JETSTREAM
VEHICLE TRANSCEIVER

Lo Nar
M 80 223.5000

FUNC V/M MHz TS.DCS CALL SQL POWER

JT220M
USER'S MANUAL

LICENSING REQUIREMENTS:

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

FCC ID: W48JT220M

Caution:

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Thank you very much for purchasing this excellent transceiver. We offer advcanced technology, it has been tested carefully at our factory for your long term use.

Please read this manual completely to learn all functions. We made efforts to write this manual to be as comprehensive and easy to understand as possible. Please note that some of the operations may be explained in previous chapters. So if you read just one part of the manual, you may not understand the complete explanation of the function.

Precautions

Please observe the following precautions to prevent fire, personal injury, and/or transceiver damage:

⚠ Do not attempt to use your transceiver while driving; it is simply too dangerous.

⚠ This transceiver is designed for a 13.8 V power source. Never use a 24 V battery to power the transceiver.

⚠ Do not place the transceiver in excessively dusty, humid or wet areas, nor on unstable surfaces.

⚠ Please make it away from interferential devices (such as TV, generator etc.) when interfering by external.

⚠ Do not expose the transceiver to long periods of direct sunlight nor place it close to heating appliances.

⚠ If an abnormal odor or smoke is detected coming from the transceiver, turn OFF the power immediately. Ensure the transceiver is safe, then send it to service station for examination.

⚠ Do not transmit with high output power for extended periods; the transceiver may overheat.
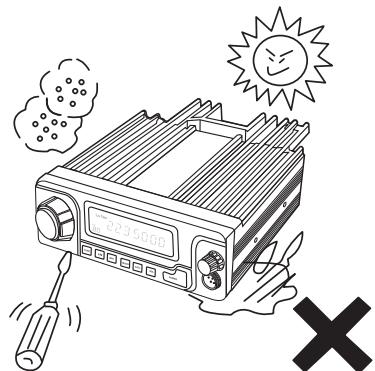
Please contact a local authorized dealer if you have any questions. We are not responsible for any typographical errors that may be in this manual. Standard accessories may change without notice, getting your understanding for any inconveniences.

☞ Contents

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1. Functions And Features

This new transceiver has many world advanced and reliable functions; it represent the innovation and practically principle of our Company. Functions as follows:

- Display on a large LCD with adjustable brightness, convenient for nighttime use. Three different displaying modes are available, including Frequency Mode, Frequency +Channel Mode and Channel Mode.

- Distribute buttons reasonably, convenient for operation. Adopt superior quality material, better technology and high quality radiator to ensure stable and durable operation.

- 99 programmable memorized channels + 1 called channel, identified by letters and numbers.

- CTCSS/DCS encode/decode per channel (can be different encode/decode tones), rejecting extra calling from other radios.

- Various scan functions, including CTCSS/DCS scan function.

- With 2-Tone, 5-Tone and DTMF encoding/decoding function, use 5-Tone to have Send Message, Emergency, Call all, ANI, Stun, Waken, etc.

- Automatic Numbering Identification function by DTMF/ANI or 5-Tone/ANI.

- Scramble function (Optional).

- Can set compander ON/OFF.

- Can set different band width; wide band: 25K, narrow band 12.5K.

- This transceiver is settled to work in 12.5 narrow band FM mode.

- Burglar alarm providing extra safety.

2. Supplied And Optional Accessories

Supplied Accessories

After carefully unpacking the transceiver, identify the items listed as below. We recommend you keep the box and packing.

- JT220M Transceiver [QX-01B]
- Microphone QMP-01 (with DTMF keypad)
- Mobile installing bracket [QMB-01]
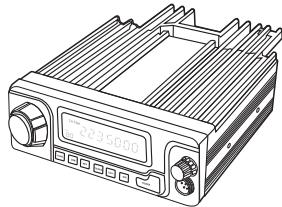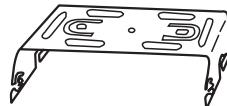
- DC power cable with fuse holder [QPL-01]
- Alarm cable A (with wire) [QL-01(A)]
- Alarm cable B (extension use) [QL-01(B)]
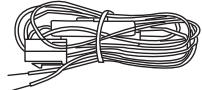
- Hardware kits for bracket

Black screws (M4*8mm) 4 pcs. (QSS-01A)

Tapping Screws (M5*20mm) 4 pcs. (QSS-01)

Screws (M5*20mm) 4 pcs. (QSS-01C)

Washer S-washer (QSS-01D)

Hexagonal nut (M5) 4 pcs. (QSS-01E)

Spare fuses (a pair) 2 pcs. (QF-01)
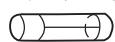
Small wrench (spanner) (QW-01)
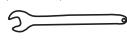
- User's Manual

The standard accessories may vary slightly depending on the version you have purchased. Please contact the local authorized our dealer should you have any questions. **We and our authorized dealer are not responsible for any typographical errors there may be in this manual.Standard accessories may change without notice.**

3. Initial Installation

Mobile Installation

To install the transceiver, select a safe, convenient location inside your vehicle that minimizes danger to your passengers and yourself while the vehicle is in motion. Consider installing the unit at an appropriate position so that knees or legs will not strike it during sudden braking of your vehicle. Try to pick a well ventilated location that is shielded from direct sunlight.

1. Install the mounting bracket in the vehicle using the supplied self-tapping screws (4 pcs), flat washers (4 pcs).

Install the mounting bracket
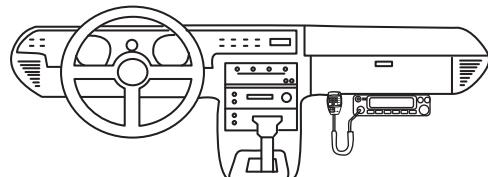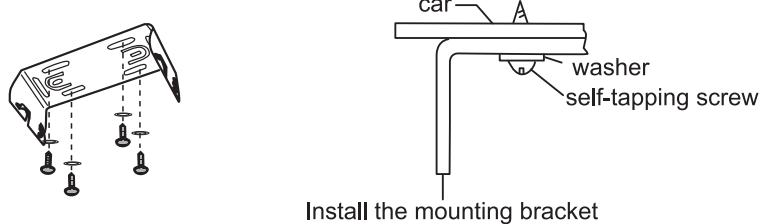
2. Position the transceiver, then insert and tighten the supplied hexagon SEMS screws (4) and flat washers (4).

- Double check that all hardware is tightened to prevent vehicle vibration from loosening the bracket or transceiver.
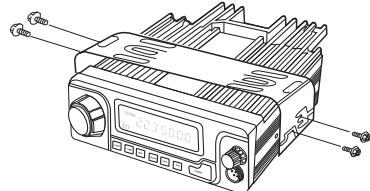
- Determine the appropriate angle of the transceiver, using the 3 screw hole positions on the side of the mounting bracket.
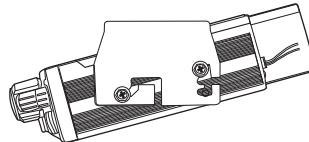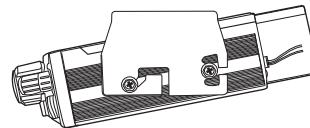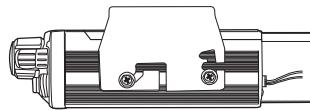
DC Power Cable Connection

NOTE: *Locate the power input connector as close to the transceiver as possible.*

【Mobile Operation】

The vehicle battery must have a nominal rating of 12 V. Never connect the transceiver to a 24 V battery. Be sure to use a 12 V vehicle battery that has sufficient current capacity. If the current to the transceiver is insufficient, the display may darken during transmission, or transmit output power may drop excessively.

1. Route the DC power cable supplied with the transceiver directly to the vehicle's battery terminals using the shortest path from the transceiver.
- If using a noise filter, it should be installed with an insulator to prevent it from touching metal on the vehicle.
- We recommend you do not use the cigarette lighter socket as some cigarette lighter sockets introduce an unacceptable voltage drop.
- The entire length of the cable must be dressed so it is isolated from heat, moisture, and the engine secondary (high voltage) ignition system/ cables.

2. After the cable is in place, wrap heat-resistant tape around the fuse holder to protect it from moisture and tie down the full run of cable.

*3.* To prevent the risk of short circuits, disconnect other wiring from the negative (-) battery terminal before connecting the transceiver.

4. Confirm the correct polarity of the connections, then attach the power cable to the battery terminals; red connects to the positive (+) terminal and black connects to the negative (-) terminal.
- Use the full length of the cable without cutting off excess even if the cable is longer than required. In particular, never remove the fuse holders from the cable.
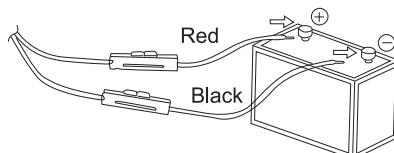
5. Reconnect any wiring removed from the negative terminal.

6. Connect the DC power cable to the transceiver's power supply connector.
- Press the connectors firmly together until the locking tab clicks.
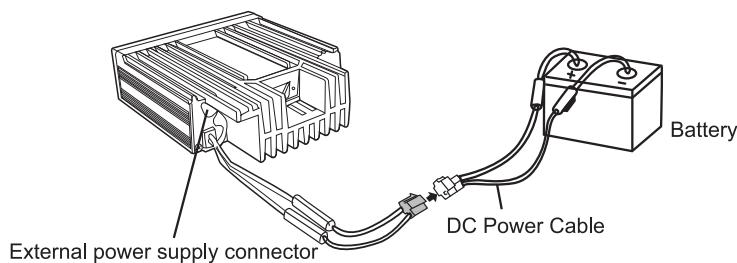
☞ 3. Initial Installtion

If set the ignition-key **ON/OFF** (optional feature), use the optional QCC-01 (For direct connection to the circut on the vehicle or for a cigar plug connection) cable. Connect one of the cables between the ACC terminal or a cigar plug that operates with the vehicle ignition or ACC switch on the vehicle power jack on the rear side of the unit. (*NOTE: In many cars, the cigar-lighter plug is always powered. In this case, you cannot use it for the ignition-key ON/OFF function.*) If set this function on, the unit can be turned **ON/OFF** either manually or automatically in accordance with the ignition-key position.

1. When the ignition-key turns to ACC (speed up) or ON(start) and the radio is power off, the power switch lights on. It turns off when the ignition key is turned to be off.To turn on the unit, press the power switch while it is on.(while ignition key is at ACC or ON)

2. When the ignition-key turns to ACC (speed up) or ON (start) and the radio is power on,the unit turns on automatically and the power switch light on. Turn the ignition-key to OFF or manually turn the power switch off to shut down the radio.

The power consumption when using the additional cable is 5 mA.

For operation without this function, use the power switch to turn the unit ON/OFF.

Ext. power jack

➡ ACC (speed up) terminal

Cigar plug connector
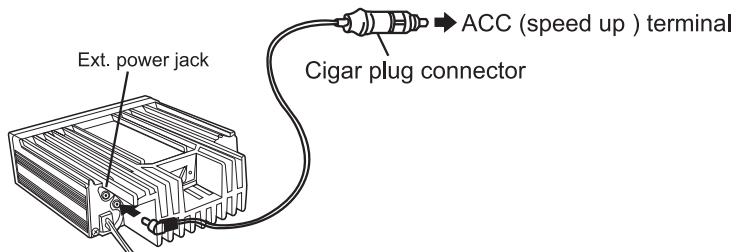
【Fixed Station Operation】

In order to use this transceiver for fixed station operation, you will need a separate13.8 V DC power supply (not included).our Co. offers excellent communication power supply as optional accessory[QRP-01], please contact the local authorized distributor.

The recommended current capacity of your power supply is 12 A.

1. Connect the DC power cable to the regulated DC power supply and ensure that the polarities are correct (Red: positive, Black: negative).
   - Do not directly connect the transceiver to an AC outlet.
   - Use the supplied DC power cable to connect the transceiver to a regulated power supply.
   - Do not substitute a cable with smaller gauge wires.

Regulated power supply (QRP-01)

Red lead

Black lead
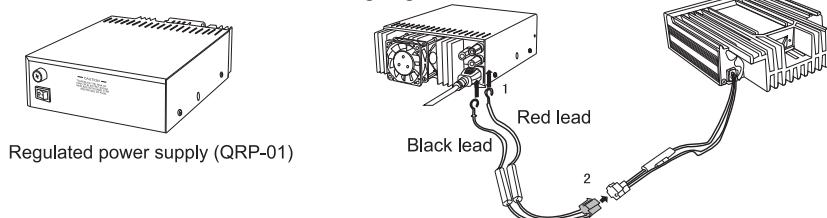
2. Connect the transceiver's DC power connector to the connector on the DC power cable.
   - Press the connectors firmly together until the locking tab clicks.

NOTE:
- ◆ *Before connecting the DC power supply to the transceiver, be sure to swi tch the transceiver and the DC power supply OFF.*
- ◆ *Do not plug the DC power supply into an AC outlet until you make all connections.*

☞ *3. Initial Installtion*

【Replacing Fuse】

If the fuse blows, determine the cause, then correct the problem. After the problem is resolved, replace the fuse.If newly installed fuse continue to blow, disconnect the power cable and contact your authorized dealer or an authorized service center for assistance.
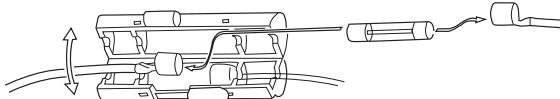
| Fuse Location	Fuse Current Rating
Transceiver	15A
Supplied Accessory DC power cable	20A

Only use fuse of the specified type and rating; otherwise the transceiver could be damaged.

NOTE: If you use the transceiver for a long period when the vehicle battery is not fully charged, or when the engine is OFF, the battery may become discharged, and will not have sufficient reserves to start the vehicle. Avoid using the transceiver under these conditions.

Power Supply Voltage Display

After connecting the transceiver to the power supply, the supply voltage can be confirmed by pressing SQL and FUNC at the same time. The supply voltage displays on the screen. The transceiver will return to normal operation when the power is OFF. The display immediately changes as the voltage supply changes. It also displays voltage during transmission.

13.8V   BUSY

[IMPORTANT] The range of the displayed voltage is only from 7V-16V. Because of the displayed value is estimated, please use a voltmeter when a more precise reading is desired.

Antenna Connection

Before operating, install an efficient, well-tuned antenna.The success of your installation will depend largely on the type of antenna and its correct installation.The transceiver can give excellent results if the antenna system and its installation are given careful attention.

Use a 50Ω impedance antenna and low-loss coaxial feed line that has a characteristic impedance of 50Ω, to match the transceiver input impedance. Coupling the antenna to the transceiver via feed lines having an impedance other than 50Ω reduces the efficiency of the antenna system and can cause interference to nearby broadcast television receivers, radio receivers, and other electronic equipment.

NOTE:
◆ *Transmitting without first connecting an antenna or other matched load may damage the transceiver. Always connect the antenna to the transceiver before transmitting.*
◆*All fixed stations should be equipped with a lightning arrester to reduce the risk of fire, electric shock, and transceiver damage.*

There are many possible antenna locations on a car. Four of the most popular are shown and discussed on the following:

Accessory Connection

【External speaker】

If you plan to use an external speaker, choose a speaker with an impedance of 8Ω. The external speaker jack accepts a 3.5 mm (1/8") mono (2-conductor) plug.
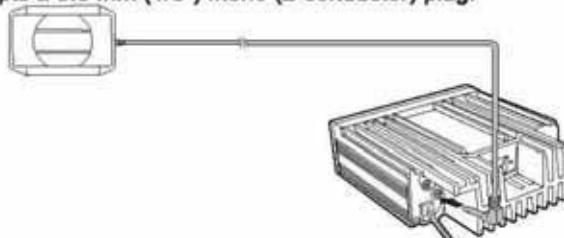
NOTE: *External speaker adopt BTL double ports as output, please care about the connecting way. The speaker can not connect with the ground, otherwise the speaker will be fault.The wrong connecting way as the following picture:*
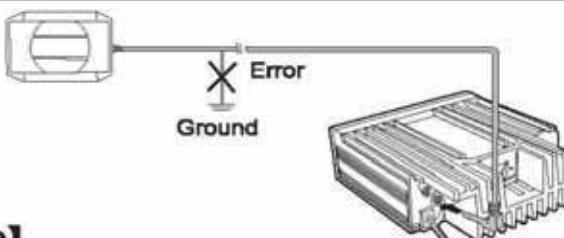
【Microphone】

For voice communications, connect a microphone equipped with an 8-pin modular plug into the modular socket on the front of the main unit.Press firmly on the plug until the locking tab clicks.

Attach the supplied microphone hanger in an appropriate location using the screws included in the screw set.
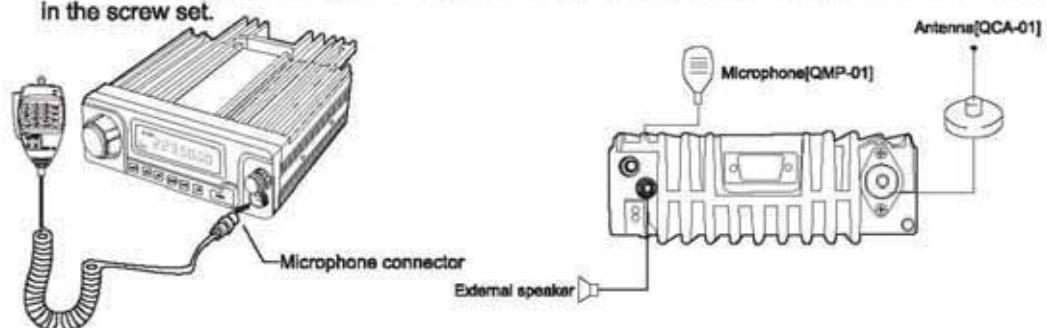
4. Getting Acquainted

Front Panel

• **Primary Function**

No.	Key	Function
1	PWR (Power)	Power ON/OFF
2	VOL(Volume switch)	Adjust volume key
3	Main Dial	Change frequency, memorized channel and scan direction etc.
4	FUNC•SET	Function key
5	V/M • MW	Switches between VFO mode and memory mode
6	MHZ • SHIFT	Step key (step:1 MHz)
7	TS/DCS • LOCK	Set CTCSS and DCS value
8	CALL• H/L	Call key
9	SQL• 🄳	Squelch adjusting key
10	Data Terminal	Data reading/writing, burglar alarm functions
11	TX	Indicates when transmitting
12	Mic. Connector	Connection port for supplied microphone

• **Press FUNC, the functions can be activated while 🄵 appears.**

No.	Key	Function
4	FUNC•SET	Confirm to choose function and exit the functions
5	V/M • MW	Store data to memory channels
6	MHZ • SHIFT	Set direction and frequency of offset frequency
7	TS/DCS • LOCK	Set key lock function
8	CALL • H/L	Switch between HI, MID and LOW power transmission
9	SQL• 🄳	Enter into the compander communication mode

● **Set function by pressing FUNC and one of the following keys at the same time**

| No.	Key	Function
1	PWR	Reset to default setting
5	V/M • MW	Delete the channel memory
6	MHZ • SHIFT	Switch between wide/narrow band
7	TS/DCS • LOCK	Set the auto dialer
9	SQL • ◨	Enter the power supply voltage indication mode

NOTE: *When pressing **FUNC** key, simultaneously press **CALL • H/L** key, it will display CLONE, meanwhile transceiver disables all operation, for CLONE has been prohibit. Now you should turn off the power and turn on transceiver once.*

● **Set functions by pressing the keys continuously**

No.	Key	Function
4	FUNC • SET	Press and hold for 2 seconds to enter the setting mode
9	SQL • ◨	Press and hold for more than 1 second to monitor function

Rear Panel
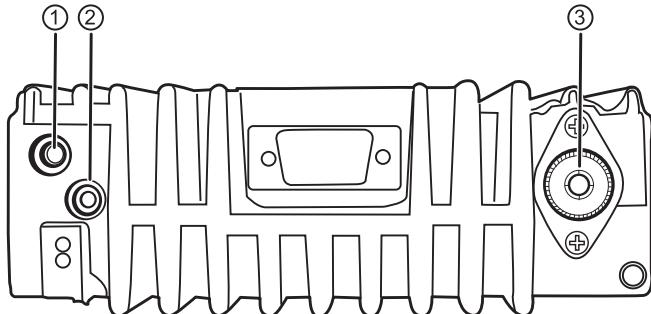
No.	Key	Function
1	Ext. Speaker Terminal	Terminal for optional external speaker
2	Ext. Power Jack	Terminal for connecting optional cable for use with ignition key on/off function
3	Antenna Connector	Use for connecting the 50 ohm coaxial cable with antenna

Screen
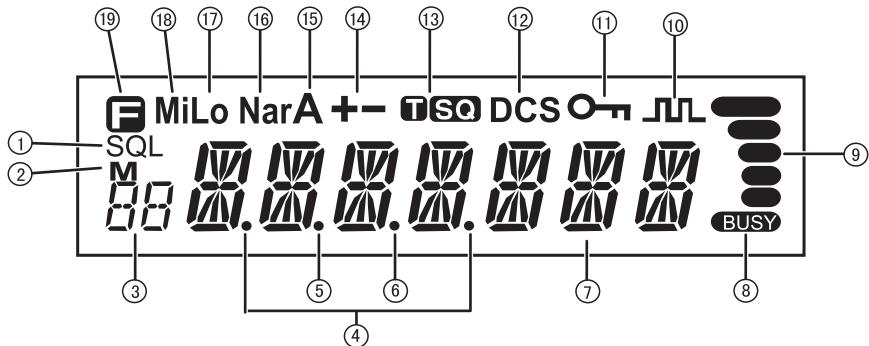
No.	Icon	Function
1	**SQL**	Appears when setting the squelch level
2	**M**	Appears when in memory mode
3	**88**	Indicates the memory channel number in memory mode
4	**.Decimal point**	Appears when setting the burglar alarm function
5	**.Decimal point**	Appears when setting the skip level
6	**.Decimal point**	Indicates the dicimal point of frequency and the scanning function
7	⧈⧈⧈⧈⧈⧈	Indicates the frequency or memory name
8	**BUSY**	Appears when a signal is being received and monitor function is ON
9	**S-meter**	Indicates the relative signal strength of transmtting and receiving
10	⊓⊔⊓	Appears when in compander mode
11	**O⊓ Key lock**	Appears when setting the key lock function
12	**DCS**	Appears when setting the DCS function
13	**T SQ**	Appears when setting CTCSS
14	**+ -**	Appears when setting direction of offset frequency
15	A	Indicates scramble
16	Nar	Indicates narrow band
17	Lo	Indicates low power
18	ML	Indicates medium power
19	**F**	Appears when pressing **FUNC** Key

Microphone

QMP-01
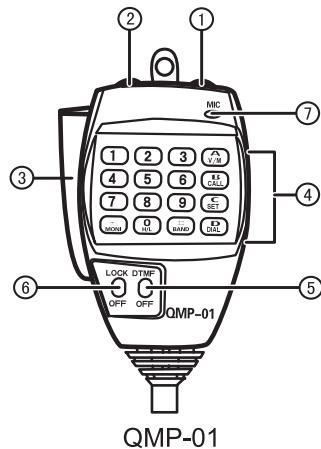
No.	Key	Function
1	**Up**	Increase frequency value,memory channel serial number,or setting value
2	**Down**	Decrease frequency value,memory channel serial number,or setting value
3	**PTT**	Push-To-Talk, get into transmitting state
4	**DTMF**	Set functions, input VFO frequency or dial DTMF,etc.
5	**DTMF OFF**	Switch between dual-tone frequency dialing and function operating
6	**LOCK OFF**	Key lock (Lightening turns off when locking)
7	**MIC**	Speak here during transmitting

Mic. Connector Diagram (While looking in the front view of the connector)

GND (Grounding)

Mic (Microphone) — ① ⑦ — MIC GND (Microphone Grounding)

PTT(Push-To-Talk) — ② ⑧ ⑥ — Remote (connect to control)

Down(Decrease) — ③ ⑤ — DC 5V

④

Up(Increase)
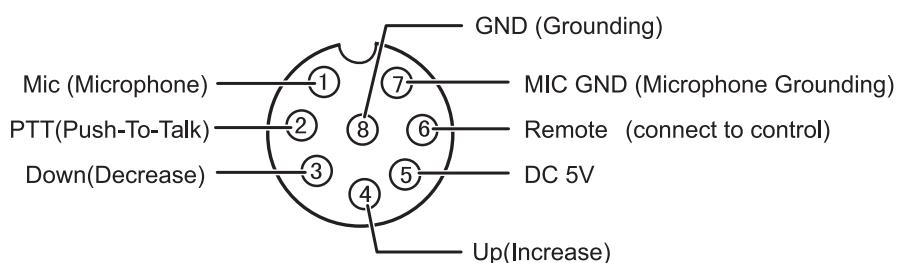
5. Operating Basics

Switching The Power ON/OFF

Press the power switch or turn the ignition key to ACC (speedup)or ON(starup) according to the selected mode when installed to power ON. Press again the power switch or turn the ignition key to OFF to power OFF.

PWR (Power) Key

Adjusting The Volume

Turn the **VOL** control clockwise to increase the audio output level and counterclockwise to decrease the output level. Set it at the desired level.

Minimum Volume   Maximum Volume

VOL (Volume) Knob
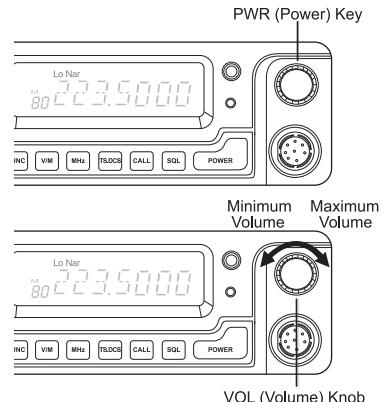
Adjusting The Squelch

The purpose of Squelch is to mute the speaker when no signals are present. With the squelch level correctly set, you will hear sound only while actually receiving signals. The higher the selected squelch level, the stronger the signals must be receive.The appropriate squelch level depends on the ambient RF noise conditions.

1. Press **SQL** Key. SQL icon displays on the screen and the squelch level will be shown where the memory number is displayed. 21 levelst total(from 0 to 20) "0" is the lowest setting value.


Squelch Level

2. Adjust desired squelch level by turning the main dial or by using the **UP/DOWN** keys on the micriohone. To return to normal use mode, press **PTT** or any key on the front panel, or if there are no operations within five seconds, the unit will store the setting and will return to its original status.

The new squelch level will be stored in the CPU until another adjustment is done.

VFO Mode

VFO tuning is set as a default mode at the factory. VFO (Variable Frequency Oscillator) allows you to change the frequency in accordance with the selected channel step as you rotate the main dial or by using the **UP/DOWN** keys on the microphone. VFO mode is also used to program the data to be stored in the memory channels.

VFO Mode

Decrease Frequency

Increase Frequency

1. Identify the current mode by checking the screen. If "M" or "C" icon is NOTdisplayed on it, the unit is already in the VFO mode.

2. Otherwise press **V/M** key untill those icons are gone.
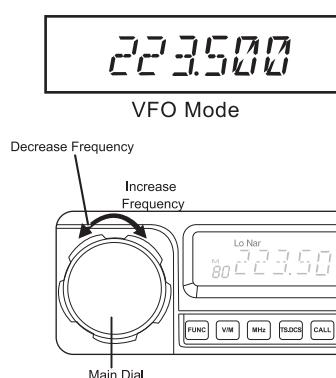
Main Dial

【Change Frequency By Channel Stepping】

Turn the main dial clockwise to increase the frequency value, counterclockwise to decrease. The **UP/DOWN** keys on the microphone act in the same way(This transceiver takes 12.5KHz as channel stepping).

【Change Frequency By 1MHz Stepping】

This will enable a quick change of frequency in 1 MHz steps:

1. Press **MHz** key. The digits after 100KHz will disappear on the screen.

*2.* Turn the main dial or press **UP/DOWN** key on Mic.

Change Channel Stepping

1. Be sure the unit is in VFO mode. Refer to page 23 to enter the SET mode.

2. Select the channel step parameter setting by using the tuning knob. The current channel step will be displayed as below.

Displaying channel stepping

STP-5	STP-83	STP-10	STP-125	STP-15
(5KHz)	(8.33KHz)	(10KHz)	(12.5KHz)	(15KHz)

| STP-50	STP-30	STP-25	STP-20
(50KHz)	(30KHz)	(25KHz)	(20KHz)
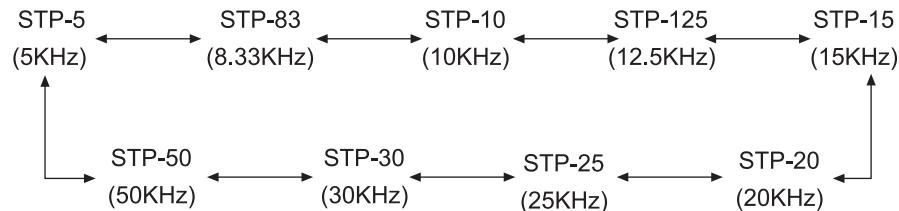
3. Press **PTT** or any key except SQL on the front panel to enter the desired step into memory. The screen will then return to the original status.

NOTE：*Settings below 10KHz may be automatically corrected according to the selected step.*


Operating Through Repeaters

Repeaters, which are often installed and maintained by radio clubs, are usually located on mountain tops or other elevated locations. They generally operate at higher ERP (Effective Radiated Power) than a typical station. This combination of elevation and high ERP allows communications over much greater distances than communicating without using repeaters.

Most repeaters use a receive and transmit frequency pair with a standard or non-standard offset (odd-split).In addition, some repeaters must receive a tone from the transceiver to be accessed. For details, consult your local repeater reference.

TX: 244.725MHz
TX Tone: 88.5Hz
RX: 245.325MHz

TX: 244.725MHz
TX Tone: 88.5Hz
RX: 245.325MHz
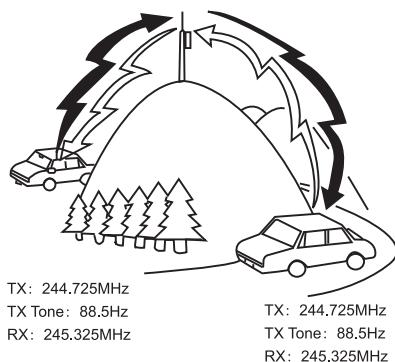
☞ 5. Operating Basics

【Offset Programming Flow】

① Select a receive frequency.

▼

② Select an offset direction.

▼

③ Select an offset frequency (only when programming odd-split repeater frequencies).

▼

④ Activate the Tone function (if necessary).

▼

⑤ Select a tone frequency (if necessary).
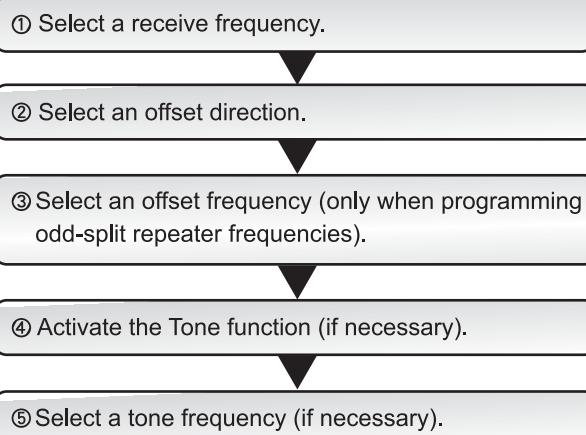
If you store all the above data in a Memory Channel, you will not need to reprogram the parameters every time. Refer to "MEMORY CHANNELS".

【Setting Offset Direction And Offset Frequency】

Repeater receives a signal (UP-LINK) on the frequency and re-transmits on another (DOWN-LINK). The difference between these two frequencies is called the offset frequency. The default offset frequency on VHF band is 1.6 MHz; If the UP-LINK frequency is higher than the DOWN-LINK frequency, the shift direction is positive, and if it is lower, the shift direction is negative. The offset is variable between 0 to 0.9875MHz on JT-200M unit.

Press the **FUNC** key. While the screen displays " ▣ " icon, press **MHz** key. Screen shows the current status of offset direction and offset frequency. The default value is 5 MHz in the negative direction. Press **MHz** key until the desired offset direction is set. If SIMPLEX mode (without changing transmit and receive frequency) is desired, select the position where both - and + icons disappears.

1. Turn the dial or use **UP/DOWN** keys on the microphone to change the offset frequency. It changes in accordance with the channel step setting value.

2. The frequency range of this unit is 1 MHz, the offset frequency which can be set should between 1MHz.

3. In this mode, if press the **FUNC** key again, the offset frequency can be changed in 1 MHz steps for faster setting.

4. Press any other key except **FUNC** or **MHz** to return to the original status.

-05.00 ⟶ +05.00

Cancel Shift