



BASIC MANUAL

HF TRANSCEIVER **IC-78**



Thank you for choosing this Icom product. This product was designed and built with Icom's state of the art technology and craftsmanship. With proper care, this product should provide you with years of trouble-free operation.

IMPORTANT

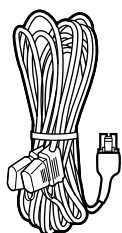
READ ALL INSTRUCTIONS carefully and completely before using the transceiver.

SAVE THIS INSTRUCTION MANUAL— This instruction manual contains basic operating instructions for the IC-78.

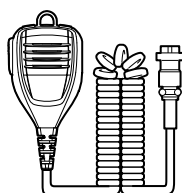
The detailed manual (PDF type) can be downloaded from the following internet address:

<https://www.icomjapan.com/support/>

SUPPLIED ACCESSORIES



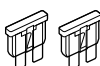
DC power cable
(3 m: 9.8 ft)



Microphone



Spare fuse (FGB 125 V/4 A)
Internal fuse



Spare fuses (ATQ 32 V/25 A)
for the DC power cable

① Some accessories are not supplied, or the shape is different, depending on the transceiver version.

About weld lines

This product's surfaces may have streaks called "weld lines," that occur during the molding process, and are not cracks or flaws.

Icom is not responsible for the destruction, damage to, or performance of any Icom or non-Icom equipment, if the malfunction is because of:

- Force majeure, including, but not limited to, fires, earthquakes, storms, floods, lightning, or other natural disasters, disturbances, riots, war, or radioactive contamination.
- The use of Icom transceivers with any equipment that is not manufactured or approved by Icom.

EXPLICIT DEFINITIONS

WORD	DEFINITION
⚠ DANGER!	Personal death, serious injury or an explosion may occur.
⚠ WARNING!	Personal injury, fire hazard or electric shock may occur.
CAUTION	Equipment damage may occur.
NOTE	Recommended for optimum use. No risk of personal injury, fire or electric shock.

PRECAUTIONS

⚠ DANGER HIGH VOLTAGE! NEVER touch an antenna or antenna connector while transmitting. This could cause an electrical shock or burn.

⚠ DANGER! NEVER operate the transceiver near unshielded electrical blasting caps or in an explosive atmosphere. This could cause an explosion and death.

⚠ DANGER! NEVER place the transceiver where air bag deployment may be obstructed during mobile operations.

⚠ WARNING! NEVER operate the transceiver with earphones or other audio accessories at high volume levels. The continuous high volume operation may cause a ringing in your ears. If you experience ringing, reduce the volume level or discontinue use.

⚠ WARNING! NEVER apply AC power to the [DC 13.8 V] socket on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ WARNING! NEVER apply more than 16 V DC to the [DC 13.8 V] socket on the transceiver rear panel. This could cause a fire or damage the transceiver.

⚠ WARNING! NEVER reverse the DC power cable polarity. This could cause a fire or damage the transceiver.

⚠ WARNING! NEVER remove the fuse holder on the DC power cable. Excessive current caused by a short could cause a fire or damage the transceiver.

⚠ WARNING! NEVER let metal, wire, or other objects contact the transceiver inside or make incorrect contact with connectors on the rear panel. This could cause an electric shock or damage the transceiver.

⚠ WARNING! NEVER operate or touch the transceiver with wet hands. This could cause an electric shock or damage the transceiver.

⚠ WARNING! NEVER operate the equipment if you notice an abnormal odor, sound, or smoke. Immediately turn OFF the power and/or remove the DC power cable. Contact your Icom dealer or distributor for advice.

⚠ **WARNING! NEVER** operate the transceiver during a lightning storm. It may result in an electric shock, cause a fire or damage the transceiver. Always disconnect the power source and antenna before a storm.

⚠ **WARNING! NEVER** place the transceiver where the vehicle's normal operation may be hindered or where it could cause bodily injury.

⚠ **WARNING! NEVER** put the transceiver in an unstable place where the transceiver may suddenly move or fall. This could cause an injury or damage the transceiver.

CAUTION: DO NOT operate the transceiver while driving a vehicle. Safe driving requires your full attention—anything less may result in an accident.

CAUTION: DO NOT expose the transceiver to rain, snow or any liquids. They could damage the transceiver.

CAUTION: DO NOT change the internal settings of the transceiver. This may reduce transceiver performance and/or damage to the transceiver. The transceiver warranty does not cover any problems caused by unauthorized internal adjustments.

CAUTION: DO NOT install or place the transceiver in a place without adequate ventilation, or block any cooling vents on the top, rear, sides or bottom of the transceiver. Heat dissipation may be reduced and damage the transceiver.

CAUTION: DO NOT use harsh solvents such as benzine or alcohol to clean the transceiver, as they will damage the transceiver's surfaces. If the transceiver becomes dusty or dirty, wipe it clean with a soft, dry cloth.

CAUTION: DO NOT leave the transceiver in areas with temperatures below -10°C or above $+60^{\circ}\text{C}$, or in areas subject to direct sunlight, such as the dashboard.

CAUTION: DO NOT place the transceiver in excessively dusty environments. This could damage the transceiver.

BE CAREFUL! The transceiver may become hot after continuously transmitting for long periods of time.

CAUTION: DO NOT set the transceiver's RF output power to more than a connected linear amplifier's maximum input level. Otherwise, the linear amplifier will be damaged.

CAUTION: DO NOT use non-Icom microphones. Other microphones have different pin assignments, and may damage the transceiver.

NEVER place the transceiver in an insecure place to avoid inadvertent use by unauthorized persons.

During mobile operation, **NEVER** place the transceiver where hot or cold air blows directly onto it.

CAUTION: DO NOT operate the transceiver without running the vehicle's engine. The vehicle's battery will quickly run out when the transceiver is used while the vehicle's engine is OFF.

CAUTION: DO NOT start the vehicle engine when the transceiver's power is ON. Ignition voltage spikes can damage the transceiver.

NOTE: During maritime mobile operations, keep the transceiver and microphone as far away as possible from the magnetic navigation compass to prevent erroneous indications.

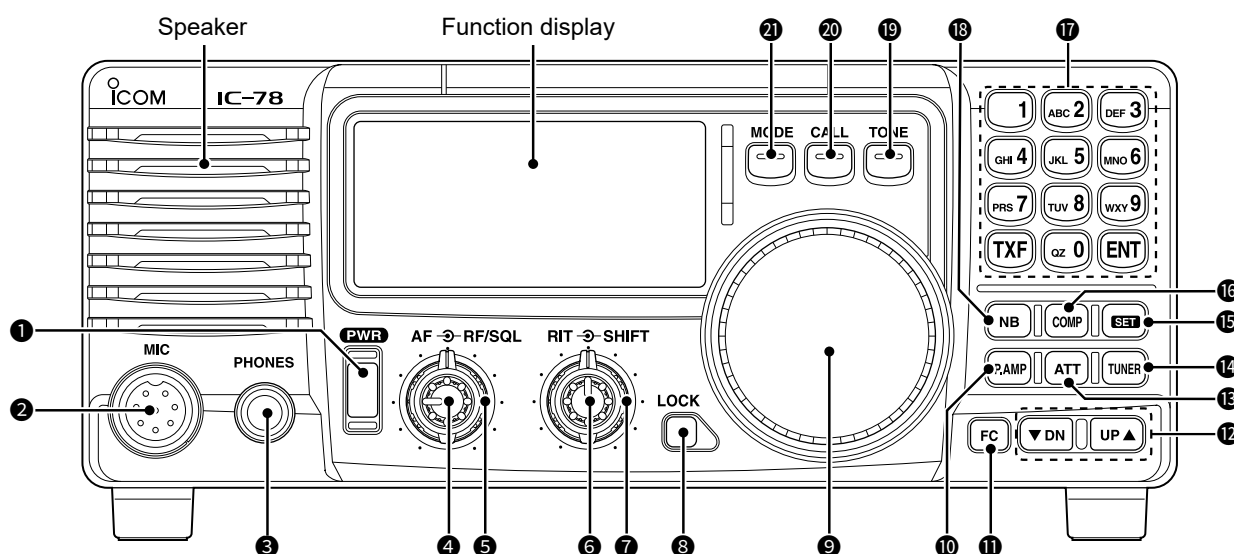
TABLE OF CONTENTS

IMPORTANT	i
SUPPLIED ACCESSORIES	i
EXPLICIT DEFINITIONS	i
PRECAUTIONS.....	i
1 PANEL DESCRIPTION	1
Front panel	1
Rear panel.....	3
Microphone.....	3
Function display	4
2 INSTALLATION AND CONNECTIONS	5
Selecting a location	5
Using the desktop stand.....	5
Grounding.....	5
Connecting an antenna	5
Connecting an external DC power supply	6
3 BASIC OPERATION	7
Turning power ON or OFF	7
Receiving and transmitting	7
Selecting a channel	7
Frequency indication	8
Selecting the operating mode	8
Scan function.....	8
Dial lock function	8
SQL level.....	9
Meter display selection.....	9
Adjusting the transmit output power	9
Adjusting the microphone gain	9
4 SET MODE.....	10
Set mode description.....	10
Quick Set mode items	11
Initial Set mode items	12
5 SPECIFICATIONS	14
6 OPTIONS	15
7 MAINTENANCE.....	16

Icom and the Icom logo are registered trademarks of Icom Incorporated (Japan) in Japan, the United States, the United Kingdom, Germany, France, Spain, Russia, Australia, New Zealand, and/or other countries.

All other products or brands are registered trademarks or trademarks of their respective holders.

Front panel



❶ POWER SWITCH [PWR]

- Push to turn ON the transceiver.
 - ① First, confirm the external DC power supply is ON.
- Hold down for 1 second to turn OFF.
- While holding down [SET], push [PWR] to enter the Initial Set mode. (p. 10)

② MICROPHONE CONNECTOR [MIC] (p. 3)

Connect the supplied or an optional microphone.

③ HEADPHONE JACK [PHONES]

Connects to standard stereo headphones. (8 Ω)

- ① When headphones are connected, the internal or external speaker does not function.

④ AF CONTROL [AF] (Inner control) (p. 7)

Rotate to adjust the audio output level.

5 RF GAIN/SQUELCH CONTROL [RF/SQL] (Outer control) (pp. 9, 12)

Rotate to adjust the squelch threshold level.

6 RIT CONTROLS [RIT] (Inner control) (PDF)

Rotate to shift the receive frequency ± 1.2 kHz for clear reception of an off frequency signal. Rotate clockwise to increase the frequency or counterclockwise to decrease.

7 IF SHIFT CONTROLS [SHIFT] (Outer control)

Rotate to shift the center frequency of the receiver's IF passband. Rotate clockwise to shift the center frequency higher or counterclockwise to shift it lower.

⑧ LOCK SWITCH [LOCK] (p. 8)

Push to turn the Dial Lock function ON or OFF.

- ① The Dial Lock function electronically locks the Channel Selector.

9 CHANNEL SELECTOR

- Rotate to select an operating channel.
- Selects an item in the Quick/Initial set mode, and so on.

10 PREAMP SWITCH [P.AMP] (PDF)

Push to turn the preamp ON or OFF.

11 FC SWITCH [FC] (p. 8)

- Push to change the indication, channel name, or stored frequency.
- Hold down for 1 second to toggle the Memory Channel mode or the VFO mode.

⑫ MEMORY CHANNEL UP/DOWN SWITCHES

- Push several times to select a Memory channel.
- Hold down for 1 second to start scanning.
- Push to select an item in the Quick/Initial Set mode.
- Push to select a character while editing the channel name.

13 ATTENUATOR SWITCH [ATT] (PDF)

Push to turn the 20 dB Attenuator function ON or OFF.

Front panel

14 TUNER SWITCH [TUNER] (PDF)

- Push to turn the Automatic Antenna Tuner function ON or OFF.
 - Hold down for 1 second to manually start the tuner.
- ① An optional antenna tuner must be connected.
 ① When the tuner cannot tune the antenna, the tuning circuit is automatically bypassed after 20 seconds.

15 SET SWITCH [SET]

- Hold down for 1 second to enter the Quick Set mode. (p. 10)
- While holding down [SET], push [PWR] to enter the Initial Set mode. (p. 10)
- Push to select the Meter function. (p. 9)

16 MIC COMPRESSOR SWITCH [COMP] (PDF)

Toggles the Microphone Compressor function ON or OFF.

17 KEYPAD (p. 7)

[0]~[9] are used:

- To enter an operating channel number.
- To select a character when entering a channel name.

[ENT] is used to apply the selection.

[TXF] is used:

- To display the transmit frequency.
- To select a space and changes the editing digit when entering channel name.

18 NOISE BLANKER SWITCH [NB] (PDF)

- Push to turn the Noise Blanker ON or OFF.
- Hold down for 1 second to enter the Noise Blanker Level Setting mode.

19 TONE SWITCH [TONE] (p. 12)

Push to directly select the Tuning Step item in the Quick Set mode.

20 CALL SWITCH [CALL] (p. 7)

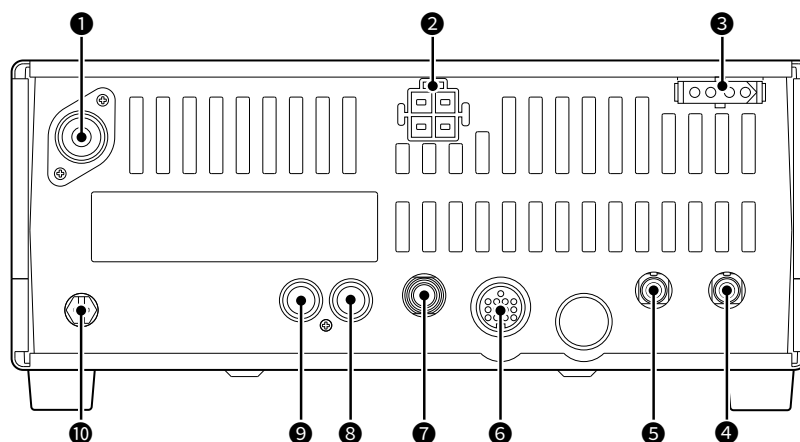
Push to select the Call channel. Push again to return to the previous condition.

21 MODE SWITCH [MODE] (p. 8)

Push to select an operating mode.

- In the SSB mode, holding down [MODE] for 1 second toggles between LSB and USB.
- In the CW mode, holding down [MODE] for 1 seconds toggles between CW and CW Reverse.
- In the RTTY mode, holding down [MODE] for 1 second toggles RTTY and RTTY Reverse.

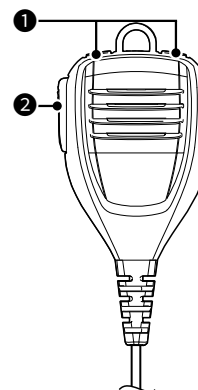
Rear panel



- 1 ANTENNA CONNECTOR [ANT]** (p. 5)
Connects to a 50 Ω antenna with a PL-259 PLUG CONNECTOR and a 50 Ω coaxial cable.
- 2 DC POWER SOCKET [DC 13.8V]** (p. 6)
Connects to a 13.8 V DC source through the supplied DC power cable.
- 3 TUNER CONTROL SOCKET [TUNER]** (PDF)
Connects to the control cable from an optional antenna tuner.
- 4 REMOTE JACK [REMOTE]** (PDF)
Connects to a PC for remote controlling the transceiver, or another IC-78 for data cloning.
- 5 EXTERNAL SPEAKER JACK [EXT SP]** (PDF)
Connects to an 8 Ω external speaker.
 - When an external speaker is connected, the internal speaker is disabled.
- 6 ACCESSORY SOCKET [ACC]** (PDF)
Connects to external equipment such as a linear amplifier, an automatic antenna tuner, a TNC for data communications, and so on.
- 7 ELECTRONIC KEYS JACK [KEY]** (PDF)
Accepts a key or paddle connector for the internal electronic keyer.
 - You can select the keyer type between the internal electronic keyer and straight key operation in the Initial Set mode.
- 8 ALC INPUT JACK [ALC]**
Connects to the ALC output jack of a non-Icom linear amplifier.
- 9 SEND CONTROL JACK [SEND]**
Goes to ground while transmitting to control external equipment such as a liner amplifier.
 - Maximum control level: 16 V DC/2 A

- 10 GROUND TERMINAL [GND]** (p. 5)
Connects to ground to prevent electrical shock, TVI, BCI and other problems.

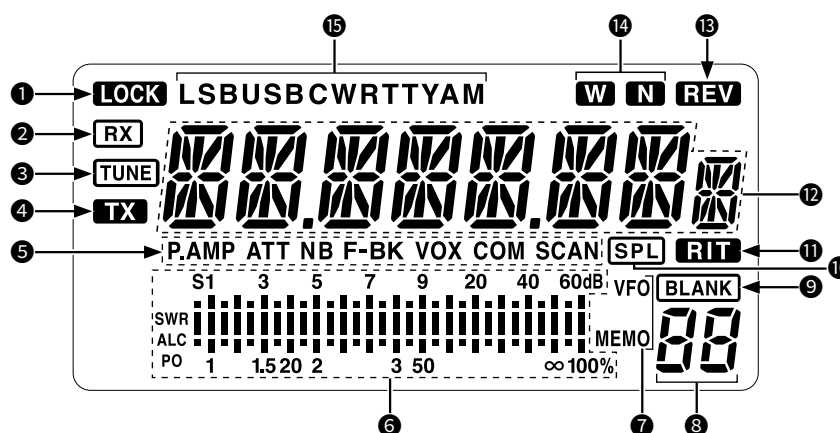
Microphone



- 1 UP/DOWN SWITCHES [UP]/[DN]**
 - Push to change the operating frequency or Memory channel.
 - Holding down to continuously change the frequency or Memory channel.
 - ① The [UP]/[DN] keys can simulate a key paddle. Set the Key Type (CW PADDLE) item in the Initial Set mode. (p. 12)
- 2 PTT SWITCH**
Push to transmit, release to receive.

NOTE: To maximize the readability of your signal, hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, and then speak at your normal voice level.

Function display



1 LOCK ICON **LOCK** (p. 8)

Displayed when the Dial Lock function is ON.

2 RECEIVE ICON **RX**

Displayed while receiving a signal or when the squelch is open.

3 TUNE ICON **TUNE**

- Displayed when an optional automatic antenna tuner has tuned completely, depending on the tuner type.
- Blinks while an optional automatic antenna tuner is tuning.

4 TRANSMIT ICON **TX** (p. 8)

- Displayed while transmitting.
- Blinks while transmit frequency is displayed.

5 FUNCTION ICONS

Icon	Status
P.AMP	The antenna preamplifier is ON.
ATT	The Attenuator function is ON.
NB	The Noise Blanker function is ON.
BK	The Semi Break-in function is ON.
F-BK	The Full Break-in function is selected in the CW mode.
VOX	The VOX function is ON.
COM	The Speech Compressor function is ON in the SSB mode.
SCAN	• The Scan function is ON. • Blinks when a Scan is paused.

6 SIGNAL/SQL/RF-GAIN METER

- Displays the signal strength while receiving.
- Displays the relative output power, ALC, or SWR levels while transmitting. (p. 9)

7 VFO/MEMORY ICON (p. 8)

“MEMO” is displayed during a regular operation.
“VFO” is displayed during a VFO operation.

8 CHANNEL NUMBER READOUT (p. 7)

Displays the selected channel number.

9 BLANK ICON **BLANK** (p. 7)

Displayed when a blank channel (no frequency programmed) is selected.

10 SPLIT ICON **SPL** (p. 7)

Displayed when a duplex channel is selected.

11 RIT ICON **RIT** (PDF)

Displayed when the RIT function is in use.

12 CHANNEL READOUT

Displays the memory names or operating frequency of the selected channel.

13 REVERSE ICON **REV** (p. 8)

Displayed when the CW Reverse or RTTY Reverse mode is selected.

14 WIDE/NARROW FILTER ICONS (PDF)

- **W** : Displayed when the wide IF filter is selected.
- **N** : Displayed when the narrow IF filter is selected.

15 MODE ICONS (p. 8)

Displays the temporarily selected operating mode.

Selecting a location

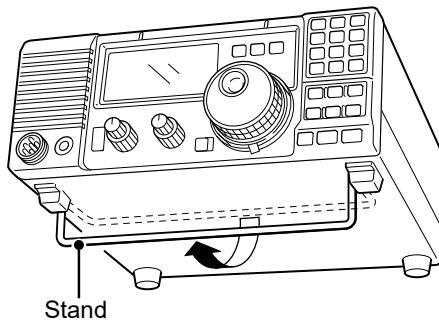
Select a location for the transceiver that allows adequate air circulation, free from extreme heat, cold, or vibration, and other electromagnetic sources.

Never place the transceiver in areas such as:

- Out of the specified temperature range ($-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$).
- An unstable place that slopes or vibrates.
- In direct sunlight.
- High humidity and temperature environments.
- Dusty environments.
- Noisy environments.

Using the desktop stand

The transceiver has a stand for desktop use.



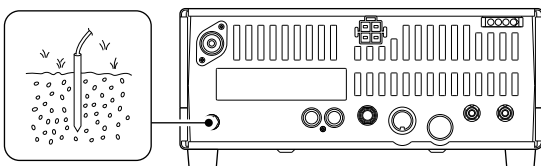
Stand

NOTE: DO NOT hold the stand, dials, or controls when you carry the transceiver. This may damage them.

Grounding

To prevent electrical shock, television interference (TVI), broadcast interference (BCI) and other problems, ground the transceiver through the GROUND terminal [GND] on the rear panel.

For best results, connect a heavy gauge wire or strap to a long ground rod. Make the distance between the [GND] terminal and ground as short as possible.



⚠ WARNING! NEVER connect the [GND] terminal to a gas or electric pipe, since the connection could cause an explosion or electric shock.

Connecting an antenna

For radio communications, the antenna is of critical importance, along with output power and receiver sensitivity.

Select antenna(s), such as a well-matched 50 Ω antenna, and feedline. A Voltage Standing Wave Ratio (VSWR) of 1.5:1 or less is recommended for your desired band.

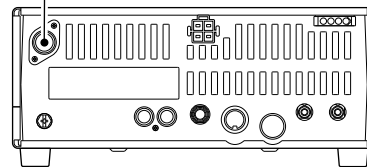
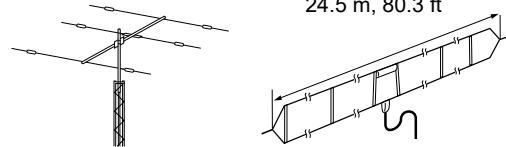
CAUTION: Help protect your transceiver from lightning by using a lightning arrestor or better, disconnect the antenna during lightning storms.

Antenna

Example: For 1.8 to 30 MHz bands

AH-710

Approximately
24.5 m, 80.3 ft



Antenna SWR

Each antenna is tuned for a specified frequency range and SWR may increase out of that range. When the SWR is higher than approximately 2.0:1, the transceiver's power drops to protect the final transistor.

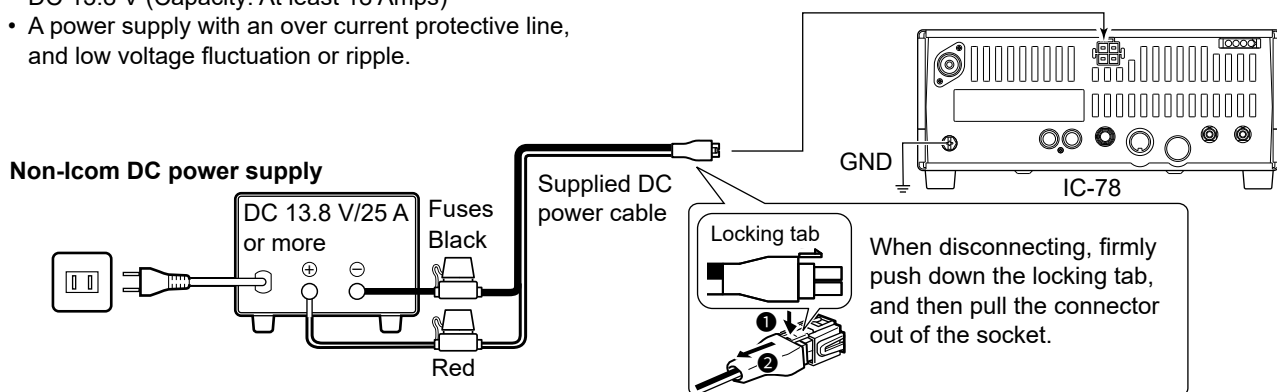
In this case, an antenna tuner is helpful to match the transceiver and antenna. The IC-78 has an SWR meter to continuously monitor the antenna SWR.

Connecting an external DC power supply

Confirm that the transceiver is OFF before connecting the DC power cable.

① When connecting a non-Icom DC power cable, the transceiver needs:

- DC 13.8 V (Capacity: At least 18 Amps)
- A power supply with an over current protective line, and low voltage fluctuation or ripple.



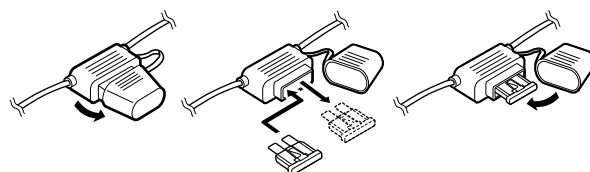
Fuse replacement

A fuse is installed in each fuse holder of the supplied DC power cable, to protect the transceiver. If the transceiver does not turn ON because a fuse blows, find and repair the cause of the problem. Then replace any blown fuse with a new, adequately rated fuse. (ATQ 25A)

① Spare fuses are supplied with the transceiver.

⚠ WARNING!

- Disconnect the DC power cable from the external power source before replacing the fuse.
- **NEVER** use fuses other than specified ones.



◇ When connecting to a vehicle's battery

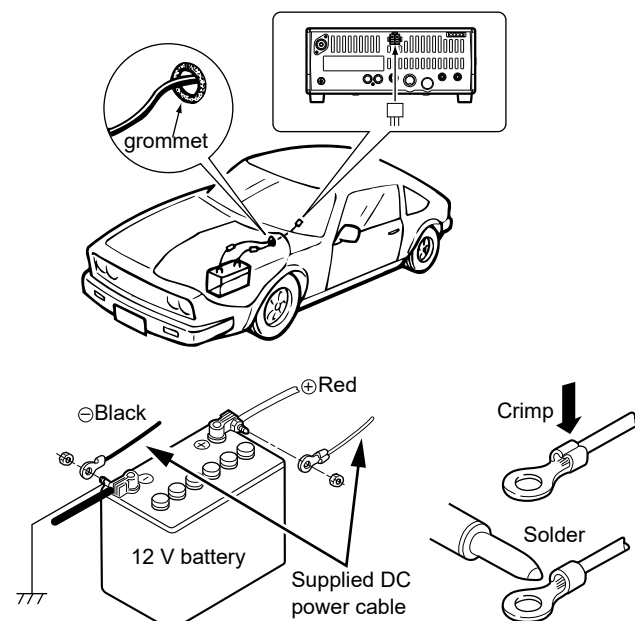
⚠ **WARNING! NEVER** connect to a battery without using a DC fuse, otherwise a fire hazard could occur or damage to the transceiver.

- **NEVER** connect the transceiver to a 24 V battery.

NOTE:

- **DO NOT** use a cigarette lighter socket as a power source when operating in a vehicle. The plug may cause voltage drops and ignition noise may be superimposed onto transmit or receive audio.
- The transceiver may not receive well on some frequencies when installed in a hybrid vehicle, or any type of electric vehicle (fuel cell vehicle). This is because vehicle's electric components, such as the inverter system, generate a lot of electrical noise.

- Use a rubber grommet when passing the DC power cable through a metal plate to prevent a short circuit.



Turning power ON or OFF

- Push [PWR] to turn ON the transceiver.
- Hold down [PWR] for 1 second to turn OFF the transceiver.

Receiving and transmitting

1. Check the following settings in advance:
 - Microphone is connected.
 - [AF] control is set to minimum position.
 - [RF/SQ] is set to center position (squelch is open).
 - [RIT] control is set to center position.
2. Select a channel to be received by using the Channel Selector, [UP▲] or [▼DN], or 10-key pad.
 - The S-meter shows signal strength when signal is received.
3. Adjust [AF] to the desired audio level when receiving a signal.
4. Push [MODE] to select a desired operating mode, if the received signal is in a different mode.
5. If the bass or treble of the receive audio is too strong, rotate [RIT] control to obtain clear audio.
6. Push [TUNER] to tune the antenna tuner, if connected.
 - "TUNE" blinks for 1 to 2 seconds for the first tuning on a channel.
7. Hold down [PTT] on the microphone, and speak into the microphone at your normal voice level.
 - The RF meter shows the output power according to your voice level, when the RF power meter is selected.
8. Release [PTT] to return to receive.

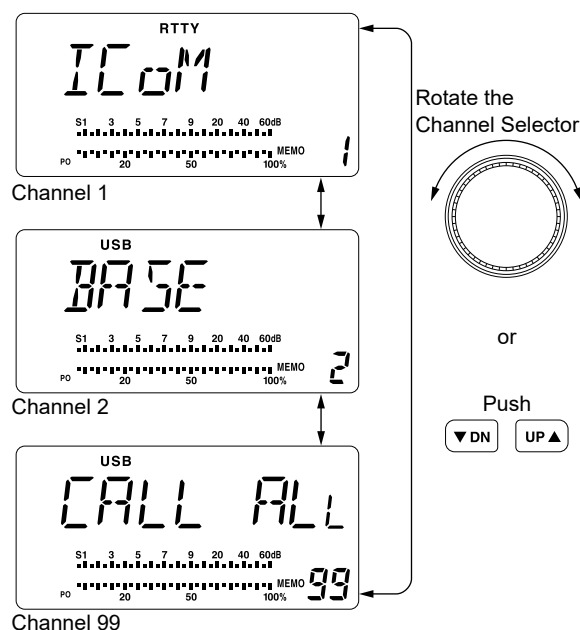
Selecting a channel

The transceiver has 99 memory channels. You can select a channel in 3 ways to suit your operating style.

- ① You can restrict the number of channels in the Initial Set mode, if necessary.

◇ Using the Channel Selector

Rotate the Channel Selector clockwise (channel number increases) or counterclockwise (channel number decreases) to select desired channel. This is the most useful way of channel selection.



◇ Using the up/down keys

Push [UP▲] or [▼DN] on the front panel or on the microphone to select the desired channel.

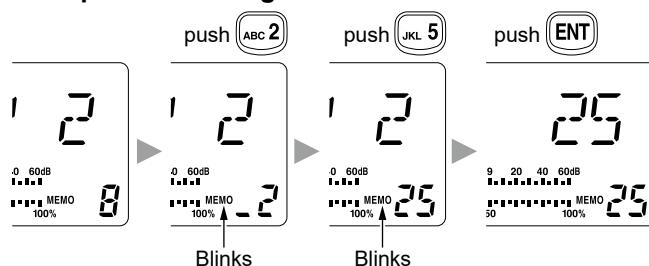
- "SPL" is displayed when a duplex channel (different frequencies between transmit and receive) is selected.

◇ Using the keypad

Enter a channel number with the keypad and then press [ENT] to directly select a channel.

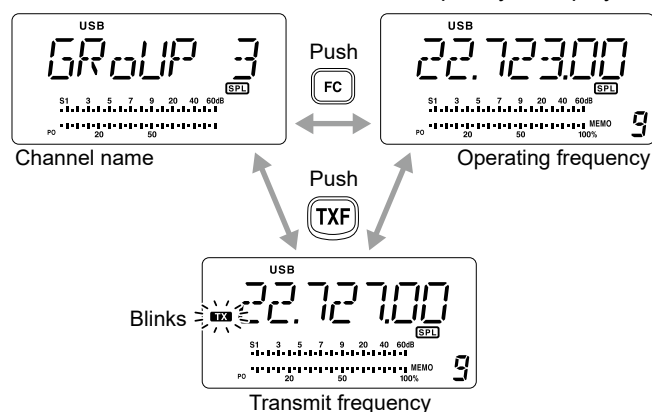
- "SPL" is displayed when a duplex channel (different frequencies between transmit and receive) is selected.
- "BLANK" is displayed when a blank (not programmed) channel is selected.

Example — selecting channel 25



Frequency indication

- Push [FC] to display the channel name or channel frequency.
- Push [TXF] to display the transmit frequency instead of the channel name or operating frequency.
 - “TX” blinks while the transmit frequency is displayed.



Selecting the operating mode

The following modes are available in the IC-78:

SSB (LSB/USB), CW, CW REV (CW reverse), RTTY, RTTY REV (RTTY reverse) and AM.

- Push [MODE] to select an operating mode, if the received signal is in a different mode.
- Hold down [MODE] for 1 second to toggle between USB and LSB, CW and CW reverse or RTTY and RTTY reverse.

Operating mode selection list

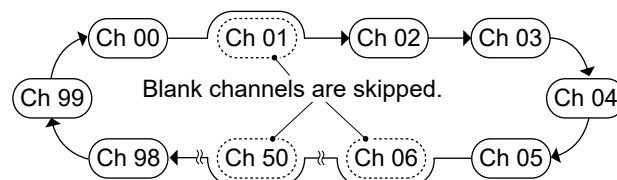
Mode (Push [MODE])	Operating mode (Hold down [MODE] for 1 second)	
SSB	USB	LSB
CW	CW	CW REV (reverse)
RTTY	RTTY	RTTY REV (reverse)
AM	AM	

NOTE: The selected mode can be used for temporary operation only.

Scan function

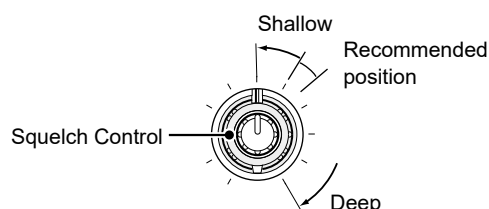
The Scan function repeatedly scans all programmed channels. This function is convenient to wait for calls on multiple channels.

Enter two or more Memory channels to use the Memory scan.

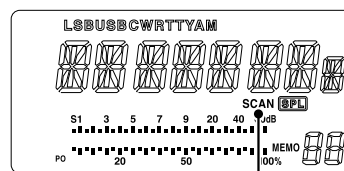


① Blank (not entered) Memory channels are skipped.

1. Set [RF/SQ] control to the center (12 o'clock) position to open the squelch, and then rotate the control clockwise to the position where the noise just disappears.



2. Hold down [UP▲] or [▼DN] for 1 second to start a channel scan.



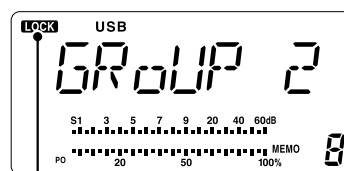
Displayed while scanning.

- The scan pauses on a signal detected channel.
3. Push [UP▲] or [▼DN] to cancel the scan.

NOTE: The scan resume operation (the action after receiving a signal) can be set to “Scan resume” or “Scan cancel” in the Initial Set mode.

Dial lock function

The Dial lock function electronically locks the [Channel Selector] to prevent accidentally changing channels. Push [LOCK] to turn the Lock function ON or OFF. Before selecting a channel, turn OFF this function.



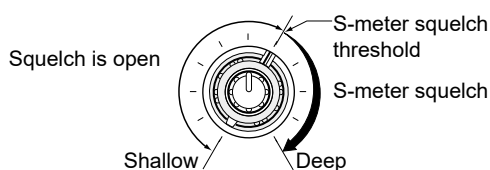
Displayed while the Lock function is ON.

SQL level

The transceiver uses the same control [RF/SQL] to adjust either the RF gain and the squelch. As default, the control works as [SQL]. The RF gain is set to maximum level.

① The function of the [RF/SQL] control can be customized in the Initial Set mode. (p. 12)

The [SQL] control



◇ Squelch (SQL) level

The S-meter squelch mutes the audio output from the speaker or headphones when the received signal is weaker than the specified S-meter squelch level. Rotate the [RF/SQL] clockwise from the 12 o'clock position to increase the S-meter threshold level.

① The meter segments display the S-meter squelch level.

Meter display selection

You can display one of the transmit parameters (Po, ALC, and SWR) for your convenience.

Push [SET] several times to select one of the meters.

Meter functions

(none): Displays the receiving signal strength level.

Po: Displays the relative RF output power.

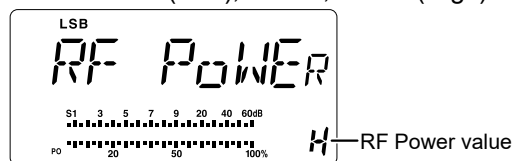
ALC: Displays the ALC level. When the meter movement shows the input signal level exceeds the allowed level, the ALC limits the RF power. In such cases, decrease the microphone gain level.

SWR: Displays the SWR of the antenna at the displayed frequency.

Adjusting the transmit output power

Before transmitting, monitor your selected operating frequency to make sure you do not cause interference to other stations on the same frequency.

1. Hold down [SET] for 1 second.
 - Enters the Quick Set mode.
2. Push[UP▲]/[▼DN] to select "RF Power."
3. Rotate Channel Selector to set the output power to between L (Low), 1 ~ 99, and H (High).



4. PUSH [SET] to exit the Quick Set mode.

The usable power

SSB/CW/RTTY: 2 (or less) ~ 100 W

AM: 2 (or less) ~ 35 W (Career power)

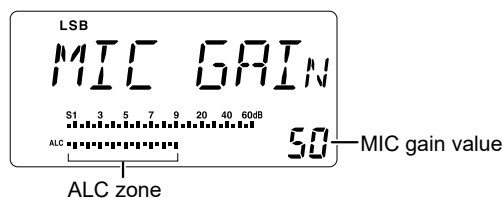
Adjusting the microphone gain

Properly adjust the microphone gain to prevent distort your transmitted signal.

1. Select SSB or AM mode.
2. Hold down [SET] for 1 second.
 - Enters the Quick Set mode.
3. Push[UP▲]/[▼DN] to select "MIC GAIN."
4. Hold down [PTT] and adjust the microphone gain.

① Information

- Hold the microphone 5 to 10 cm (2 to 4 inches) from your mouth, then hold down [PTT] on the microphone and speak at your normal voice level.
- In the SSB mode, set the meter to the ALC meter, and rotate Channel Selector to adjust the microphone gain until the meter reading does not peak past the ALC zone.



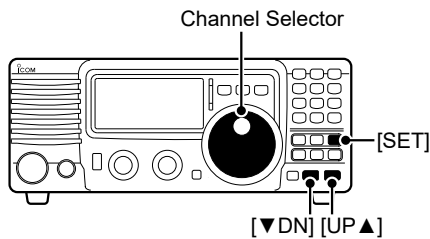
- In the AM mode, check the audio clarity with another station.
5. Release [PTT].
 6. Push [SET] to exit the Quick Set mode.

Set mode description

You can use the Set mode to set infrequently changed values or function settings. The transceiver has 2 set modes, the Quick Set mode and the Initial Set mode.

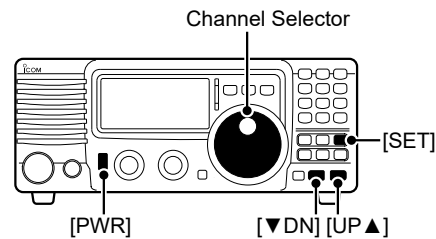
◇ Quick Set mode operation

1. While the transceiver is ON, hold down [SET] for 1 second.
 - Enters the Quick Set mode, and a setting item is displayed.
2. Push [UP▲] or [▼DN] to select an item.
3. Rotate the Channel Selector to set a value or option for the selected item.
4. Repeat steps 2 and 3 to set other items.
5. Push [SET] to exit the Quick Set mode.



◇ Initial Set mode operation

1. Turn OFF the transceiver.
2. While holding down [SET], push [PWR] to turn ON the transceiver.
 - Enters the Initial Set mode and a setting item is displayed.
3. Push [UP▲] or [▼DN] to select an item.
4. Rotate the Channel Selector to set a value or option for the selected item.
5. Repeat steps 2 and 3 to set other items.
6. Hold down [PWR] for 1 second to turn OFF the transceiver.
7. Push [PWR] to turn ON the transceiver with the revised settings.



Quick Set mode items

NOTE: The default settings described below are for the USA version transceiver. The default settings may differ, depending on your transceiver version.

LSB
RF POWER

RF Power (Default: H)

Sets the RF output power.

- Range: L (minimum), 1 ~ 99, and H (maximum)

LSB
MIC GAIN

Mic Gain (Default: 50)

Adjusts the microphone gain.

- Range: 0 ~ 99, and H (maximum)

AM
FILTER

Filter (Default: no indication is displayed (Normal))

Selects the filter bandwidth

- Option: wide, normal, or narrow

LSB
VOX

VOX Function (Default: oF)

Turns the VOX function ON or OFF.

LSB
VOX GAIN

VOX Gain (Default: 50)

Adjusts the VOX gain for the VOX (Voice Activated transmit) function.

- Range: 0 ~ 99

LSB
VOX DELY

VOX Delay (Default: 10 (1.0 second))

Adjusts the VOX delay time.

- Range: 0 ~ 20 (2.0 seconds) in 0.1 second steps.

LSB
AN VOX

Anti VOX Level (Default: 50)

Adjusts Anti-VOX gain for the VOX operation.

- Range: 0 ~ 99

LSB
CW PITCH

CW Pitch (Default: 60 (600 Hz))

Sets the CW tone pitch

- Range: 30 (300 Hz) ~ 90 (900 Hz) in 10 Hz steps.

LSB
BK-IN

BK-IN (Default: oF)

Sets the Break-in type for the CW operation.

- Option: oF (OFF), SE (Semi break-in), FL (Full break-in)

LSB
BK-DELAY

BK-IN Delay (Default: 7)

Sets the Break-in delay time for the CW semi break-in operation.

- Range: 2 ~ 13 (dots.)

LSB
KEY SPD

Key Speed (Default: 20)

Adjusts the CW keying speed.

- Range: 6 ~ 60 (wpm.)

① 40, 44, 47, 50, 52, 54, 56, 57, and 59 cannot be set.

LSB
KEY RAT

Key Ratio (Default: 30 (3.0))

Sets the CW key ratio (or weight.)

- Range: 28 (2.8) ~ 45 (4.5.)

RTTY
TON 2 125

RTTY Mark Tone (Default: 2125)

Selects the Mark tone frequency for RTTY operation.

- Option: 1275, 1615, 2125 (Hz)

Quick Set mode items

RTTY Shift (Default: 170 Hz)

Selects the RTTY shift.

- Option: 170, 200, 425, 850 (Hz)

Dimmer (Default: HI)

Selects the display backlight brightness.

- Option: oF (OFF), Lo (Dim), HI (Bright)

Tuning Step (Default: 1k)

Selects the tuning step for the Channel Selector's tuning.

- Option: 1, 10, 0.1k, 1k, 5k, 9k, 10k, 100k (Hz)

Initial Set mode items

RF/SQL Control Action (Default: Sq)

Selects the function of the [RF/SQL] control.

- Option: rS (RF/Squelch), At (Squelch in the AM modes and RF gain in the SSB, CW, and RTTY modes), Sq (Squelch)

Beep (Default: on)

Turns the confirmation beep sound ON or OFF.

Beep Level (Default: 50)

Adjusts the confirmation beep level.

- Range: 1 ~ 99

Side Tone Level (Default: 30)

Adjusts the CW side-tone output level

- Range: 1 ~ 99

Meter Peak Hold (Default: on)

Turns the Meter Peak Hold function ON or OFF.

Scan Speed (Default: HI)

Sets the scan speed.

- Option: Lo (Low), HI (High)

SCAN Resume (Default: on)

Turns the Scan Resume function ON or OFF. A scan pauses for 10 seconds if the signal is detected, 2 seconds after the signal disappears, the scan resumes.

AM Noise Blanker (Default: on)

Turns the Noise Blanker function in the AM mode ON or OFF.

① The Noise Blanker function may degrade the audio, such as regular AM radio broadcasts.

Key Type (Default: n)

Selects the CW paddle type.

- Option: n (Normal), r (Reverse), oF (for a straight key),
ud (Uses microphone's [UP]/[DN] keys instead of the paddle.)

Tuner Type (Default: no)

Selects the tuner type when an optional antenna tuner is connected.

- Option: no (No tuner), 4 (AH-4 AH-730, or AH-740), 12 (AT-120 (Discontinued),
13 (AT-130)

4 SET MODE

Initial Set mode items

MAX M-CH

Number of Maximum Memory Channels (MAX M-CH) (Default: 99)

Sets the number of selectable memory channels

- Range: 1 ~ 99

CI-V BAUD

CI-V Baud Rate (Default: At)

Sets the baud rate for the CI-V data transferring.

- Option: 3 (300 bps), 12 (1200 bps), 48 (4800 bps), 96 (9600 bps), HI (19200 bps), At (Auto)

CI-V ADD

CI-V Address (Default: 62)

Sets the CI-V Icom standard address in hexadecimal code.

- Option: 01 ~ 7F

CI-V TRN

CI-V Transceive (Default: on)

Turns the CI-V transceive function ON or OFF.

CI-V 731

CI-V 731 Mode (Default: oF)

When connecting the IC-78 to the IC-735 for transceive operation, you must convert the operating frequency data from 5 bytes to 4 bytes.

- ① Set to "on" when operating the IC-78 with the IC-735.

FIL no

Option Filter (Default: no)

Select an optional IF filter you want to use.

- Option: no, 52A (500 Hz), 53A (250 Hz), 222 (1.8 kHz), 96 (2.8 kHz), 257 (3.3 kHz)

EXP FIL

Expanded Filter Selection (Default: oF)

Turns the Expanded filter (Wide or Narrow) ON or OFF.

Push [MODE] several times to select an operating mode you want to set, and then rotate Channel Selector to set the expanded filter ON or OFF.

^{CW} WIDE THU

Filter Selection (WIDE/NARW) (Default: WIDE=THU, NARW=NoR)

Select an IF filter for the Wide or Narrow bandwidth in each operating mode.

Push [MODE] several times to select an operating mode you want to set, and then rotate Channel Selector to select a filter.

^{AM} NARW NoR

- ① Settable only in the mode that the Expanded Filter Selection is ON.

◇ General

- Frequency coverage: (Unit: MHz)

Receiver	0.030000 ~ 29.999999	*1
Transmitter	1.600000 ~ 29.999999	*2
- *1 Guaranteed range: 0.5 ~ 29.999999 MHz
- *2 Not guaranteed for some frequency bands.
- Operating Modes: USB, LSB, CW, RTTY, AM
- Number of memory channels: 99 (Duplex) +1 Call channel
- Frequency stability: Less than ± 200 Hz from 1 minute to 60 minutes after power on.
After that rate of stability less than ± 30 Hz/hour at $+25^{\circ}\text{C}$.
Temperature fluctuations $0^{\circ}\text{C} \sim +50^{\circ}\text{C}$ less than ± 350 Hz.
- Power supply requirement: 13.8 V DC $\pm 15\%$ (negative ground)
- Current drain:

Receive	Standby	1.3 A
	Maximum audio	2.0 A
Transmit	Maximum power	21.0 A
- Operating temperature range: $-10^{\circ}\text{C} \sim +60^{\circ}\text{C}$
- Antenna impedance: 50 Ω unbalanced
- Dimensions (Approximate, projections not included): 240 (W) $\times$ 95 (H) $\times$ 239 (D) mm
- Weight (Approximate): 3.8 kg

◇ Transmitter

- Transmit output power:

SSB, CW, RTTY	2 W ~ 100 W
AM	2 W ~ 35 W
- Modulation system:

SSB	Balanced modulation
AM	Low level modulation
- Spurious emissions: Less than -46 dB below peak output power
- Carrier suppression: More than 40 dB
- Unwanted sideband suppression: More than 50 dB
- Microphone impedance: 600 Ω

◇ Receiver

- Receive system: Double-conversion superheterodyne system
- Sensitivity:

SSB/CW/RTTY (10 dB S/N)	0.16 μV (1.600–29.999999 MHz) (0.5 μV at 12 dB SINAD)
AM (10 dB S/N)	13 μV (0.500–1.599999 MHz) 2.0 μV (1.600 – 29.999999 MHz)
- Selectivity:

SSB, CW, RTTY	More than 2.1 kHz/ -6 dB Less than 4.5 kHz/ -60 dB
AM	More than 6 kHz/ -6 dB Less than 20 kHz/ -40 dB
- Spurious and image rejection ratio: More than 70 dB (1.600–29.999999 MHz)
- RIT variable range: ± 1200 Hz
- Audio output power: More than 2.0 W at 10% distortion with an 8 Ω load (at 13.8 V DC)

① All stated specifications are typical and subject to change without notice or obligation.

(As of February 2024)

Microphones

HM-219 HAND MICROPHONE

The same as supplied.

SM-30 DESKTOP MICROPHONE**SM-50** DESKTOP MICROPHONE**Speaker**

SP-41 EXTERNAL SPEAKER**Antennas**

AT-130 HF AUTOMATIC ANTENNA TUNER

Frequency coverage: 1.6 MHz ~ 30 MHz

AH-4 HF + 50 MHz AUTOMATIC ANTENNA TUNER

To tune a long wire antenna for portable or mobile HF operation.

Input power rating: 120 W

AH-2b ANTENNA ELEMENT

A 2.5 m long antenna element for mobile operation with the AH-4.

Frequency coverage:

3.5 MHz ~ 28 MHz bands with the AH-4

AH-710 FOLDED DIPOLE ANTENNA**AH-730** AUTOMATIC ANTENNA TUNER

Input power rating: 150 W Maximum

AH-740 AUTOMATIC TUNING ANTENNA

Frequency coverage with 1.54 m whip antenna:

2.5 MHz ~ 29.9999 MHz

MN-100 ANTENNA MATCHER

Matcher with two 8 m antenna wires

MN-100L ANTENNA MATCHER

Matcher with a 15 m antenna wire

Cables

OPC-420 4-CONDUCTOR SHIELD CABLE

For the connection between transceiver and an antenna tuner AT-130 or AH4.

Compatible with the control cable, that is supplied with the AT-130 or AH-4.

Cable length: 10 m (32.8 ft)

OPC-599 ADAPTER CABLE

13-pin, ACC connector to 7-pin + 8-pin ACC connectors.

OPC-2321 CONTROL CABLE

To connect the AH-740

Approximately 6 m, (19.7 ft)

Others

MB-23 CARRYING HANDLE**MB-118** MOBILE MOUNTING BRACKET

① Some options may not be available in some countries. Ask your dealer for details.

◇ Troubleshooting

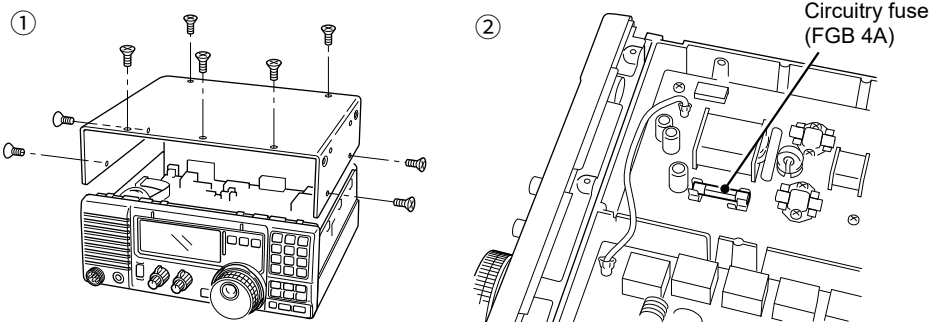
The following chart is designed to help you correct problems which are not equipment malfunctions. If you are not able to locate the cause of a problem or solve it through the use of this chart, contact your nearest Icom Dealer or Service Center.

	Problem	Possible cause	Solution	Ref.
POWER	Power does not turn ON when [PWR] is pushed.	- DC power cable is improperly connected. - The external power supply is turned OFF. Fuse is blown.	- Properly reconnect the DC power cable. - Turn ON the external power supply. - Find and repair the cause of the problem, and then replace the blown fuse with a new one.	p. 6 p. 6 p. 6
	No sound is heard from the speaker.	- The audio level is too low. - The squelch is closed. - The transceiver is in the transmitting mode.	- Rotate [AF] control clockwise to obtain a suitable listening level. - Rotate [RF/SQL] to around the 10 o'clock position to open the squelch, and adjust the squelch level. - Check the SEND line of an external unit.	p. 7 p. 8 —
	Sensitivity is too low, and only strong signals are heard.	- The antenna is not properly connected. - The antenna for another band is connected. - The antenna is not properly tuned. - The attenuator is activated.	- Reconnect the antenna connector. - Push [TUNER] to tune the connected antenna tuner. - Set the proper value for the connected tuner. - Push [ATT] to turn OFF the attenuator.	p. 5 p. 2 PDF
RECEIVE	Receive audio is distorted.	- The operating mode is not selected correctly. - The Noise blanker function is activated. - The [RIT] control is rotated too far clockwise, or counterclockwise.	- Select the correct operating mode. - Push [NB] to turn OFF the function. - Push [RIT] to turn OFF the function.	p. 7 PDF PDF
	Your signal does not reach as far as usual.	- The antenna tuner is not matched to the operating frequency when manual tuning is selected. - The CW or RTTY mode is selected for voice transmission.	- Push [TUNER] to tune the external antenna tuner. - Push [MODE] to select USB, LSB, or AM mode.	PDF
TRANSMIT	Transmitted signal is unclear or distorted.	- The wrong mode is selected. - Microphone is too close to your mouth.	- Push [MODE] to select the proper operating mode. - Speak into the microphone at your normal voice level. Hold the mic farther away from your mouth.	p. 8 p. 7
DISPLAY	The displayed channel does not properly change.	- The dial lock function is activated. - A Quick Set mode screen is selected.	- Push [LOCK] to deactivate the function. - Push [SET] to exit the Quick Set mode.	p. 8 p. 10

◇ Replacing the circuitry fuse

The 13.8 V DC from the DC power source is applied to all units in the IC-78 through the circuitry fuse. The fuse is in the MAIN unit.

1. Remove the top cover of the transceiver. (①)
2. Replace the circuitry fuse to a brand-new one. (②)
3. Replace the top cover.



◇ Resetting the CPU

The reset operation returns the programmed values in both the Quick and Initial Set modes to their defaults. When applying power for the first time after purchase, or if the functions seem to be displaying erroneous information, reset the CPU as follows:

1. Make sure transceiver power is OFF.
2. While pushing [UP▲] and [▼DN], push [PWR] to turn ON the transceiver.
 - The internal CPU is reset to the default.

