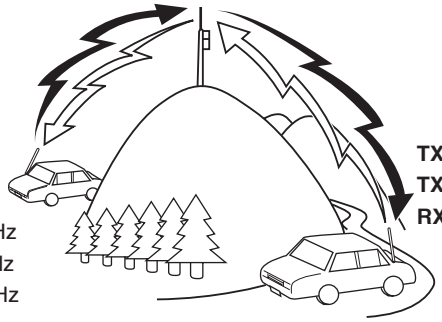
OPERATING THROUGH REPEATERS

Repeaters are often installed and maintained by radio clubs, sometimes with the cooperation of local businesses involved in the communications industry.

Compared to simplex communication, you can usually transmit over much greater distances by using a repeater. Repeaters are typically 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 considerable distances.



REPEATER ACCESS

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 in order to gain access to the repeater. For details, consult your local repeater reference.

■ Selecting an Offset Direction

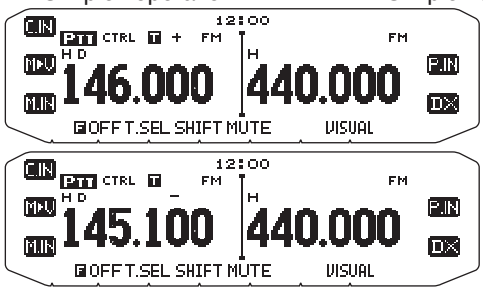
The offset direction allows your transmit frequency to be higher (+) or lower (–) than the receive frequency.

1 Select your desired band (A or B).

2 Press **[F], [SHIFT]** to select an offset direction.

- Each time you press **[SHIFT]**, the offset direction changes as follows:

  Simplex operation >> + >> – >> Simplex operation



- If you are using an E type transceiver, when operating on the 430 MHz band, the offset direction changes as follows:

  Simplex operation >> + >> – >> = (–7.6 MHz) >> Simplex operation

If the offset transmit frequency falls outside the allowable range, transmitting is inhibited. Use one of the following methods to bring the transmit frequency within the band limits:

- Move the receive frequency further inside the band.
- Change the offset direction.

Note: While using an odd-split memory channel or transmitting, you cannot change the offset direction.

■ Selecting an Offset Frequency

The offset frequency is the value which the transmit frequency will be offset from the receive frequency. The default offset frequency on the 144 MHz band is 600 kHz for all type versions. The default on the 430/440 MHz band is 5 MHz.

1 Select your desired band (A or B).

2 Enter Menu mode and access Menu 400.

3 Set the appropriate offset frequency value.

- The selectable range is from 00.00 MHz to 29.95 MHz, in steps of 50 kHz.

Note: After changing the offset frequency, the new offset frequency will also be used by Automatic Repeater Offset.

■ Activating the Tone Function

To turn the Tone function on:

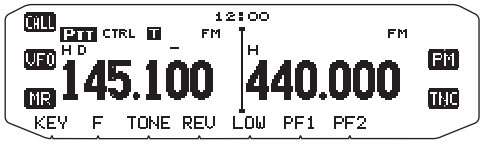
1 Select your desired band (A or B).

2 Press **[TONE]** to turn the Tone function ON.

- Each time you press **[TONE]**, the selection changes as follows:

  Tone (▤) –> CTCSS (CT) –> DCS (DCS) –> Off (no display).

- The ▤ icon appears on the display when the tone function is ON.



Note: When accessing a repeater that requires a 1750 Hz tone, you do not need to activate the Tone function. Simply press the key assigned to the 1750 Hz tone {Menu 507 ~ 512} to transmit the tone.

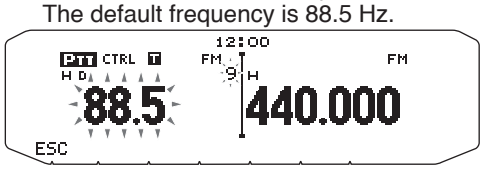
■ Selecting a Tone Frequency

To select the tone frequency required to access your desired repeater:

1 Turn the Tone function ON.

2 Press **[F], [T.SEL]**.

- The current tone frequency appears on the display. The default frequency is 88.5 Hz.



3 Rotate the **Tuning** control to select your desired frequency.

- To exit the tone frequency selection, press **[ESC]**.

4 Press any key other than the **Tuning** control and **[ESC]** to set the selected frequency.

Note: If you have set up a Memory channel with a tone setting, simply recall the Memory channel instead of setting up the tone frequency every time.

No.	Frequency (Hz)	No.	Frequency (Hz)	No.	Frequency (Hz)
01	67.0	16	110.9	31	186.2
02	69.3	17	114.8	32	192.8
03	71.9	18	118.8	33	203.5
04	74.4	19	123.0	34	206.5
05	77.0	20	127.3	35	210.7
06	79.7	21	131.8	36	218.1
07	82.5	22	136.5	37	225.7
08	85.4	23	141.3	38	229.1
09	88.5	24	146.2	39	233.6
10	91.5	25	151.4	40	241.8
11	94.8	26	156.7	41	250.3
12	97.4	27	162.2	42	254.1
13	100.0	28	167.9		
14	103.5	29	173.8		
15	107.2	30	179.9		

■ Automatic Repeater Offset (K and E Types Only)

This function automatically selects an offset direction and activates the Tone function, according to the frequency that you have selected. To obtain an up-to-date band plan for repeater offset direction, contact your national Amateur Radio association.

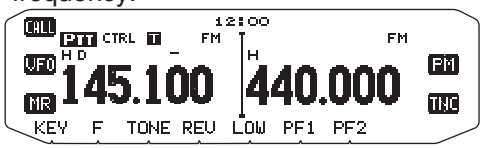
1 Enter Menu mode and access Menu 401.

2 Set the ARO to ON.

3 Press **[BAND SEL A]** to select the A band.

4 Press **[VFO]** to select VFO mode.

5 Rotate the **Tuning** control to select your desired frequency.



6 Press **[PTT]** to start a call.

- You will be transmitting on an offset frequency value determined from your offset setting value and an offset direction depending on your selected frequency. Refer to the settings below for offset directions:

K Type:

Under 145.100 MHz:	No offset (Simplex operation)
145.100 ~ 145.499 MHz:	Minus (–) offset
145.500 ~ 145.599 MHz:	No offset (Simplex operation)
146.000 ~ 146.399 MHz:	Plus (+) offset
146.400 ~ 146.599 MHz:	No offset (Simplex operation)
146.600 ~ 146.999 MHz:	Minus (–) offset
147.000 ~ 147.399 MHz:	Plus (+) offset
147.400 ~ 147.599 MHz:	No offset (Simplex operation)
147.600 ~ 147.999 MHz:	Minus (–) offset
148.000 MHz and higher:	No offset (Simplex operation)

E Type:

Under 145.000 MHz:	No offset (Simplex operation)
145.600 ~ 145.799 MHz:	Minus (–) offset
145.800 MHz and higher:	No offset (Simplex operation)

TRANSMITTING A 1750 Hz TONE

Most repeaters in Europe require that a transceiver transmit a 1750 Hz tone. On a E type model, simply pressing Microphone **[CALL]** causes it to transmit a 1750 Hz tone. It is also possible to program [1750] on the front panel as a **PF** key for transmitting a 1750 Hz tone.

Note: The transceiver continuously transmits a 1750 Hz tone until you release Microphone **[CALL]** or **PF** key(1750).

Some repeaters in Europe must receive continuous signals for a certain period of time, following a 1750 Hz tone. This transceiver is also capable of remaining in the transmit mode for 2 seconds after transmitting a 1750 Hz tone.

1 Enter Menu mode and access Menu 402.

2 Set the tone to ON or OFF.

- When set to ON, the 1750 Hz tone will transmit. When set to OFF, the tone will not be transmitted.

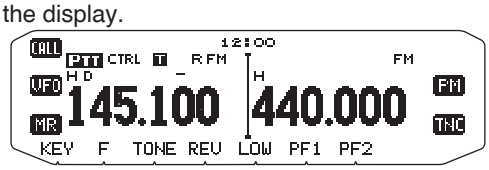
Note: While remaining in the transmit mode, the transceiver does not continuously transmit a 1750 Hz tone.

REVERSE FUNCTION

After setting a separate receive and transmit frequency, you can exchange these frequencies using the Reverse function. This allows you to manually check the strength of signals you receive directly from other stations, while using a repeater. If the station's signal is strong, move to a simplex frequency to continue the contact and free up the repeater.

Press **[REV]** to turn the Reverse function ON or OFF.

- When the Reverse function is ON, the R icon will appear on the display.



Note:

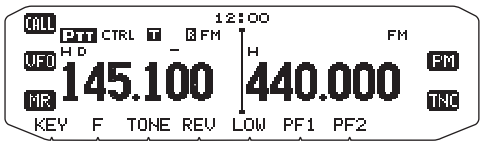
- If the transmit frequency is outside the allowable transmit frequency range when using Reverse, pressing **[PTT]** will cause an error tone to sound and transmission will be inhibited.
- If the receive frequency is outside the receive frequency range when using Reverse, an error tone will sound and Reverse will not operate.
- The ARO (Automatic Repeater Offset) will not function when Reverse is ON.
- You cannot switch Reverse ON or OFF while transmitting.

AUTOMATIC SIMPLEX CHECKER (ASC)

While using a repeater, ASC periodically monitors the strength of signals you receive directly from the other stations. If the station's signal is strong enough to allow direct contact without a repeater, the R icon blinks.

Press **[REV] (1s)** to turn the ASC ON.

- When the ASC is ON, the R icon will appear on the display.



- While direct contact is possible, without the use of a repeater, the R icon will begin blinking.
- To exit ASC, press **[REV]**.

Note:

- Pressing **[PTT]** will cause the R icon to stop blinking.
- ASC does not function if you are using simplex operation.
- ASC does not function while scanning.
- Activating ASC while using Reverse will switch the Reverse function OFF.
- If you recall a Memory channel or the Call channel, and those channels are set up with the Reverse function switched ON, the ASC will switch OFF.
- You cannot use ASC when the built-in TNC is turned ON.
- ASC causes received signals to be momentarily intermitted every 3 seconds.

TONE FREQUENCY ID

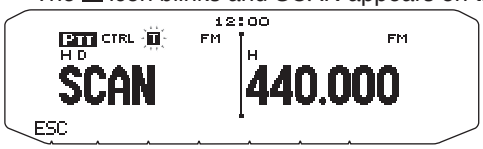
This function scans through all tone frequencies to identify the incoming tone frequency on a received signal. You can use this function to find which tone frequency is required by your local repeater.

1 Press **[TONE]** to switch the Tone function ON.

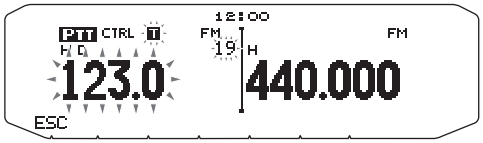
- The T icon appears on the display.

2 Press **[F], [T.SEL] (1s)** to run the Tone Frequency ID scan.

- The T icon blinks and SCAN appears on the display.



- To reverse the scan direction, turn the **Tuning** control clockwise (upward scan) or counterclockwise (downward scan).
- To quit the function, press **[ESC]**.
- When the tone frequency is identified, the identified frequency appears on the display and blinks. Press any key other than the **Tuning** control while the identified frequency is blinking, to resume scanning.



3 Press the **Tuning** control to program the identified frequency in place of the currently set tone frequency.

- The Tone function will remain ON. You can press **[TONE]** to switch the Tone function OFF.
- Press **[ESC]** if you do not want to program the identified frequency.