 ohms

TRANSMITTER

Frequency Range	156.3 ~ 157.425MHz
Output Power	1 Watt
Emission Mode	$16F_3$
Modulation System	Variable reactance frequency modulation
Max. Frequency Deviation	±5KHz
Spurious Emission	More than 57dB below carrier
Microphone	Built-in Electret condenser microphone
	Optional Speaker-microphone (IC-CM9) can be used

SECTION III ACCESSORIES

Carefully remove your transceiver from the packing carton and examine it for signs of shipping damage. Should any be apparent, notify the delivering carrier or dealer immediately, stating the full extent of the damage. It is recommended that you keep the shipping cartons. In the event storage, moving, or reshipment becomes necessary, they come in handy. Various accessories are packed with the transceiver. Make sure you have not overlooked anything.



1. Power pack IC-CM3 1
   (attached to the set)
2. Wall charger CM-25U/E 1
3. Flexible antenna 1
4. Belt clip. 1
5. Belt clip retaining screws. 2
6. Earphone. 1
7. Earphone plug 1
8. Microphone plug. 1
9. Hand-strap 1
10. AC conversion plug** 1

* CM-25U for 117V AC
CM-25E for 240V AC

** 117V AC version is not included.

SECTION IV PRE-OPERATION

BATTERY INSTALLATION

When using Nickel-Cadmium power pack IC-CM3:

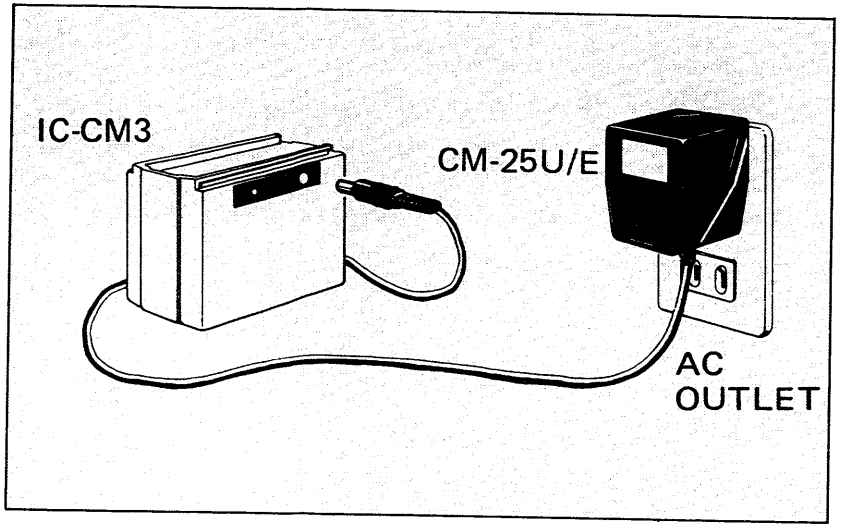
The IC-CM3 is a rechargeable Nickel-Cadmium power pack, and it can be slipped onto or off of the set very easily. It has a connector for a charger charger-current control circuit, reverse polarity protection circuit and charge indicator LED in its own pack. You can use the supplied CM-25U/E wall charger or similar simple wall charger, or a 12V battery by using optional cable IC-CM1 for recharging. Before use, the power pack should be charged about 15 hours, because the battery may have discharged.

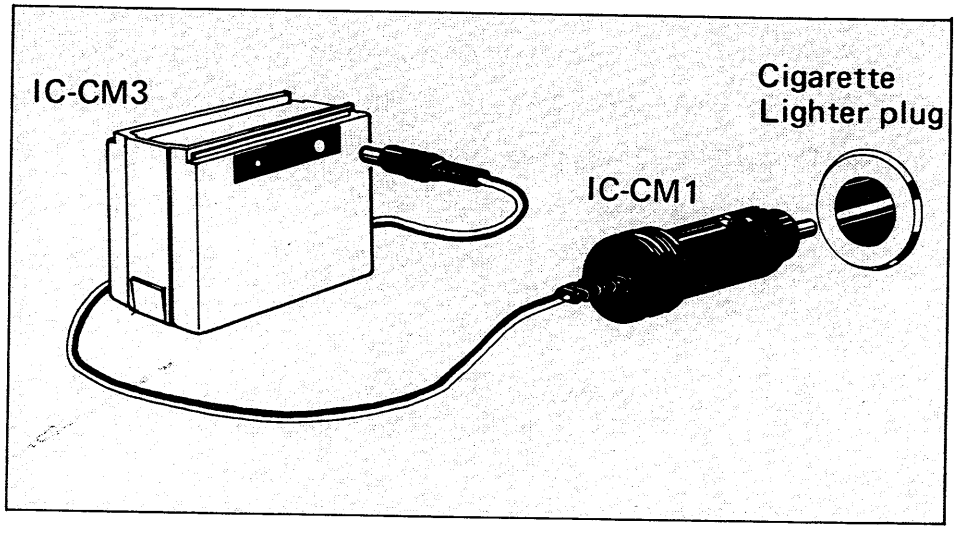
After charging is completed, the batteries can be used in the same manner as dry cells. However, the voltage of Nickel-Cadmium batteries drops rapidly just before they are exhausted, so when the Transmit Indicator LED of the transceiver goes out, be sure to immediately stop using it, and recharge the batteries again.

HOW TO CHARGE (When using Nickel-Cadmium power pack IC-CM3)

1. Use the supplied wall charger CM-25U/E or a stable power source with an output voltage of 13.8V DC and current capacity over 50mA, or use a 12V battery with optional charger cable IC-CM1. (Output voltage of 12 ~ 15V can be used, but output voltage near the specified voltage should be used.)
2. The power switch of the transceiver must be OFF, or remove the power pack from the transceiver.

3. Connect the output plug of the wall charger (CM-25U/E), or other power source, to the charger socket of the power pack. (When charging Nickel-Cadmium batteries in the IC-CM4 power pack, you should use the CM-30 charger only.)
   The charge indicator LED of the power pack is lit, which shows that the charger is working.





4. It takes about 15 hours to charge the batteries completely. This charger is designed for 0.1C (10-hour rate current), but charge for 15 hours in order to compensate for any unbalance of the batteries.
   You should charge the batteries for 15 hours when you have not used them for a long time or after buying them.
5. Charge between 0°C and 40°C.
6. Avoid continuing charging as much as possible after full charging, (15 hours). If excess charging is repeated, efficiency of the power pack is reduced.
7. After charging, unplug the power source from the charger socket of the power pack. The transceiver and the power pack are now ready for operation.

PRECAUTIONS FOR USE OF THE NICKEL-CADMIUM BATTERIES (from the JIS C8705 MANUAL)

General Cautions

1. Never short the power pack.
   Since internal resistance is low, excess shorted current flows away, causing the batteries or conductors to burn. Avoid shorts! A label showing polarity is on the power pack.
2. Never solder the batteries directly.
   If the batteries are soldered directly, the separator or insulator may become melted and damaged. Accordingly, the terminal must be spot-welded first and then soldered.
3. Confirm polarities in order to prevent reverse charging.
   If they are charged in reverse, batteries may be damaged. Therefore confirmation of correct polarity is essential, to proper operation.
4. Never charge with excess charging current.
   If an excess charging rate is employed, gas consumption speed cannot keep up with gas generating speed at the time of charging. Batteries may be damaged by increasing internal pressure. Accordingly, the charging must be kept regulated.
5. Avoid charging under 0°C or over 40°C.
   Under 0°C, since gas consumption speed becomes lower at the charging time, inside pressure increases and hydrogen is generated. Since charging efficiency is reduced over 40°C, it is rather difficult to charge. Accordingly, charging must be done between 0°C and 40°C.
6. Never put batteries into fire.
   Since there may be a little gas left in the batteries, internal pressure increases suddenly and the batteries explode if thrown into a fire. Also, battery electrolyte is ejected and can cause damage to skin and clothes.

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