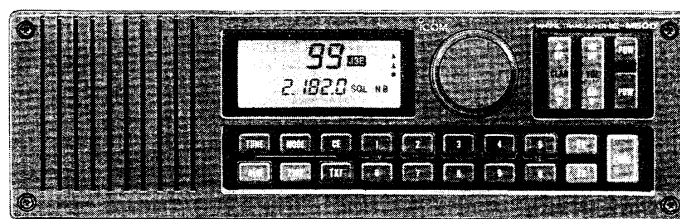




INSTRUCTION MANUAL

HF MARINE TRANSCEIVER
IC-M600



FOREWORD

Thank you for purchasing the IC-M600 HF MARINE TRANSCEIVER. The IC-M600 is a compact, easy-to-operate transceiver designed with Icom's state-of-the-art technology.

To fully appreciate the capabilities of your new IC-M600, please read this instruction manual thoroughly before attempting operation. If you have any questions regarding the operation of the IC-M600, feel free to contact your nearest authorized Icom Dealer or Service Center.

EXPLICIT DEFINITIONS

The following explicit definitions apply to this instruction manual.

WORD	DEFINITION
WARNING	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	If disregarded, inconvenience only. No personal injury, risk of fire or electric shock.

IMPORTANT SAFETY PRECAUTIONS

READ THIS INSTRUCTION MANUAL CAREFULLY before attempting to operate the transceiver.

SAVE THIS INSTRUCTION MANUAL — This instruction manual contains important safety and operating instructions for the IC-M600.

IMPORTANT: The Operating Rules and Guidelines are described in Section 6 (p. 14).

WARNING: Mount the transceiver securely with the supplied bolts and nuts. If the transceiver is mounted without these, personal injury or transceiver damage could occur due to wave shock, vibrations, etc.

NEVER connect the transceiver via the [DC 13.6 V] connector to an AC outlet or to a power source of more than 16 V DC. **NEVER** connect the transceiver to a power source using reverse polarity. These connections will ruin the transceiver.

NEVER allow children to touch the transceiver.

AVOID using or placing the transceiver in areas with temperatures below -30°C or over $+60^{\circ}\text{C}$.

NEVER expose the transceiver to rain, snow or any liquids.

AVOID using the transceiver in excessively dusty environments.

AVOID placing the transceiver in direct sunlight for long periods.

BE CAREFUL! The heatsink may become hot when operating the transceiver continuously for long periods.

During maritime mobile operations, **DO NOT** operate the transceiver without running the boat's engine.

FEATURES

- One-touch emergency frequency access capability.
- Full 150 W* (PEP) of output power.
- Excellent frequency stability of ± 20 Hz in the -30°C ~ $+60^{\circ}\text{C}$ range.
- DDS (Direct Digital Synthesizer) system for a rapid lockup time and high quality frequency oscillation.
- Convenient frequency selection via keyboard entry or rotation of the main dial.
- Clarity control for up to ± 150 Hz in 10 Hz steps.
- 99 user-programmable memory channels.
- 192 pre-programmed ITU channels and 282 new ITU channels effective July 1991.
- Overload protection against open, shorted or mismatched antenna connections and thermal overloads.
- General coverage receiver.
- Splash-resistant front panel.
- Keyboard and function display backlighting.
- Audio activated squelch.
- Noise blanker circuit.
- AGC (Automatic Gain Control) circuit.
- Accepts an optional AT-120 HF AUTOMATIC ANTENNA TUNER.
- Optional UT-62 ALARM UNIT for alarm signal transmission.

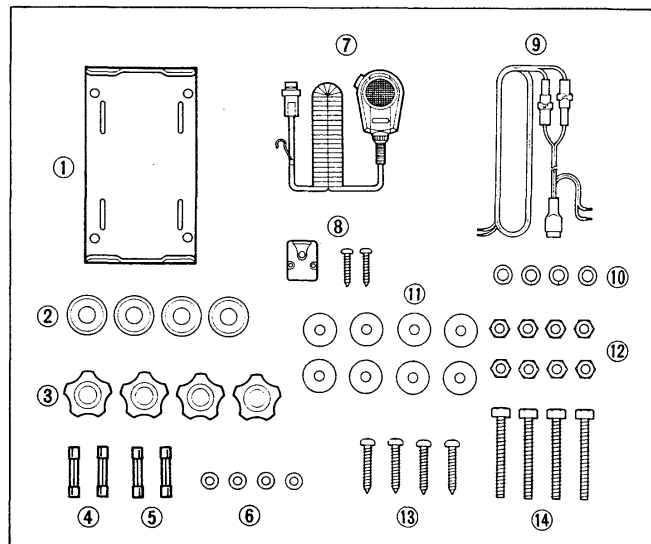
* For 25.0000~26.9999 MHz: More than 60 W

TABLE OF CONTENTS

FOREWORD	i	5 SETTING A FREQUENCY	13
EXPLICIT DEFINITIONS	i	- Setting a frequency	13
IMPORTANT SAFETY PRECAUTIONS	i	- Changing the frequency in 100 Hz steps	13
FEATURES	i	6 OPERATING RULES AND GUIDELINES ...	14
TABLE OF CONTENTS	ii	7 RECEIVING	15~16
UNPACKING	ii	- Receiving.....	15~16
1 PANEL DESCRIPTION	1~4	8 TRANSMITTING	17
- Switches and controls.....	1~2	- Transmitting	17
- Rear panel	3	- Setting the transmit power	17
- Function display	4	9 MEMORY OPERATION	18
2 INSTALLATION	5~8	- Programming a frequency	18
- Mounting the transceiver	5	- Changing the operating mode	18
- Rear panel connections	6	- Clearing memory information.....	18
- Installation example.....	7	10 ALARM SIGNAL (OPTIONAL)	19
- Ground connections.....	8	- Transmitting an alarm signal on 2182 kHz.....	19
- Antenna connections.....	8	- Distress call procedures.....	19
- Power source	8	- Testing an alarm signal	19
3 EXTERNAL EQUIPMENT CONNECTIONS	9~10	11 OPTIONAL UNIT INSTALLATION	20
- AT-120 HF AUTOMATIC ANTENNA TUNER.....	9	- UT-62 ALARM UNIT.....	20
- Internal setting for a non-Icom antenna tuner.....	9	- ACC cables	20
- MN-100, MN-100L ANTENNA MATCHERS	10	12 MAINTENANCE	21
- OPC-302, OPC-303 ACC CABLES.....	10	- Replacing a fuse	21
4 SELECTING A CHANNEL	11~12	- Cleaning.....	21
- Direct selection of 2182 kHz.....	11	13 TROUBLESHOOTING	22
- Selecting a memory channel	11~12	14 SPECIFICATIONS	23
		15 OPTIONS	24

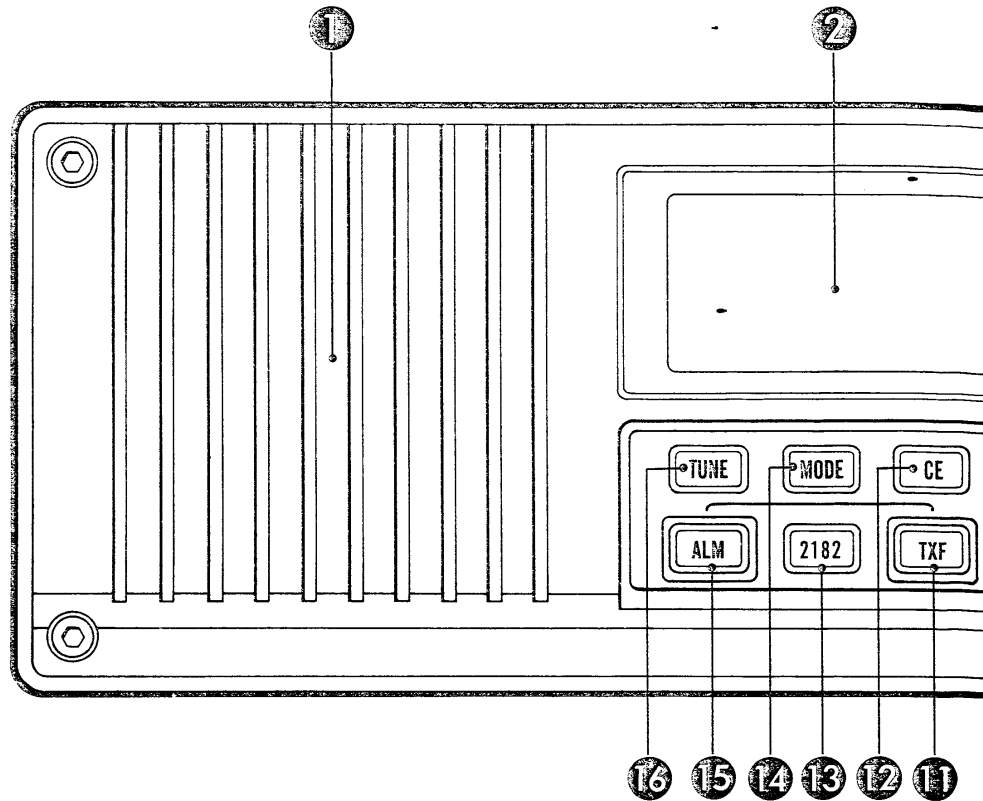
UNPACKING

Accessories included with the IC-M600:	QTY.
① Mounting bracket	1
② Rubber feet.....	4
③ Mounting knobs	4
④ Spare fuses (30 A)	2
⑤ Spare fuses (4 A).....	2
⑥ Flat washers (for mounting knobs)	4
⑦ Microphone (EM-48).....	1
⑧ Microphone hanger and screws.....	1 set
⑨ DC power cable (OPC-077).....	1
⑩ Spring washers	8
⑪ Flat washers.....	
⑫ Nuts	8
⑬ Self-tapping screws	4
⑭ Hex head bolts	4



1 PANEL DESCRIPTION

Switches and controls



1 INTERNAL SPEAKER

Operates while the transceiver is receiving and “” is not displayed.

2 FUNCTION DISPLAY (p. 4)

Indicates the current operating frequency, channel, mode and additional information.

3 MAIN DIAL

Selects an operating channel (pgs. 11, 12) or operating frequency (p. 13).

Selects an operating band after pushing [FUNC]. (p. 12)

4 CLARITY SWITCHES [CLAR] (pgs. 15, 16)

Shifts only the receive frequency ± 150 Hz in 10 Hz steps.

- Clarity indicator appears and shows the shifting level.
- Clears the shift frequency when both [UP] and [DN] are pushed simultaneously.

5 VOLUME SWITCHES [VOL] (p. 15)

Adjusts the audio level.

- The volume level is displayed by the S/Rf indicator while adjusting the volume level.
- When both [] and [] are pushed simultaneously, audio is muted.

6 POWER SWITCHES [POW]

Turn power ON and OFF.

- Turns power ON when either switch is pushed.
- Turns power OFF when both switches are pushed simultaneously.

7 FUNCTION SWITCH [FUNC] (pgs. 15, 16)

Activates the secondary functions of the switches and main dial.

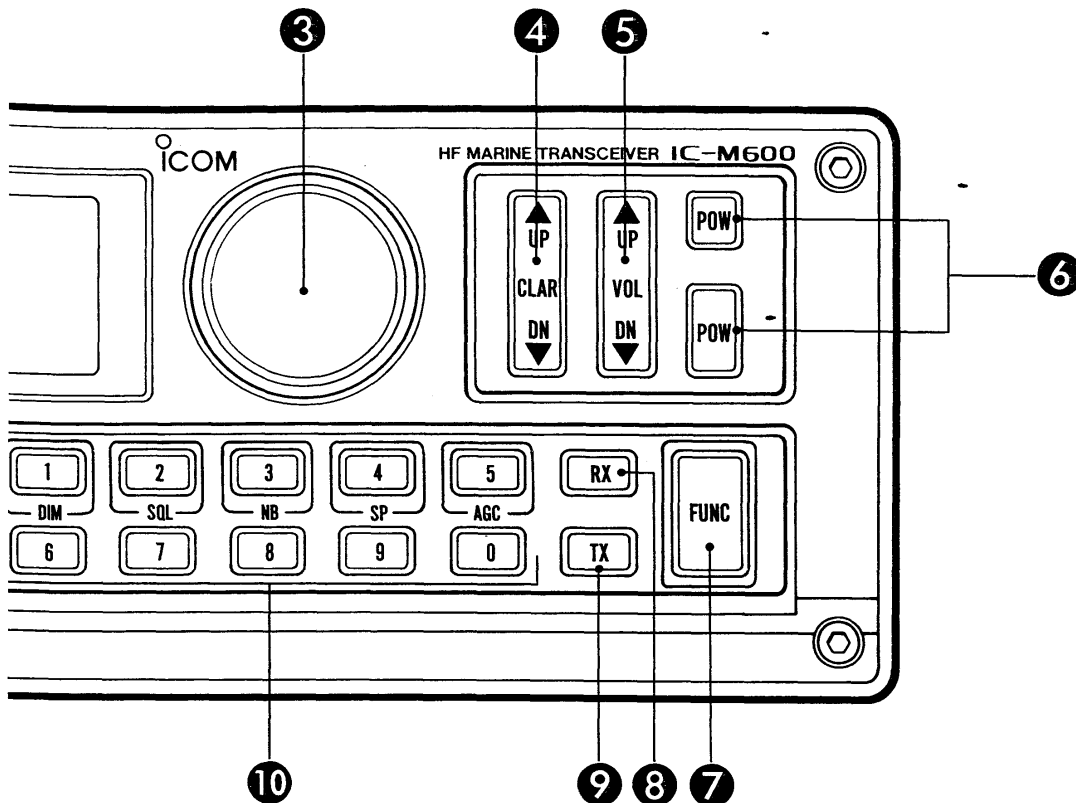
KEY	SECONDARY FUNCTION (After pushing [FUNC])
[1]	Dimmer switch [DIM] • Turns backlighting ON and OFF.
[2]	Squelch switch [SQL] • Turns the squelch function ON and OFF.
[3]	Noise blanker switch [NB] • Turns the noise blanker function ON and OFF.
[4]	Speaker-off switch [SP] • Mutes received audio and the beep tone from the internal speaker.
[5]	AGC switch [AGC] • Turns the AGC (Automatic Gain Control) circuit ON and OFF.

8 RECEIVE FREQUENCY ENTER SWITCH [RX]

Stores a duplex ITU channel or memory channel after keyboard entry. (pgs. 11, 12)

Enters a receive frequency. (p. 13)

Stores a receive frequency in a memory channel. (p. 18)



9 TRANSMIT FREQUENCY ENTER SWITCH [TX]

Stores a duplex ITU channel or memory channel after keyboard entry. (pgs. 11, 12)

Sets the transceiver for writing of a transmit frequency. (p. 18)

Stores a transmit frequency in a memory channel. (p. 18)

Sets the transceiver to select RF output power after pushing [FUNC]. (p. 17)

10 KEYBOARD

Numeral keys perform tuning and activate functions. Some numeral keys have secondary functions as shown in the table at left. To activate the secondary function of the keys, push [FUNC] before pushing the keys.

See pgs. 11~13 for tuning operation, or see the page at left for a description of secondary functions.

11 TRANSMIT FREQUENCY CHECK SWITCH [TXF]

(p. 17)

While pushing this switch, the operating frequency changes from the receive frequency to the transmit frequency to check whether the transmit frequency is busy or not.

12 CLEAR SWITCH [CE]

Clears input digits and retrieves the previous key input.

Sets the transceiver for the 100 Hz tuning step. (p. 13)

Sets the transceiver to store a frequency.

13 2182 kHz SWITCH [2182] (p. 11)

Accesses the 2182 kHz emergency and distress call frequency instantly during any operating condition.

14 MODE SWITCH [MODE]

Selects the desired operating mode.

15 ALARM SWITCH [ALM] (p. 19)

Selects the 2182 kHz emergency frequency; also turns ON and OFF the alarm function when the optional UT-62 ALARM UNIT is installed.

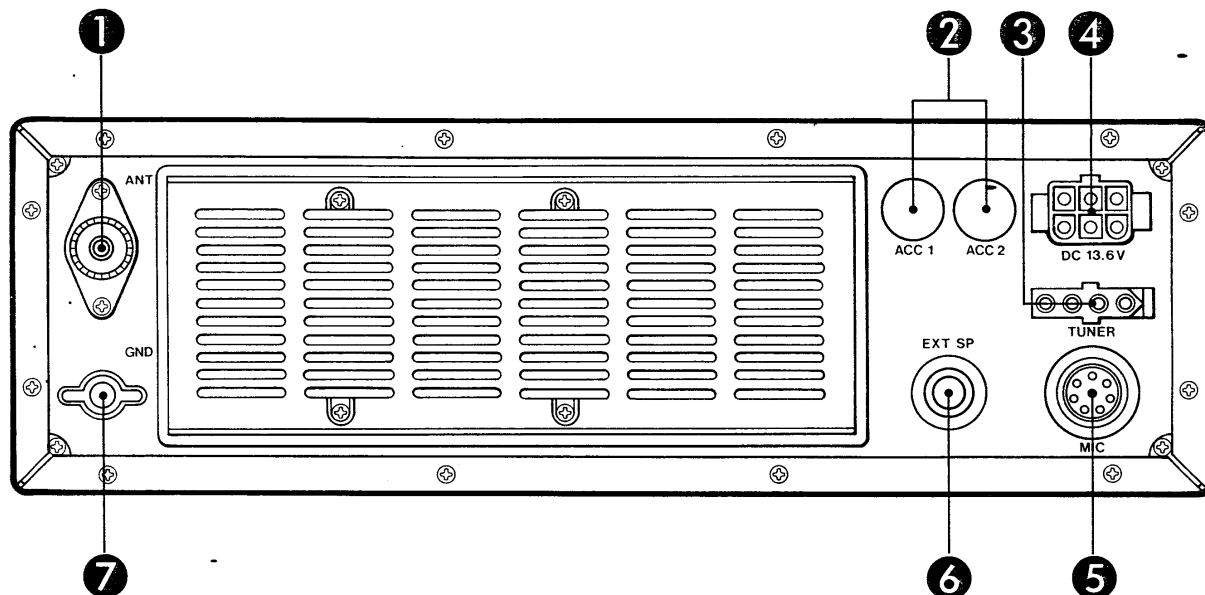
Transmits alarm signals on 2182 kHz when pushing this switch together with [TXF].

16 ANTENNA TUNER SWITCH [TUNE]

Starts the tuning of an optional AT-120 HF AUTOMATIC ANTENNA TUNER.

1 PANEL DESCRIPTION

■ Rear panel



❶ ANTENNA CONNECTOR [ANT] (p. 8)

Connects an antenna cable. A PL-259 plug must be used.

CAUTION: Transmitting without an antenna may damage the transceiver.

❷ SPARE HOLES [ACC1], [ACC2] (p. 10)

Optional ACC cables, OPC-302 and OPC-303, can be installed here. External equipment may require sockets with ACC cables.

❸ ANTENNA TUNER CONNECTOR [TUNER] (p. 9)

Connects the control cable of an optional AT-120 HF AUTOMATIC ANTENNA TUNER.

❹ DC POWER CONNECTOR [DC 13.6 V] (pgs. 6, 8)

Connects the supplied DC power cable to an external 13.6 V DC power source.

❺ MIC CONNECTOR [MIC]

Connects the supplied microphone or an optional HS-50 HANDSET.

- The internal speaker does not function when the microphone is not connected to [MIC].

❻ EXTERNAL SPEAKER JACK [EXT SP]

Connects a 4~8 Ω speaker, if desired.

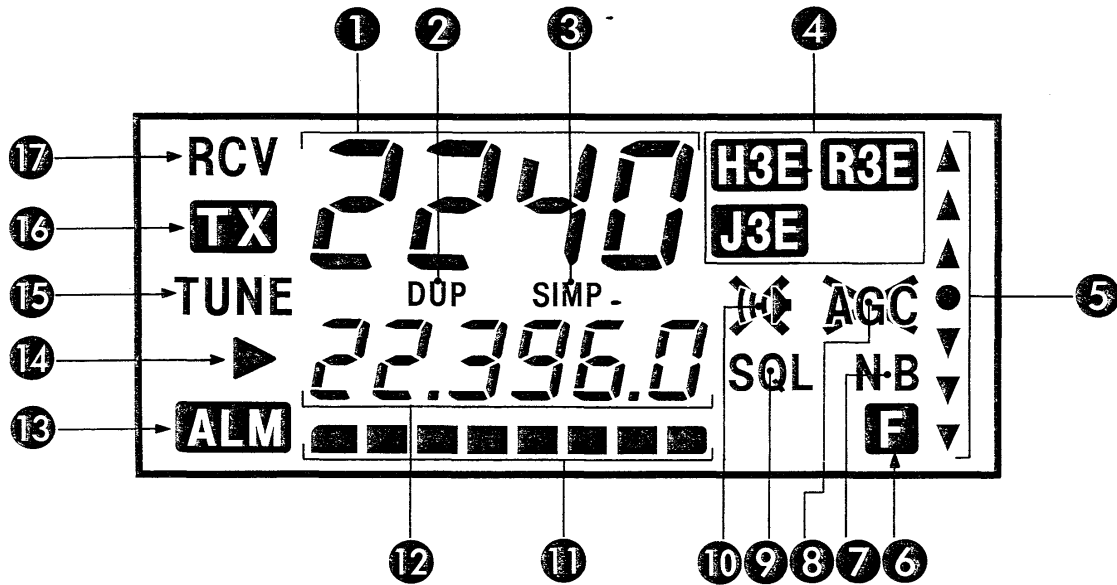
- The internal speaker can be turned OFF using the speaker-off function (Push [FUNC], then [4]).

❼ GROUND TERMINAL [GND] (p. 8)

To prevent electrical shocks, interference from other electronic equipment and other problems, be sure to ground the transceiver to a good earth point.

(See p. 8 for ground connection examples.)

■ Function display



① CHANNEL INDICATOR

Displays the selected ITU or memory channel number.

- Hyphenated numbers appear when a simplex ITU channel is selected.

② DUPLEX INDICATOR

Appears when a duplex channel is selected.

③ SIMPLEX INDICATOR

Appears when a simplex channel is selected.

④ MODE INDICATORS

Indicate the operating mode.

- The mode indicator disappears while an optional antenna tuner is tuning.

⑤ CLARITY INDICATOR

Indicates the clarity setting level every 50 Hz.

- “▲” arrows indicate that the receive frequency has been shifted higher than the displayed frequency.
- “▼” arrows indicate that the receive frequency has been shifted lower than the displayed frequency.

⑥ FUNCTION INDICATOR

Appears when the [FUNC] switch is pushed.

⑦ NOISE BLANKER INDICATOR

Appears when the noise blanker function is turned ON.

⑧ AGC OFF INDICATOR

Appears when the AGC (Automatic Gain Control) circuit is turned OFF.

⑨ SQUELCH INDICATOR

Appears when the squelch function is turned ON.

⑩ SPEAKER-OFF INDICATOR

Appears when the internal speaker is turned OFF.

⑪ S/R/F INDICATOR

Displays the relative received signal strength while receiving.

Displays the volume level while adjusting the volume.

Displays the RF output power level while transmitting.

⑫ FREQUENCY READOUT

Displays the operating frequency.

⑬ ALARM INDICATOR

Appears when the optional alarm function is activated.

⑭ FREQUENCY SETTING INDICATOR

Appears during frequency setting.

- The [CE] switch turns the indicator ON and OFF.

⑮ TUNING INDICATOR

Blinks while an optional antenna tuner is tuning.

⑯ TRANSMIT INDICATOR

Appears while transmitting or checking the transmit frequency.

Blinks while setting the transmit frequency.

⑰ RECEIVE INDICATOR

Appears when the squelch opens.

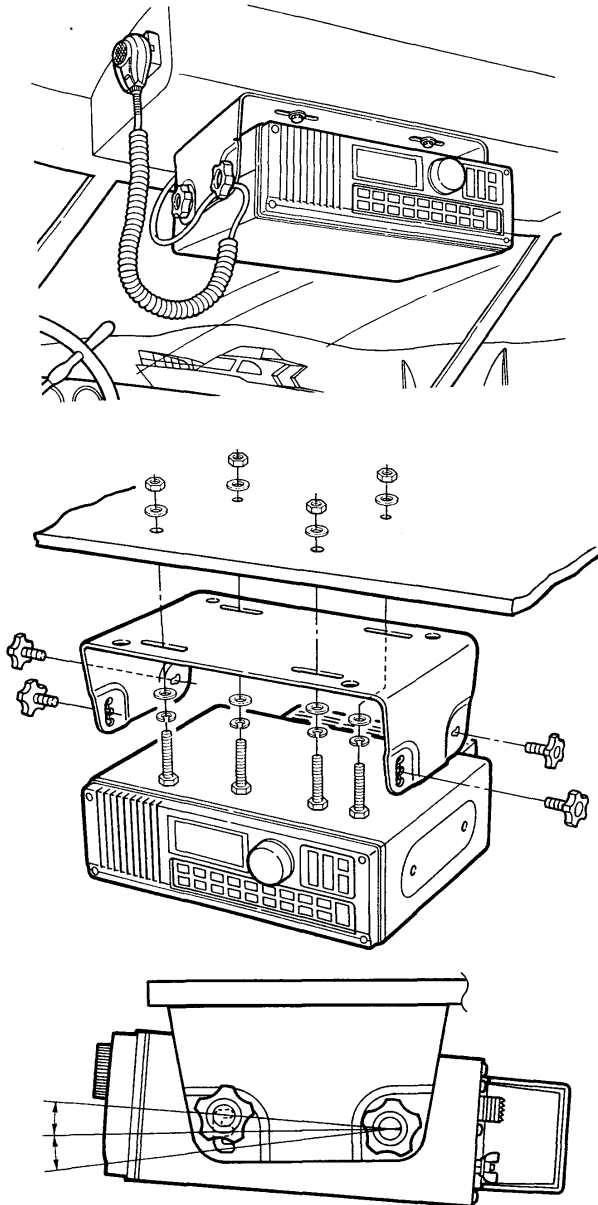
■ Mounting the transceiver

The bracket supplied with your transceiver allows "overhead" or "dashboard" mounting. Read the following installation instructions carefully.

WARNING: The transceiver may drop during wave shocks or vibrations when mounted without the proper bolts, nuts, etc.

- 1) Select a location that provides easy access to the front panel for steering safety, good ventilation and a dry environment.

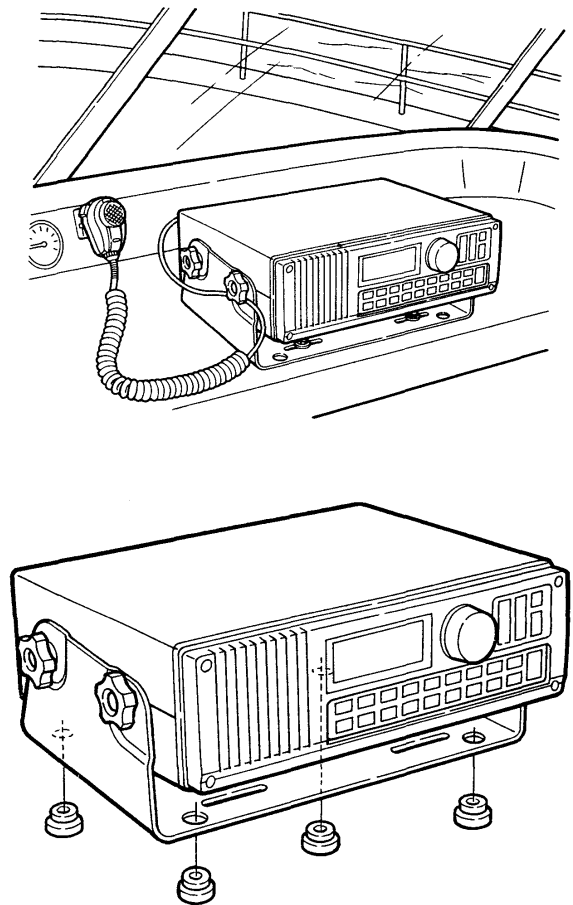
• Overhead mounting



Adjust installation angle for good visibility.

- 2) **DO NOT** select areas subject to extreme heat, cold, vibrations, or areas near electromagnetic sources or in direct sunlight.
- 3) Install the mounting bracket as shown in the diagram below so the transceiver is adequately supported, thus protecting it from wave shock and vibrations.
- 4) Mount the transceiver and adjust the viewing angle; then, tighten the mounting knobs.

• Dashboard mounting



To install the transceiver for dashboard mounting, attach the supplied rubber feet to the mounting bracket as above so that the transceiver can be moved to suit your operation needs; or use the supplied hardware as shown at left for fixed installation.

■ Rear panel connections

The transceiver requires at least 4 cable connections:

- Supplied DC power cable (OPC-077)
- Ground cable
- Antenna coaxial cable
- Supplied microphone (EM-48)

(1) DC power cable

Connect the cable to a 13.6 V DC power source (at least 30 A) directly. See the diagram below and p. 8 for details.

(2) Ground cable

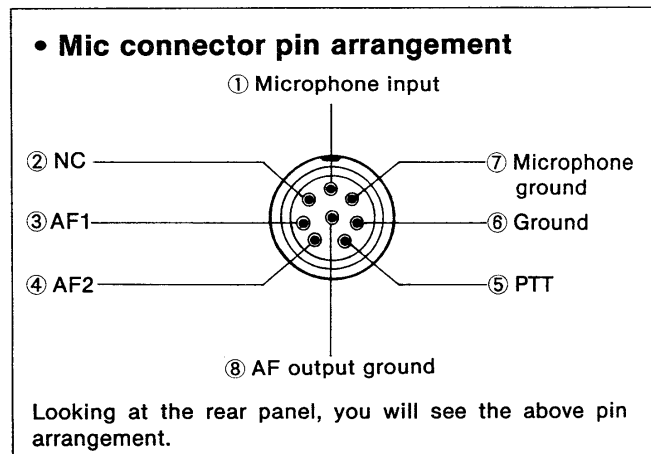
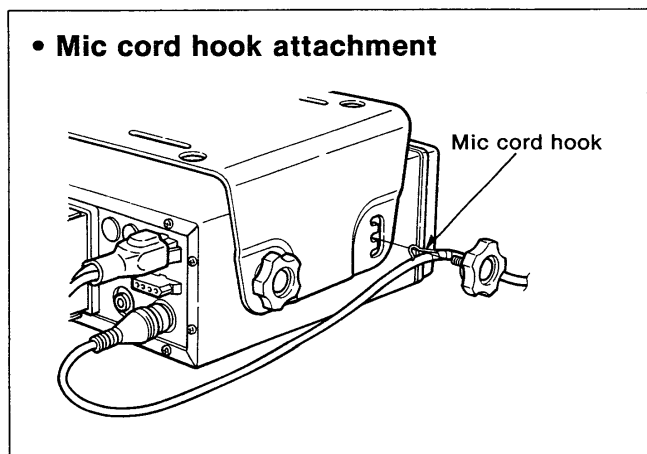
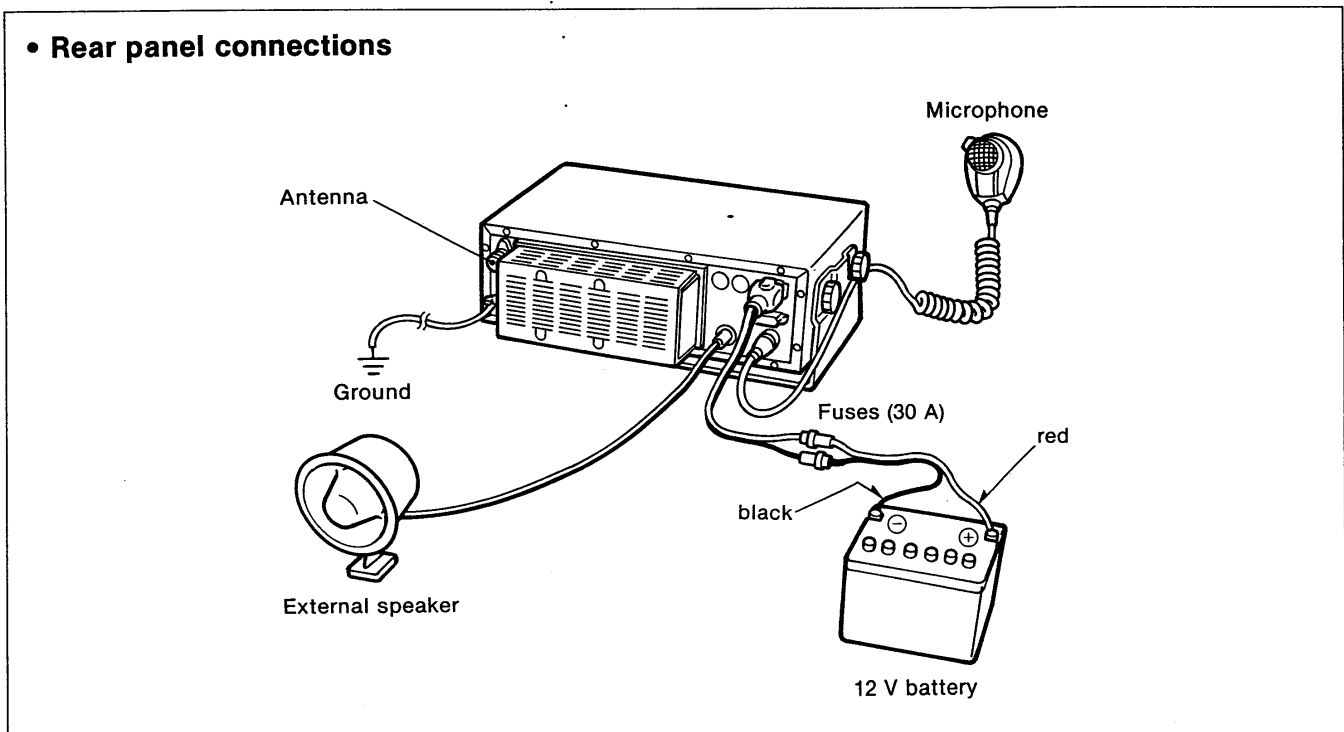
The transceiver **MUST** have an adequate ground connection. See p. 8 for details.

(3) Antenna coaxial cable

Connect a 50 Ω coaxial cable with a PL-259 connector. See p. 8 for details.

(4) Microphone

Connect the supplied microphone to [MIC].



2 INSTALLATION

■ Installation example

The following diagrams show a typical installation of the IC-M600 with the AT-120. Installation consists of the following 5 major components:

- IC-M600 HF MARINE TRANSCEIVER
- AT-120 HF AUTOMATIC ANTENNA TUNER
- DC power source
- Antenna
- Ground

(1) IC-M600 installation

See pgs. 5 and 6 for installation and connections.

(2) Optional AT-120 installation

The AT-120 ensures a matched condition between the transceiver and antenna at all times. See p. 9 for installation and connection procedures.

(3) DC power source

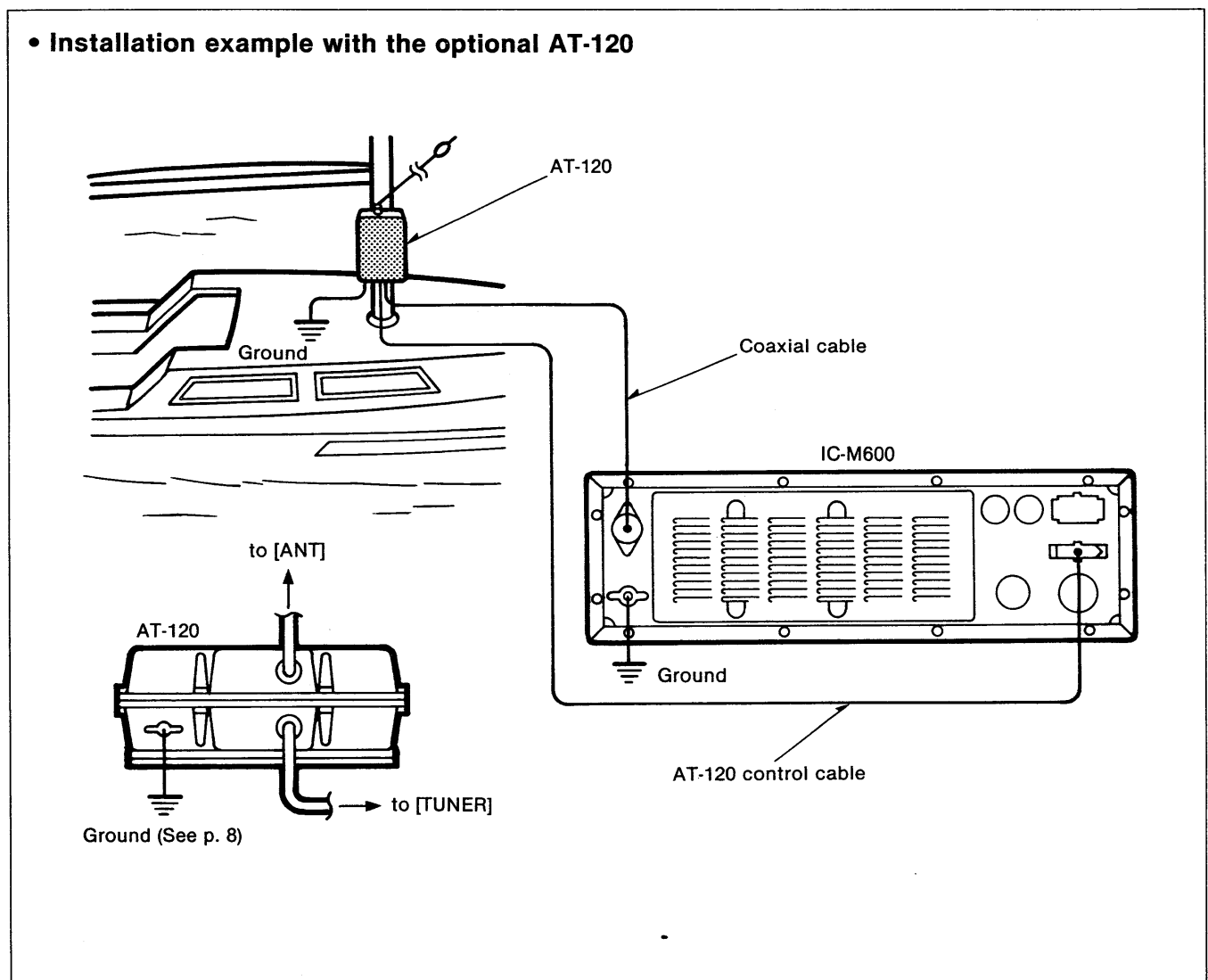
The IC-M600 requires regulated DC power; 13.6 V and at least 30 A. See p. 8 for the power cable connections.

(4) Antenna

The AT-120 requires an antenna wire or element at least 7.6 m (25 ft.) long for covering all HF marine bands. See pgs. 8 and 9 for more information.

(5) Ground

Proper grounding is very important. See p. 8 for a transceiver and tuner ground system example.



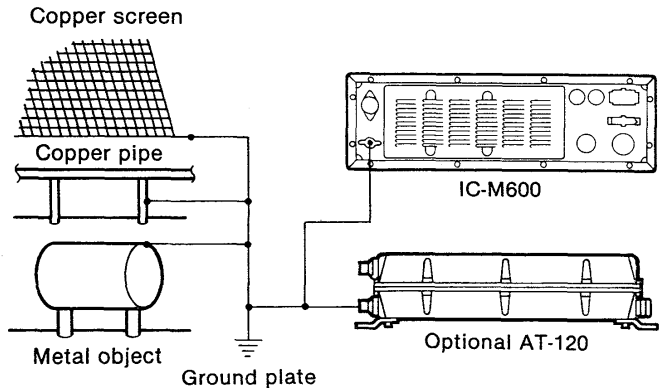
Ground connections

The transceiver and antenna tuner **MUST** have an adequate ground connection. Otherwise, the overall efficiency of the transceiver and antenna tuner installation will be reduced. Electrical shocks and interference from other equipment could also occur.

For best results, use the heaviest gauge wire or strap available and make the connection as short as possible.

For wooden or fiberglass boats, make the ground connection to the engine block or other large metal objects, or use a copper ground plate, etc. See the diagram at right for an example of grounding.

• Ground system example

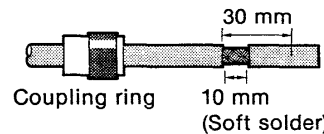


Antenna connections

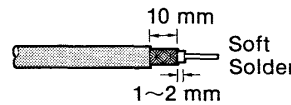
Most stations operate with a whip or long wire (insulated backstay) antenna. However, these antennas cannot be connected directly to the transceiver since their antenna impedance is not matched with the transceiver antenna connector. Keep the following procedures in mind:

- Whip or long wire antennas require an optional AT-120 HF AUTOMATIC ANTENNA TUNER or an optional MN-100 or MN-100L ANTENNA MATCHER. (p. 9)
- A 50 Ω impedance antenna is required. Ask your Icom Dealer for details.

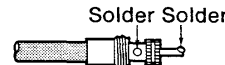
• PL-259 connector attachment



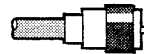
- 1) Slide the coupling ring over the coaxial cable.



- 2) Strip the cable as shown in the figure, and soft-solder the center conductor.



- 3) Slide the connector body onto the cable and solder.



- 4) Screw the coupling ring onto the connector body.

1 mm = 1/32 in

Power source

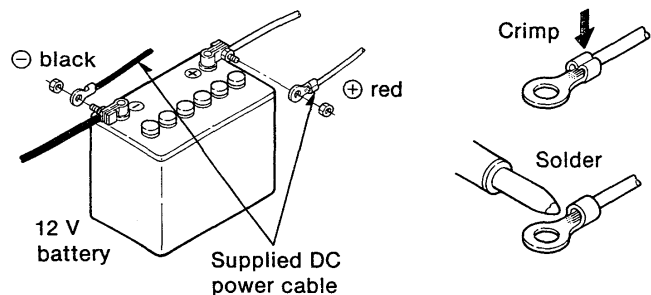
The IC-M600 requires regulated DC power: 13.6 V and at least 30 A. There are 3 ways to supply power:

- Connect the power cable directly to the 12 V battery in the boat.
- Connect an optional PS-60 DC POWER SUPPLY to use an AC outlet.
- Connect an optional PS-66 DC-DC CONVERTER to use a 19~32 V DC power source.

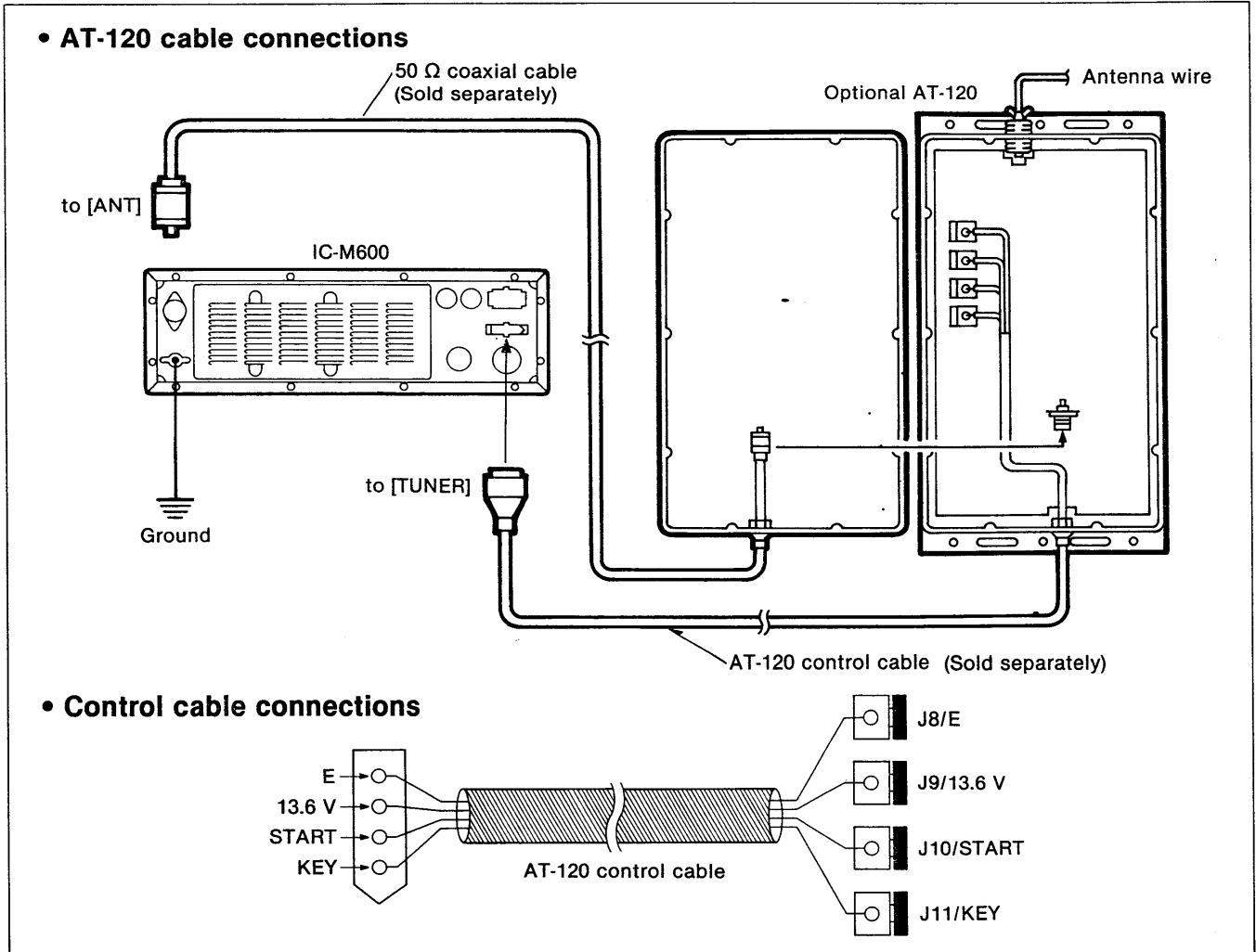
CAUTION: The supplied DC power cable **MUST** be used to provide power to the transceiver. **AVOID** exceeding the 3 m (10 ft.) of length of the DC power cable. If it is necessary to make a run of over 3 m, use #6 or a similar cable instead of the supplied DC power cable for a maximum run of 6 m (20 ft.).

• DC power cable connection

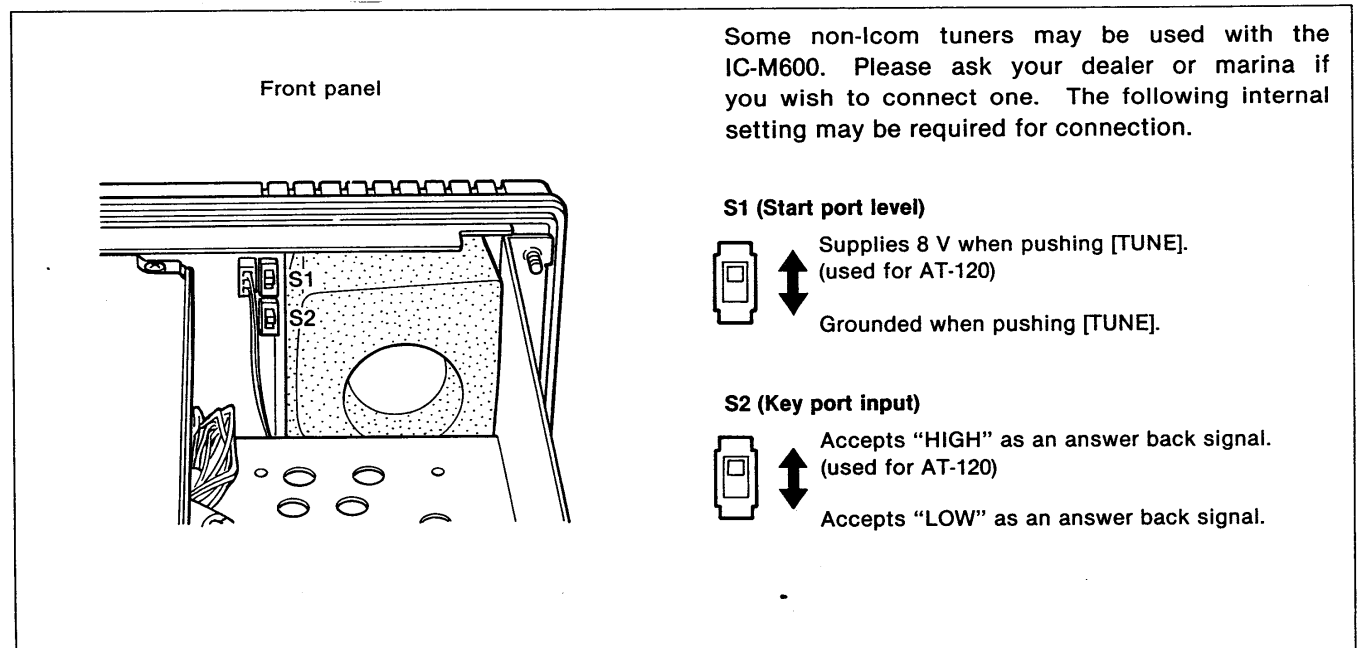
CAUTION: Cables **MUST** be connected to the terminals of a 12 V battery when using a battery as the power source.



■ AT-120 HF AUTOMATIC ANTENNA TUNER

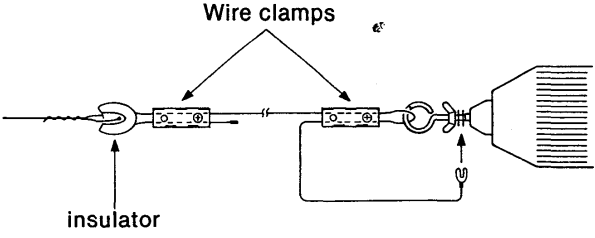


■ Internal setting for a non-Icom antenna tuner



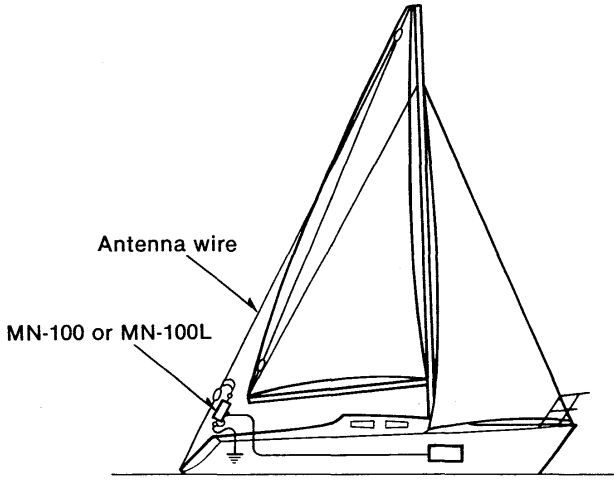
MN-100, MN-100L ANTENNA MATCHERS

• **Connecting a wire with wire clamps**



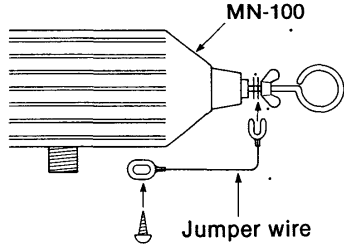
Wire clamps
insulator

• **Typical installation**



Antenna wire
MN-100 or MN-100L

• **Using the MN-100 with a long wire antenna**

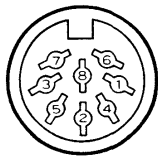


MN-100
Jumper wire

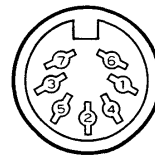
OPC-302, OPC-303 ACC CABLES

The OPC-302 and OPC-303 ACC CABLES provide simple and sure connections for external equipment. The OPC-302 and OPC-303 are installed in the ACC2 and ACC1 SOCKETS respectively. Refer to p. 20 for ACC cable installation.

ACC1 SOCKET

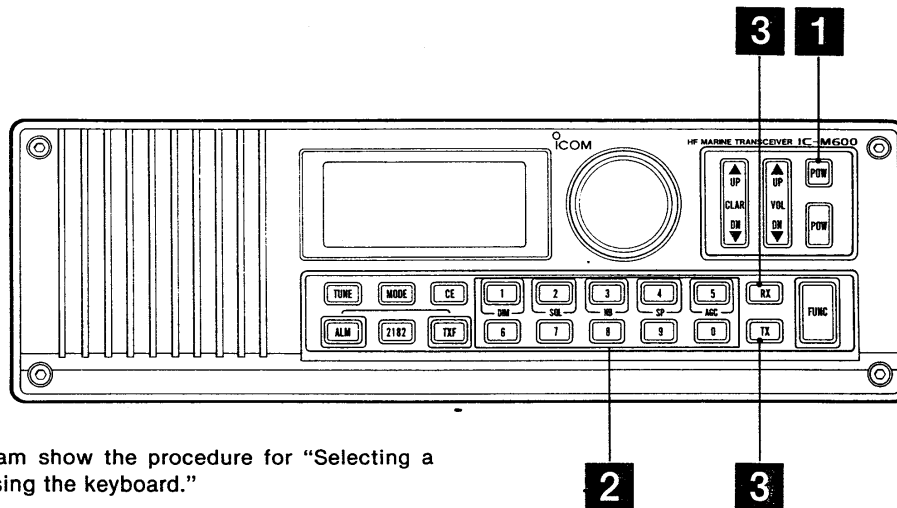


ACC2 SOCKET



PIN NO.	PIN NAME	DESCRIPTION
1	SCAN	Scan control input from external equipment.
2	GND	Connected to the chassis ground.
3	SEND	Transmits when grounded.
4	MOD	Modulation input for external equipment.
5	AF	Fixed AF output regardless of [VOL].
6	SQL S	Squelch output. Grounded when the squelch is open.
7	13.6 V	13.6 V output.
8	ALC	ALC voltage input.

PIN NO.	PIN NAME	DESCRIPTION
1	8 V	Regulated 8 V output.
2	GND	Same as ACC1 pin 2.
3	SEND	Same as ACC1 pin 3.
4	BAND	Band voltage output. Varies with marine band.
5	ALC	Same as ACC1 pin 8.
6	RLC	Goes to ground when transmitting.
7	13.6 V	Same as ACC1 pin 7.



1~3 in the diagram show the procedure for "Selecting a memory channel, using the keyboard."

Direct selection of 2182 kHz

- 1 Push either [POW] to turn ON power.
- 2 Push [2182] to select the 2182 kHz emergency and distress call frequency quickly.
 - The channel indicator shows "0."
 - The operating mode automatically changes to H3E.
- 3 To return to the previous operating condition, push [2182] again.

NOTE: When 2182 kHz is selected via [2182], the operating frequency cannot be changed. Push [2182] to return to the normal operating condition.

Selecting a memory channel

The IC-M600 has 99 user-programmable memory channels and 282 new ITU channels.

There are 2 ways to select the desired memory channel:

- Using the main dial.
- Using the keyboard.

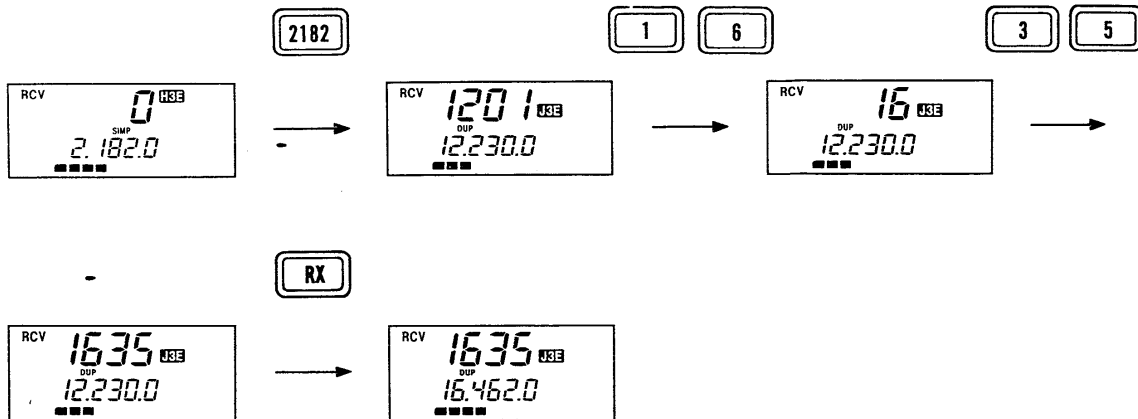
(1) Using the keyboard

- 1 Push either [POW] to turn ON power.
- 2 Enter your desired channel via the keyboard.
 - A user-programmable memory channel is automatically selected when channel 1~99 is entered.
 - An ITU channel is automatically selected when a channel number higher than 401 is entered. An ITU channel list is available separately.
 - ITU simplex channels cannot be selected via the keyboard. Use the main dial as described at right.

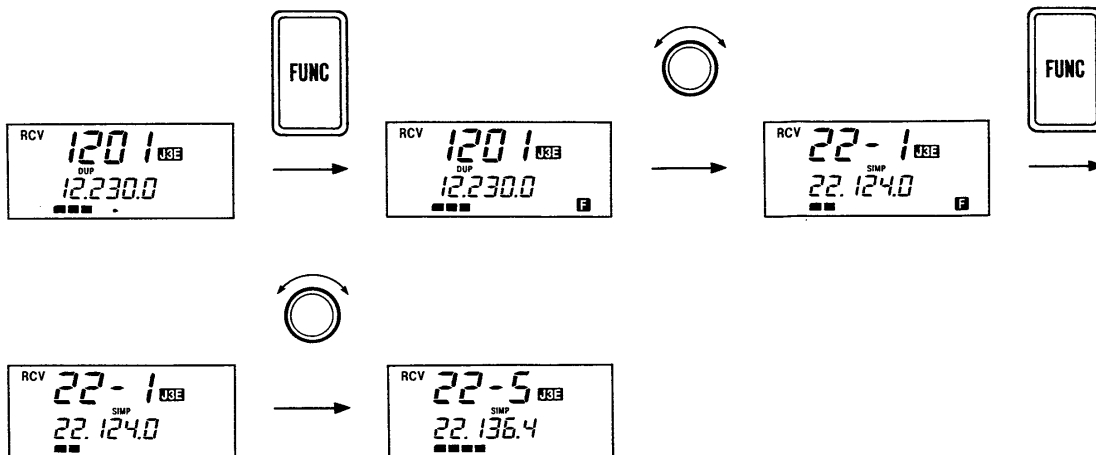
NOTE: The keyboard cannot enter channel numbers when "▶" or "2.182.0" appears on the function display. To remove "▶," push [CE]; to remove "2.182.0," push [2182].

- 3 Push [TX] or [RX] to select the channel number.
 - The desired channel number appears.

EXAMPLE: Selecting channel 1635.



EXAMPLE: Selecting channel 22-5.

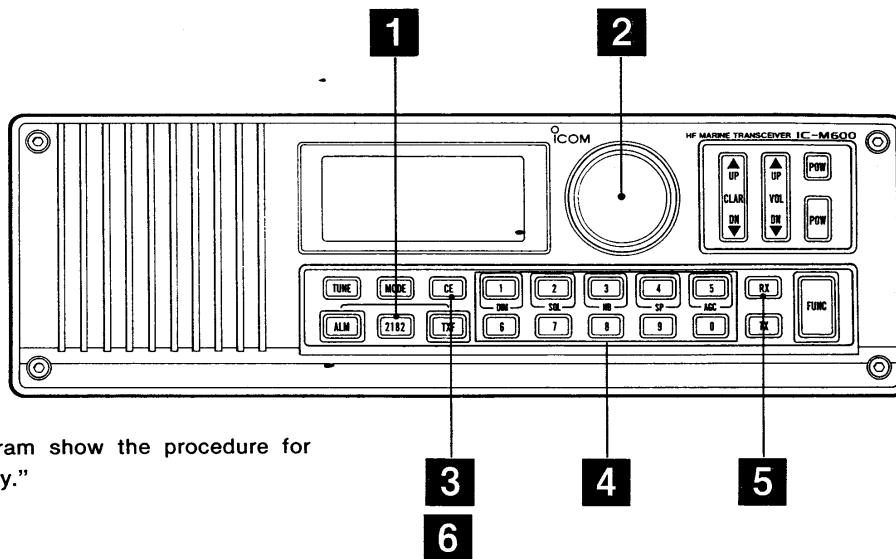


(2) Using the main dial

- 1** Push either [POW] to turn ON power.
- 2** Push [FUNC].
 - “F” appears on the function display.
- 3** Rotate the main dial until your desired band appears at the channel indicator.
 - The thousands and hundreds digits of the channel indicator show the operating band.
 - “-” appears on the channel indicator when an ITU simplex channel is selected.
- 4** Push [FUNC] to enter the channel selecting condition.
 - “F” disappears.
- 5** Rotate the main dial to select the desired operating channel.

IC-M600 MEMORY CHANNELS

CHANNEL NO.	DESCRIPTION	CHANNEL NO.	DESCRIPTION
1~99	User-programmable channels	1601~1656	16 MHz ITU duplex channels
401~427	4 MHz ITU duplex channels	16-1~16-9	16 MHz ITU simplex channels
4-1~4-9	4 MHz ITU simplex channels	1801~1815	18 MHz ITU duplex channels
601~608	6 MHz ITU duplex channels	18-1~18-9	18 MHz ITU simplex channels
6-1~6-9	6 MHz ITU simplex channels	2201~2253	22 MHz ITU duplex channels
801~832	8 MHz ITU duplex channels	22-1~22-9	22 MHz ITU simplex channels
8-1~8-9	8 MHz ITU simplex channels	2501~2510	25 MHz ITU duplex channels
1201~1241	12 MHz ITU duplex channels	25-1~25-9	25 MHz ITU simplex channels
12-1~12-9	12 MHz ITU simplex channels		



1~6 in the diagram show the procedure for "Setting a frequency."

Setting a frequency

The IC-M600 has 0.5~30.0 MHz general coverage capability. To set a general frequency, follow this procedure:

NOTE: The displayed frequency can be cleared and a new frequency can be stored in the displayed memory channel when operating on a memory channel between 1~99 and following the below procedures.

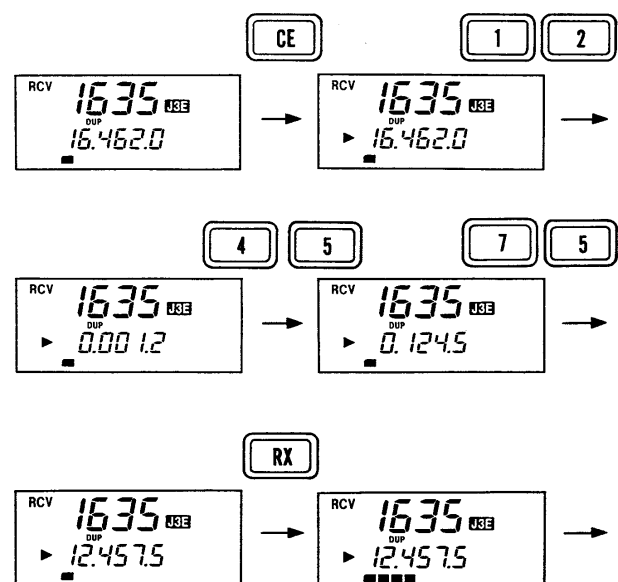
- 1 Push [2182] if the emergency frequency has been selected.
- 2 Select any channel except an ITU simplex channel.
- 3 Push [CE].
 - "▶" appears on the function display.
- 4 Enter the desired frequency up to the 100 Hz unit via the keyboard.
 - Push [CE] to clear input digits.
- 5 Push [RX] to enter the receive frequency.
- 6 To clear this function and return to the previous frequency, push [CE] again.
 - "▶" disappears.

NOTE: A frequency set by the above procedure will be cleared once the memory channel is changed. To write the frequency into a memory channel, see Section 9, MEMORY OPERATION.

Changing the frequency in 100 Hz steps

- 1 Push [2182] if the emergency frequency has been selected.
- 2 Push [CE].
 - "▶" appears on the function display.
- 3 Rotate the main dial.
 - The displayed frequency (receive frequency) changes in 100 Hz steps.
- 4 To clear this function and return to the previous frequency, push [CE] again.
 - "▶" disappears.

EXAMPLE: Selecting 12,457.5 kHz.



Before transmitting, monitor the channel you wish to use so as to avoid interrupting transmissions already in progress.

(1) Call procedures

Calls must be properly identified and time limits must be respected.

- 1) Give your call sign each time you call another vessel or coastal station. If you have no call sign, identify the station by giving your vessel name and the name of the licensee.
- 2) Give your call sign at the end of each transmission that lasts more than 3 min.
- 3) You must break and give your call sign at least once every 15 min. during long ship-to-shore calls.
- 4) Keep your unanswered calls short, less than 30 sec. Do not repeat a call for 2 min.
- 5) Unnecessary transmissions are not allowed.

(2) Priorities

- 1) Read all the rules and regulations pertaining to priorities and keep an up-to-date copy handy. Safety and distress calls take priority over all others.
- 2) False or fraudulent distress signals are prohibited and punishable by law.

(3) Privacy

- 1) Information overheard but not intended for you cannot lawfully be used in any way.
- 2) Indecent or profane language is prohibited.

(4) Logs

- 1) All distress, emergency and safety calls must be recorded in complete detail. Log data activity is usually recorded in 24 hour time. Universal Time (also known as UTC) is frequently used.
- 2) Adjustments, repairs, channel frequency changes and authorized modifications affecting electrical operation of the equipment must be kept in the maintenance log; entries must be signed by the authorized licensed technician performing or supervising the work.

(5) Radio licenses

SHIP STATION LICENSE

When your craft is equipped with an HF marine transceiver such as the IC-M600 you must have a current radio station license before using the equipment. It is unlawful to operate a ship station which is not licensed.

Inquire through your Icom Dealer or the appropriate government agency for a Ship Radiotelephone License application. This government-issued license states the call sign which is your craft's identification for radio purposes.

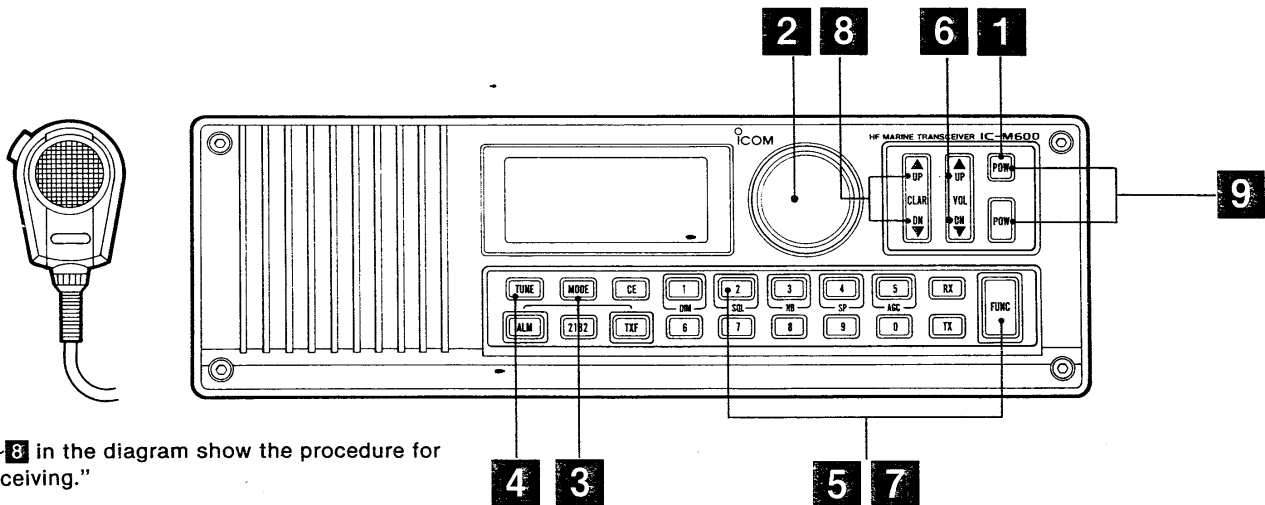
OPERATOR'S LICENSE

A Restricted Radiotelephone Operator Permit is the license most often held by small vessel radio operators when a radio is not required for safety purposes. You can usually obtain this permit by mail.

The Restricted Radiotelephone Operator Permit must be posted or kept with the operator. Only a licensed radio operator may operate a transceiver.

However, non-licensed individuals may talk over a transceiver if a licensed operator starts, supervises, and ends the call, and makes the necessary log entries.

Keep a copy of the current government rules and regulations handy.



1~8 in the diagram show the procedure for "Receiving."

NOTE: The microphone **MUST** be connected to the mic connector or no audio will be emitted from the speaker.

Receiving

- 1 Push either [POW] to turn ON power.
- 2 Select the desired operating channel or frequency.
 - For selecting a channel, see pgs. 11 and 12.
 - For setting a frequency, see p. 13.
- 3 Push [MODE] to select the desired operating mode.
- 4 Push [TUNE] when an optional AT-120 HF AUTOMATIC ANTENNA TUNER is connected.
 - [TUNE] is effective only when the AT-120 is connected.
 - Push [TUNE] each time you change the operating band.
 - The AT-120 automatically tunes the connected antenna wire or element.
 - "TUNE" blinks on the function display while the AT-120 is tuning.
- 5 Push [FUNC] and then [2/SQL] to turn OFF the squelch function when the squelch indicator appears.
- 6 Push [UP] or [DN] on [VOL] to obtain the desired loudness.
- 7 Push [FUNC] and then [2/SQL] to turn ON the squelch function when necessary.
 - "SQL" appears on the function display.
 - The function mutes audio output from the speaker when receiving no voice signals.
- 8 Push [UP] or [DN] on [CLAR] to obtain clear reception for an off-frequency signal.
- 9 Push both [POW] switches to turn OFF power.

• Using the noise blanker function

The noise blanker function reduces pulse noise such as that coming from engine ignitions.

Push [FUNC] and then [3/NB] to turn ON the noise blanker function and reduce the noise level.

• Using the squelch function

This function detects signals with voice components and squelches unwanted signals such as signals with no modulation, beat signals and noise component signals. This function allows you quiet waiting periods.

While receiving a very weak signal, turn OFF the squelch function.

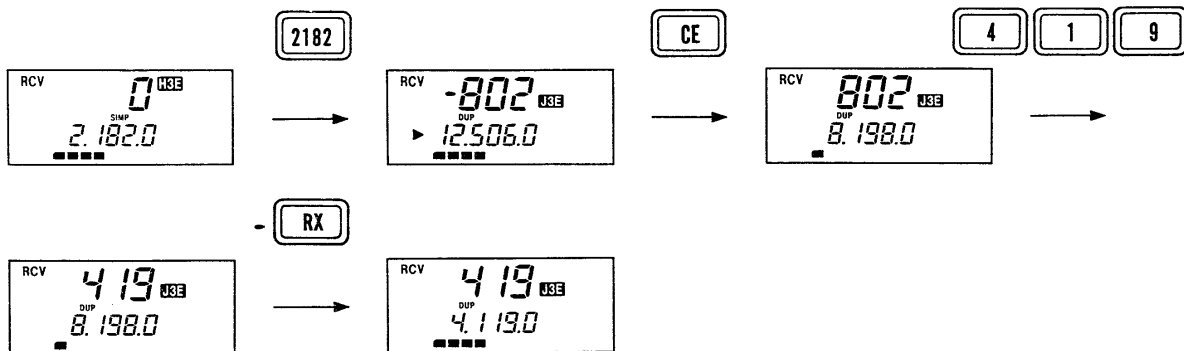
• Using the AGC switch

The RF gain is controlled by the AGC (automatic gain control) circuit. While searching for a channel or receiving a weak signal, push [FUNC] and then [5/AGC] to turn OFF the AGC circuit.

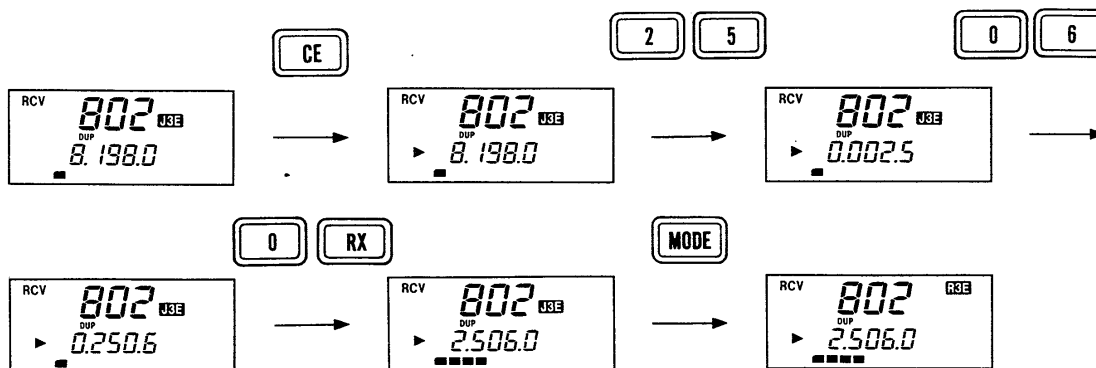
• Using the speaker-off switch

Audio output from the internal speaker can be muted with [FUNC] and [4/SP]. This is useful when you do not need to listen to receive signals, or when an external speaker is connected to the rear panel [EXT SP].

EXAMPLE: Receiving on channel 419 in J3E mode.



EXAMPLE: Receiving on 2506.0 kHz in R3E mode.



• Using the dimmer switch

The backlighting can be turned ON and OFF with [FUNC] and [1/DIM] for adjustment with the surrounding brightness.

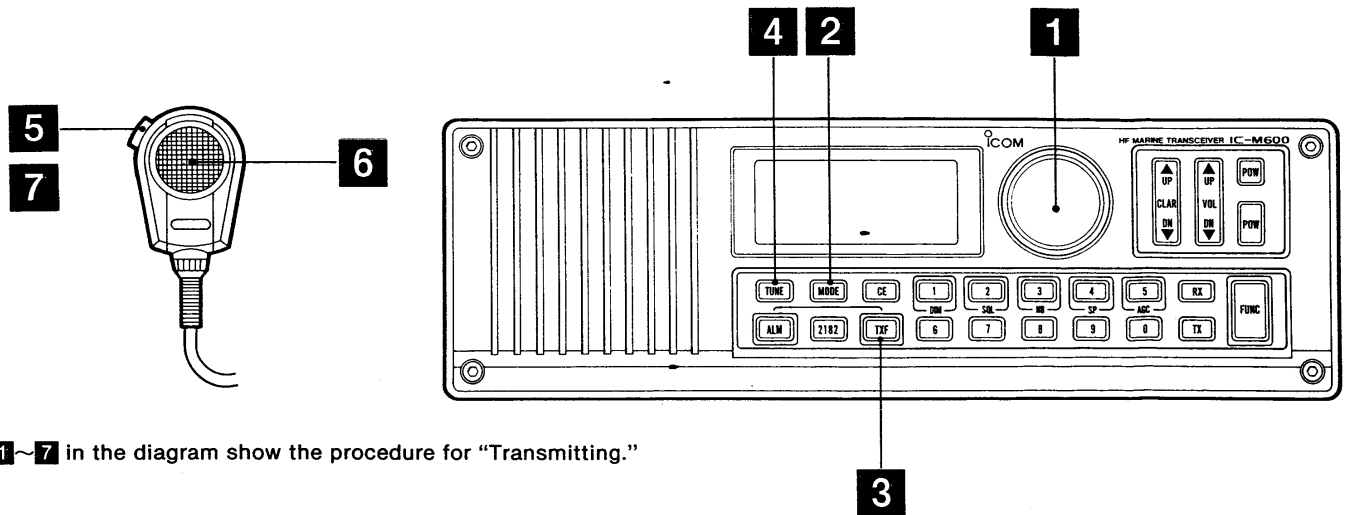
• Adjusting the clarity

[UP] or [DN] on [CLAR] shifts the receive frequency ± 150 Hz in 10 Hz steps to obtain clear reception for an off-frequency signal.

To cancel the clarity setting, push [UP] and [DN] on [CLAR] simultaneously.

• Receive indicator

When the squelch is open, the receive indicator appears.



1~7 in the diagram show the procedure for "Transmitting."

CAUTION: Transmitting without an antenna may damage the transceiver.

NOTE: To prevent interference, listen on the frequency before transmitting using [TXF].

Transmitting

The following transmitting procedures should be started after completing the steps in Section 7 RECEIVING.

- 1 Select the desired operating channel or frequency.
- 2 Push [MODE] to select the desired operating mode.
- 3 Push and hold [TXF] to check whether the transmit frequency is busy or not.
 - The function display changes from the receive frequency to the transmit frequency.
- 4 Push [TUNE] when an optional AT-120 HF AUTOMATIC ANTENNA TUNER is connected.
 - [TUNE] is effective only when the AT-120 is connected.
 - Push [TUNE] each time you change the operating band.
 - The AT-120 automatically tunes the connected antenna wire or element.
 - "TUNE" blinks on the function display while the AT-120 is tuning.
- 5 Push and hold the PTT switch on the microphone.
 - "TX" appears on the function display.
- 6 Speak into the microphone at your normal voice level.
 - The RF indicator varies depending on your voice level.
- 7 Release the PTT switch to receive.

Setting the transmit power

Transmit power can be changed in 3 steps as follows:

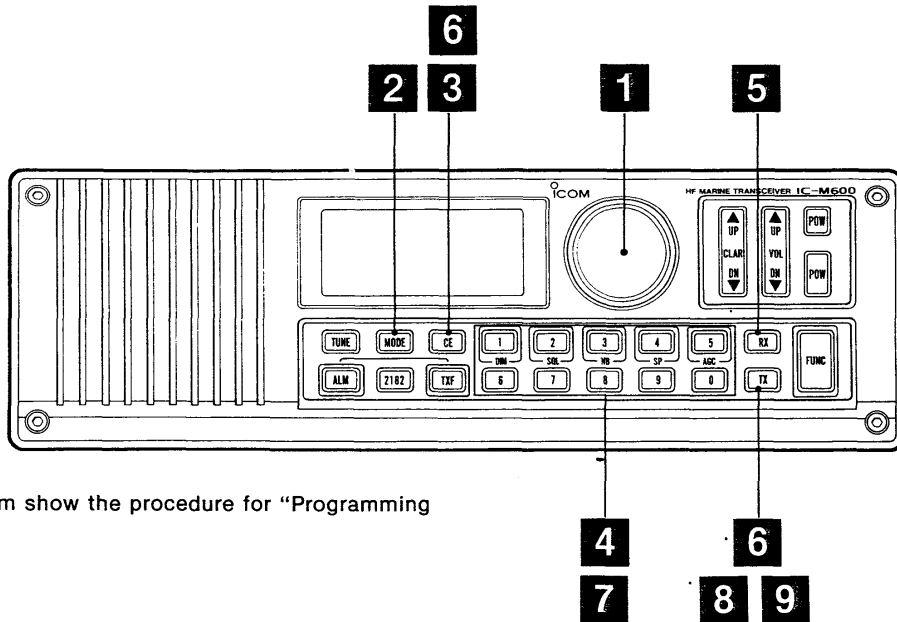
NOTE: The transmit power setting affects all channels.

- 1 Push [FUNC].
 - "F" appears on the function display.
- 2 Push [TX].
 - "Po" and the previously selected output power number appear.
- 3 Push the appropriate number to select the desired output power.

KEY	OUTPUT POWER	FREQUENCY DISPLAY
[3]~[9]	150 W (High)*	Po-3
[2]	60 W (Medium)	Po-2
[1]	20 W (Low)	Po-1

• "Po" disappears and the new output power level has been programmed.

*The IC-M600 will provide more than 60 W of output power for operation on the 25 MHz band.



1~9 in the diagram show the procedure for “Programming a frequency.”

■ Programming a frequency

The IC-M600 has 99 user-programmable memory channels. The transmit and receive frequencies can be separately programmed.

- 1 Select the desired memory channel to be used.
 - Channels 1~99 are user-programmable memory channels.
 - For selecting a memory channel, see pgs. 11 and 12.
- 2 Push [MODE] to select the desired operating mode.
 - When the receive frequency has been cleared, the operating mode is not displayed. Write a frequency and then change the mode. See the procedures at right.
- 3 Push [CE].
 - “▶” appears on the function display.
- 4 Enter the desired receive frequency via the keyboard. (p. 13)
- 5 Push and hold [RX] until “▶” disappears.
- 6 Push [TX] and then [CE].
 - “TX” blinks and “▶” appears on the function display.
- 7 Enter the desired transmit frequency within the HF marine band via the keyboard.
 - The frequency range of the HF marine band appears on p. 23.
- 8 Push and hold [TX] until “▶” disappears.
- 9 Push [TX] again to exit the transmit frequency setting condition.

NOTE: The ITU simplex channels can be changed to an operating band frequency using steps 1~5 above. 9 simplex channels are available for each band.

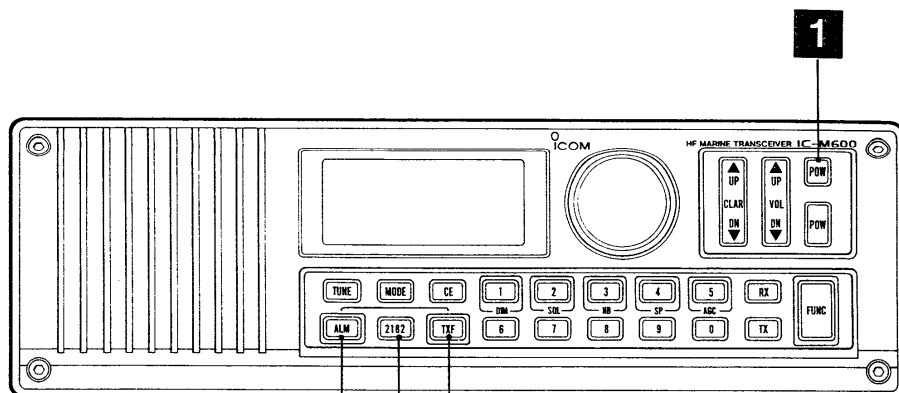
■ Changing the operating mode

- 1 Select the desired memory channel to be changed.
 - For selecting a memory channel, see pgs. 11 and 12.
- 2 Push [CE].
 - “▶” appears on the function display.
- 3 Push [MODE] to select the desired operating mode.
- 4 Push and hold [RX] until “▶” disappears.

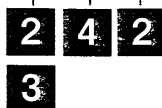
■ Clearing memory information

- 1 Select the desired memory channel to be cleared.
 - For selecting a memory channel, see pgs. 11 and 12.
- 2 Push [CE].
 - “▶” appears on the function display.
- 3 Push [0].
- 4 Push and hold [RX] until “▶” disappears to clear the receive frequency.
- 5 Push [TX] and then [CE].
 - “TX” blinks and “▶” appears on the function display.
- 6 Push [0].
- 7 Push and hold [TX] until “▶” disappears to clear the transmit frequency.
- 8 Push [TX] again to exit the transmit frequency setting condition.

10 ALARM SIGNAL (OPTIONAL)



1~4 in the diagram show the procedure for "Transmitting an alarm signal on 2182 kHz."



Transmitting an alarm signal on 2182 kHz

The IC-M600 can transmit a 2-tone alarm signal on 2182 kHz when an optional UT-62 ALARM UNIT is installed.

WARNING: Transmitting an alarm signal when your vessel is not in distress is prohibited and punishable by law.

- 1 Push either [POW] to turn ON power.
- 2 Push [ALM] and [TXF] simultaneously.
 - "TX" and "ALM" appear on the function display.
 - The operating condition automatically changes to 2182 kHz and H3E mode.
 - 2-tone alarm signals are transmitted for approx. 50 sec.
 - The optional AT-120 HF AUTOMATIC ANTENNA TUNER automatically tunes the connected antenna wire or element to 2182 kHz.
- 3 To stop transmitting the signal, push [ALM] again.
- 4 Push [2182] to return to the previous operating condition.

NOTE: If you wish to transmit an alarm signal in a mode other than H3E, push [2182]; then, push [MODE] to select the desired mode. Then, proceed to step 2 above.

Distress call procedures

If your vessel requires assistance, contact other vessels and the Coast Guard by sending a distress call on 2182 kHz.

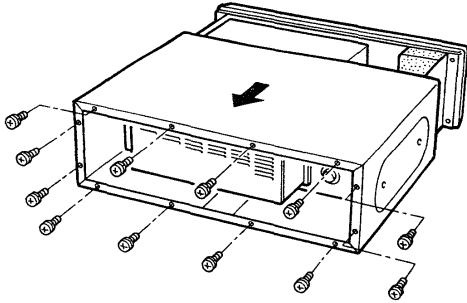
- 1 "MAYDAY, MAYDAY, MAYDAY."
- 2 "THIS IS" (name of vessel)
- 3 "LOCATED AT" (Vessel's position)
- 4 Give the reason for the distress call.
- 5 Explain what assistance you need.
- 6 Give additional information:
 - Vessel type
 - Vessel length
 - Vessel color

Testing an alarm signal

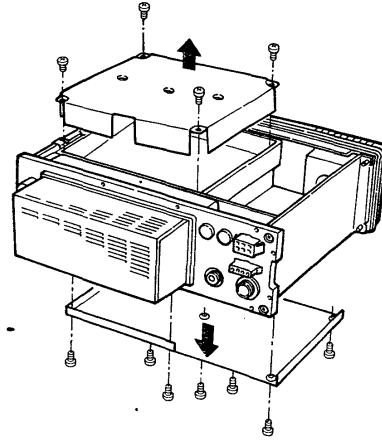
The signal can be checked without transmitting an alarm.

- 1 Push [ALM].
 - The operating condition automatically changes to 2182 kHz and H3E mode.
 - The speaker emits alarm signals for approx. 50 sec.
 - When the speaker-off function is activated, the alarm signal cannot be heard.
- 2 To stop testing, push [ALM] again.
- 3 Push [2182] to return to the previous operating condition.

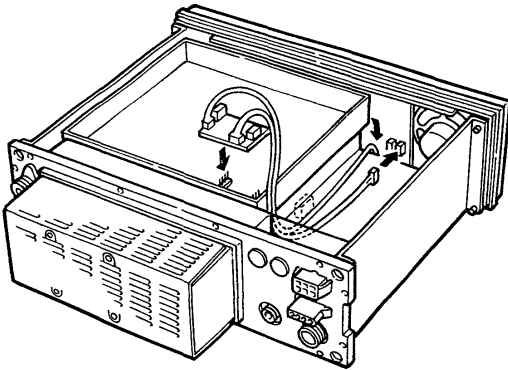
■ UT-62 ALARM UNIT



1) Remove the 12 screws from the rear panel; then, remove the case from the transceiver.

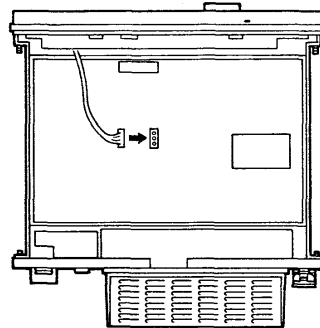


2) Remove the 7 screws from the internal shield cover on the top side; then, remove the cover.



4) Plug the UT-62 onto the FILTER unit as shown in the diagram above; then, plug the 4-pin plug to J11 on the LOGIC unit.

3) Remove the 8 screws from the internal shield cover on the bottom side; then, remove the cover.

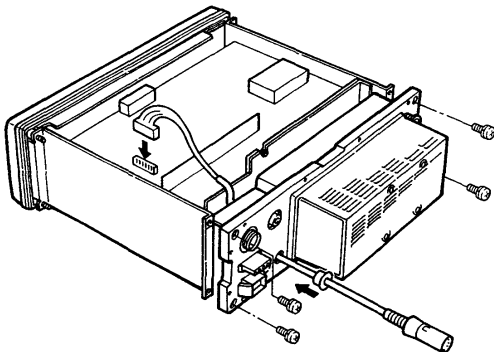


5) Pass the 3-pin plug behind the front panel to the bottom side.

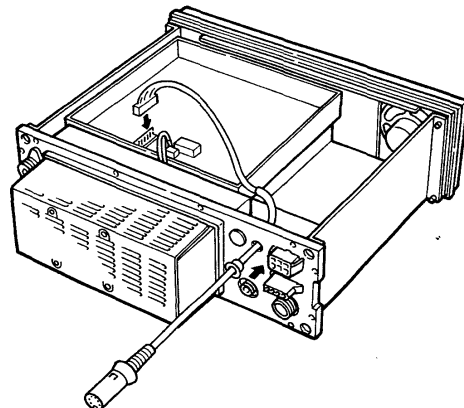
6) Connect the 3-pin plug to J14 on the MAIN unit.

■ ACC cables

The ACC cables may be used to connect external equipment such as a linear amplifier. See p. 10 for socket information.



OPC-303 for ACC (1) socket



OPC-302 for ACC (2) socket

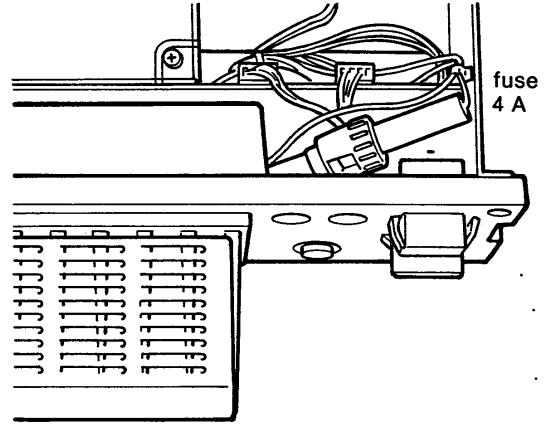
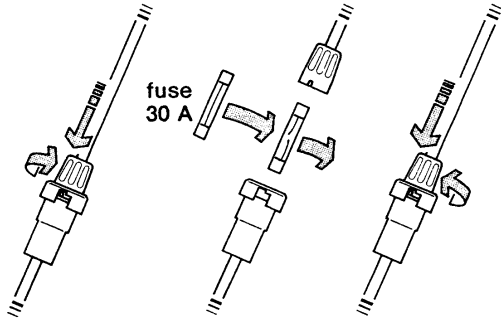
12 MAINTENANCE

■ Replacing a fuse

If a fuse blows or the transceiver stops functioning, try to find the source of the problem; then, replace the damaged fuse with a new, rated fuse. See figures below for replacing the fuse.

The IC-M600 has fuses installed in 2 different places:

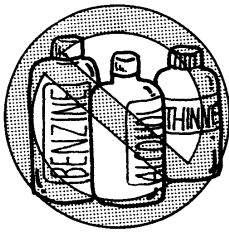
- DC power cable : 30 A
- Inside the transceiver : 4 A



■ Cleaning

If the transceiver becomes dusty or dirty, wipe it clean with a dry, soft cloth.

AVOID the use of strong chemical agents such as benzine or alcohol, as they may damage the transceiver surfaces.



What appears to be trouble may not be damaging or hard to solve. Check the following chart before making any adjustments or sending the transceiver to an Icom Service Center.

	PROBLEM	POSSIBLE CAUSE	SOLUTION	REF.
POWER	◦ Power does not come ON when [POW] is pushed.	◦ Power cable is improperly connected. ◦ Blown fuse	◦ Reconnect the cable securely. ◦ Check for the cause, then replace the fuse with a spare one. 2 kinds of fuses are installed in different places.	p. 8 p. 21
	RECEIVE	◦ No sound comes from the speaker.	◦ The squelch is closed. ◦ The speaker-off switch is set at ON. ◦ Microphone is not connected to [MIC]. ◦ Audio mute is activated	◦ Push [FUNC] and then [2] to open the squelch. ◦ Push [FUNC] and then [4] to turn OFF the speaker-off switch. ◦ Connect the supplied microphone to [MIC]. ◦ Push [UP] or [DN] to cancel the mute.
◦ Sensitivity is low and only strong signals are audible.		◦ Antenna is not properly matched to the operating frequency. ◦ Bad connection of the antenna connector or element.	◦ Push [TUNE] to tune the connected antenna system when an optional AT-120 is connected. ◦ Check the antenna system for any abnormal or improper conditions.	p. 15 p. 8
◦ Received audio is unclear or distorted.		◦ Wrong mode has been selected. ◦ Noise blanker is ON when receiving a strong signal. ◦ [CLAR] was set extremely [UP] or [DN].	◦ Push [MODE] to select the proper operating mode. ◦ Push [FUNC] and then [3] to turn OFF the noise blanker. ◦ Set [CLAR] to the proper receive audio output.	p. 15 p. 15 p. 15
TRANSMIT	◦ Your signal does not reach distances as far away as usual.	◦ The output power is low. ◦ Antenna is not properly matched to the operating frequency.	◦ Increase the output power. ◦ Push [TUNE] to tune the connected antenna system when an optional AT-120 is connected.	p. 17 p. 17
	◦ Transmitted signal is unclear or distorted.	◦ Wrong mode has been selected. ◦ Microphone is held too close to your mouth.	◦ Push [MODE] to select the proper operating mode. ◦ Speak into the microphone naturally and do not hold the microphone too close to your mouth.	p. 17 p. 17
	◦ No contact is possible with another station.	◦ Wrong transmit frequency has been set.	◦ Push [TXF] to check the transmit frequency and store the correct transmit frequency.	p. 17
FUNCTION DISPLAY	◦ Frequency cannot be changed in 100 Hz steps.	◦ [CE] is not pushed.	◦ Push [CE]; then, rotate the main dial.	p. 13
	◦ Frequency cannot be set via the keyboard.	◦ [CE] is not pushed before entering the frequency. ◦ Entered transmit frequency is not within the marine band.	◦ Push [CE] to enter the desired frequency via the keyboard. ◦ Set a frequency within the marine band.	p. 13 p. 23
	◦ The function display is not lit.	◦ Backlighting has been turned OFF.	◦ Push [FUNC] and then [1] to turn ON the backlighting.	p. 16

14 SPECIFICATIONS

■ GENERAL

- Frequency coverage : Receive 0.5000~30.0000 MHz continuously
Transmit 2.0000~ 2.9999 MHz
4.0000~ 4.9999 MHz
6.0000~ 6.9999 MHz
8.0000~ 8.9999 MHz
12.0000~13.9999 MHz
16.0000~16.9999 MHz
18.0000~19.9999 MHz
22.0000~22.9999 MHz
25.0000~26.9999 MHz
- Mode : J3E (USB), H3E, R3E
- Antenna impedance : 50 Ω (unbalanced)
- Power supply requirement : 13.6 V \pm 15% DC (negative ground)
- Current drain : Receive 2 A at max. audio output
Transmit 30 A at max. RF output power
- Usable temperature range : $-30^{\circ}\text{C}\sim+60^{\circ}\text{C}$
- Frequency stability : ± 20 Hz ($-30^{\circ}\text{C}\sim+60^{\circ}\text{C}$)
- Dimensions : 287(W) \times 90(H) \times 233(D) mm
11.3(W) \times 3.5(H) \times 9.2(D) in
(projections not included)
- Weight : 6.0 kg; 13.2 lb

■ TRANSMITTER

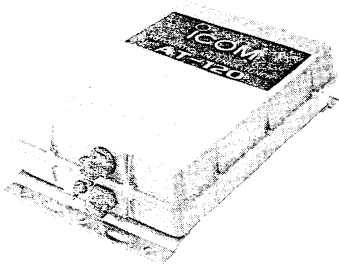
- Output power (PEP) : High 150 W,* Med. 60 W, Low 20 W
* More than 60 W at 25.0000~26.9999 MHz
- Spurious emissions : 65 dB below peak output power
- Carrier suppression (J3E) : 40 dB
- Unwanted sideband suppression : 55 dB below peak output power
(with 1500 Hz AF input)
- Microphone impedance : 600 Ω

■ RECEIVER

- Sensitivity (for 12 dB SINAD) : J3E, R3E 0.5~ 1.8 MHz 6.3 μV
1.8~30.0 MHz 0.5 μV
H3E 0.5~ 1.8 MHz 30 μV
1.8~30.0 MHz 3.16 μV
- Spurious response rejection : -70 dB
- Audio output power : 5.0 W with a 4 Ω load
- Audio output impedance : 4~8 Ω
- Clarity variable range : ± 150 Hz in 10 Hz steps

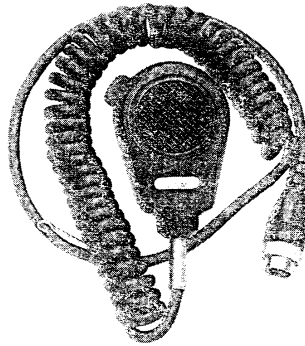
All stated specifications are subject to change without notice or obligation.

AT-120 HF AUTOMATIC ANTENNA TUNER



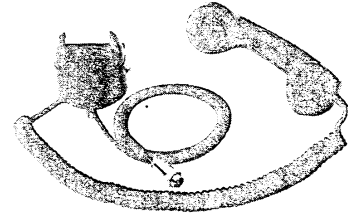
The AT-120's new ITU version matches the IC-M600 to a long wire or whip antenna system.

EM-48 HAND MICROPHONE



Die-cast and weather-resistant microphone. Same as the supplied one.

HS-50 HANDSET



Provides better audio reception and comes in handy for listening privacy on board.

MN-100, MN-100L ANTENNA MATCHERS

MN-100

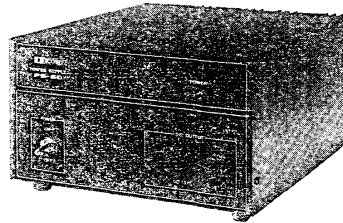


MN-100L



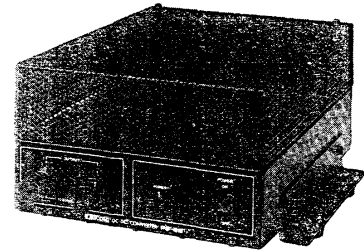
Match the IC-M600 to a long wire or whip antenna system without applying DC power. An antenna matcher is recommended for emergency situations.

PS-60 DC POWER SUPPLY



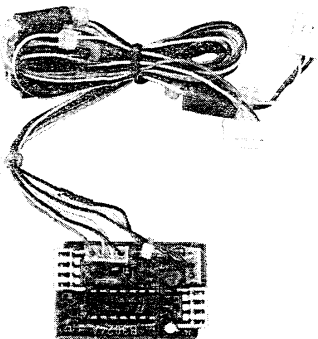
Provides 13.6 V DC (30 A) output from a ship-equipped AC outlet or AC wall outlet.
Input voltage: 100, 117, 220 or 240 V AC

PS-65, PS-66 DC-DC CONVERTERS



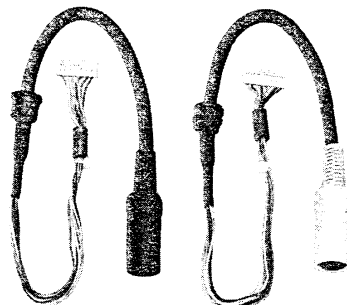
Convert DC voltage to 13.6 V (30 A) and provide a floating ground system.
- PS-65: Input voltage 10.5~16 V
- PS-66: Input voltage 19~32 V

UT-62 ALARM UNIT



Allows transmission of the international alarm signal when the vessel is in distress.

OPC-302, OPC-303 ACC CABLES



Allow connection of external equipment via [ACC1] and [ACC2].

Count on us!

