

# INTERFERENCE REJECTION

## DIGITAL NOTCH FILTER (DNF) OPERATION

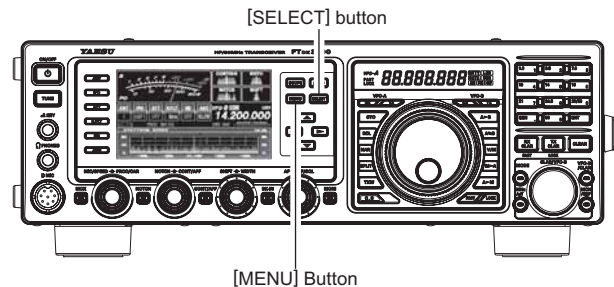
The Digital NOTCH Filter (DNF) is an effective beat-canceling filter that can null out a number of interfering beat notes inside the receiver passband. Because this is an Auto-Notch feature, there is no adjustment knob associated with this filter.

### ADVICE:

If a very strong interfering carrier is encountered, we recommend you first use the IF NOTCH filter, as it is the most effective notching tool in the receiver section.

1. Press the [▲/▼/◀/▶] button to select the “DNF”.
2. Press the [SELECT] button to select “ON”. The “DNF” will appear in the display.

To disable the Digital NOTCH Filter, just repeat the above procedure, pressing the [SELECT] button to select “OFF” in step 2 above. The “DNF” will turn off, confirming that the Digital NOTCH Filter is not active.

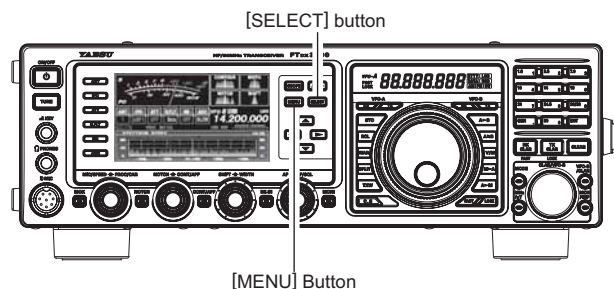


## DIGITAL NOISE REDUCTION (DNR) OPERATION

The Digital Noise Reduction (DNR) system is designed to reduce the level of random noise found on the HF and 50 MHz bands, and it is especially effective during SSB operation. By setting the Menu item “072 RGEN DNR”, any of 15 different noise-reduction algorithms can be selected; each of these algorithms was created for dealing with a different noise profile, and you will want to experiment with the DNR system to find the best setting according to the noise currently being experienced.

1. Press the [▲/▼/◀/▶] button to select the “DNR”.
2. Press the [SELECT] button to select “ON”. The “DNR” will appear in the display.

To disable the DNR system, just repeat the above procedure, pressing the [SELECT] button to select “OFF” in step 2 above. The “DNR” will turn off, confirming that the DNR system is not active.



# INTERFERENCE REJECTION

## RF GAIN (SSB/CW/AM MODES)

The RF Gain control provides manual adjustment of the gain levels for the receiver RF and IF stages, to account for noise and signal strength conditions at the moment.

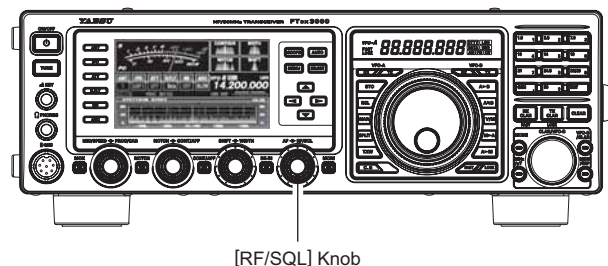
1. The [RF/SQL] knob should, initially, be rotated to the fully clockwise position. This is the point of maximum sensitivity.
2. Counter-clockwise rotation of the [RF/SQL] knob will gradually reduce the system gain.

### ADVICE:

- As the [RF/SQL] knob is rotated counterclockwise to reduce the gain, the S-meter reading will rise. This indicates that the AGC voltage being applied to the receiver is increasing (which causes a *reduction* in receiver gain).
- Rotating the [RF/SQL] knob control to the fully counter-clockwise position will essentially disable the receiver, as the gain will be greatly reduced. In this case, the S-meter will appear to be “pegged” against the right edge of the analog S-meter scale.

### QUICK POINT:

- Reception frequently can be optimized by rotating the [RF/SQL] knob slightly counter-clockwise to the point where the “stationary” meter indication is set just about the same as the incoming noise level. This setting ensures that excessive gain is not being utilized, without so much gain reduction that incoming signals cannot be heard.
- The RF Gain control, along with the IPO and the Attenuator features, all affect the system receiver gain in different ways. The IPO generally should be the first feature engaged when dealing with a high noise level, or a crowded, high-level signal environment, the IPO generally should be the first feature engaged, if the frequency is low enough to allow the preamplifier to be bypassed. Thereafter, the RF Gain and Attenuator features may be employed to provide precise, delicate adjustment of the receiver gain to fully optimize performance.

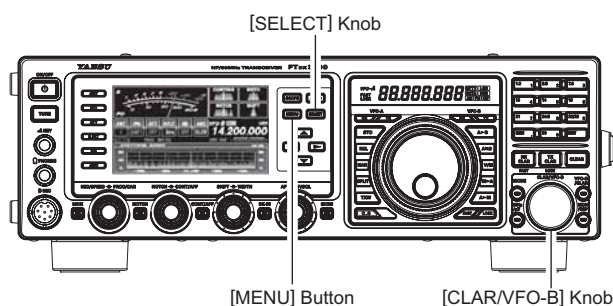


# TOOLS FOR COMFORTABLE AND EFFECTIVE RECEPTION

## AUDIO PITCH CONTROL (SSB MODE)

The **FT dx 3000** permits adjustment of the receiver audio response by shifting the carrier point during SSB operation.

1. Press and hold in the **[MENU]** button for one second to enter the Menu mode.
2. Rotate the **[CLAR/VFO-B]** knob to select Menu item “106 MODE SSB LSB RX CARRIER” or “107 MODE SSB USB RX CARRIER”.
3. Rotate the **[CLAR/VFO-B]** knob to adjust the receiver audio response as desired.
4. Press the **[SELECT]** button, then press the **[MENU]** button to save the new setting and exit to normal operation.



## MUTE FEATURE

There may be occasions when you want to silence the receiver audio of the **FT dx 3000**, perhaps to concentrate on another receiver or telephone call. The Mute feature makes this simple to accomplish.

### VFO-A/Memory Mute

Press the **[(VFO-A)RX]** Indicator/Switch, while receiving the VFO-A frequency or Memory channel. The **FTdx3000** will be silenced and the green LED in the **[(VFO-A)RX]** Indicator/Switch will blink.

To restore reception, just press the blinking **[(VFO-A)RX]** Indicator/Switch once more.

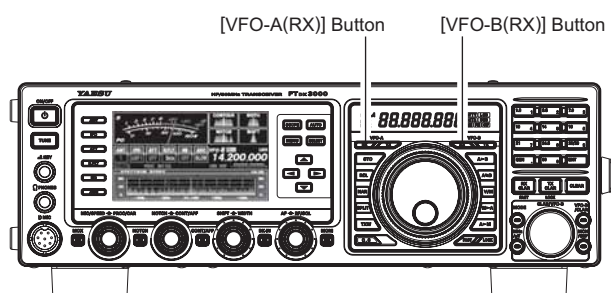
### VFO-B Mute

While receiving the VFO-B frequency, press the **[(VFO-B)RX]** Indicator/Switch. The **FTdx3000** will be silenced and the green LED in the **[(VFO-B)RX]** Indicator/Switch will blink.

To restore reception, just press the blinking **[(VFO-B)RX]** Indicator/Switch once more.

### ADVICE:

If you press the **[POWER]** switch momentarily while the transceiver is turned on, the transceiver's audio will be muted for three seconds.

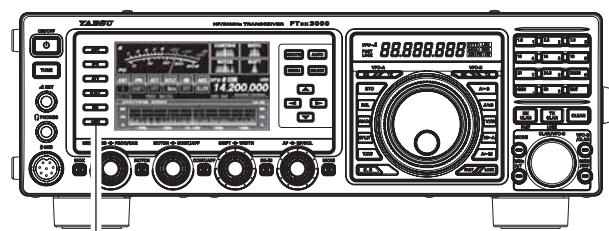


# TOOLS FOR COMFORTABLE AND EFFECTIVE RECEPTION

## AGC (AUTOMATIC GAIN CONTROL)

The AGC system is designed to help compensate for fading and other propagation effects. The AGC characteristics can be individually set for each operating mode. The basic objective of AGC is to maintain a constant audio output level once a certain minimum threshold of signal strength is achieved.

Press the **[AGC]** button repeatedly to select the desired receiver-recovery time constant. You will observe the AGC status notation in the AGC column of the Block Diagram Display on the display, denoting the AGC receiver-recovery time currently in use. For most operations, we recommend the “AUTO” mode. Additionally, you may disable the AGC by pressing and holding in the **[AGC]** button for one second.



[AGC] Button

### NOTE:

Pressing the **[AGC]** button allows selection of the desired receiver-recovery time constant. Normally, the “AUTO” selection is satisfactory for most situations, but in the event of operation on a crowded band where you wish to receive a weak signal, you may wish to change the setting to FAST. The AUTO mode selections are:

OPERATING MODE	AUTO AGC SELECTION
LSB	SLOW
USB	SLOW
CW	FAST
AM	SLOW
FM	FAST
RTTY	SLOW
PKT (FM)	FAST
PKT (LSB)	SLOW

### ADVICE:

- The AGC selection will be memorized independently on each VFO stack of VFO-A and VFO-B.
- If the AGC receiver-recovery time is set to “Off” by pressing and holding in the **[AGC]** button, the S-meter will no longer deflect. Additionally, you will likely encounter distortion on stronger signals, as the IF amplifiers and the following stages are probably being overloaded.

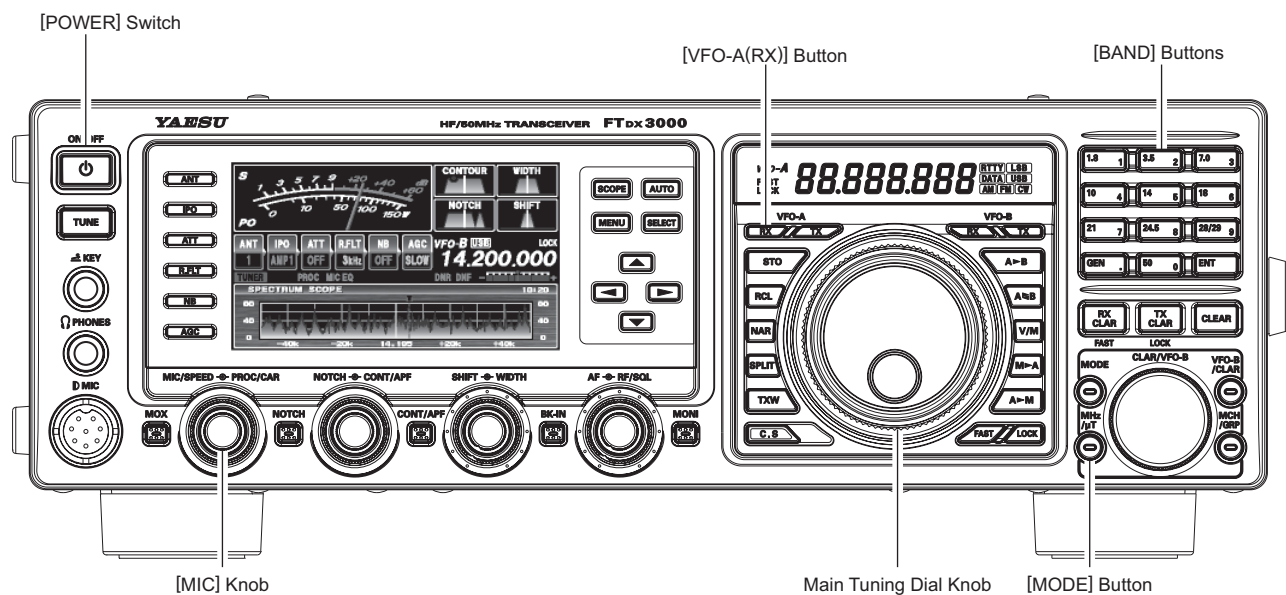
### QUICK POINT:

Several aspects of AGC performance may be configured via the Menu. However, because AGC can have such a profound impact on overall receiver performance, we generally do not recommend any changes to the AGC Menu selections until you are thoroughly familiar with the performance of the **FTdx3000**.

### TERMINOLOGY:

Automatic Gain Control, or AGC, is a circuit that senses the incoming signal strength, and then limits the gain of the RF and IF stages to keep the output audio volume at a more-or-less constant level. AGC also protects the RF, IF, Audio, and DSP stages from overload, as it limits the signal strength that is allowed to flow, irrespective of the input signal level.

# SSB/AM MODE TRANSMISSION



1. Press the **[BAND]** button corresponding to the Amateur band on which you wish to operate.



2. Press the **[MODE]** button to select the operating mode. Press and hold in this button, will toggle to the alternate mode.

For example, *In the LSB or USB modes*, press and hold in this button toggles between “LSB” and “USB” mode.

#### ADVICE:

By convention, LSB is used in the 7 MHz and lower Amateur bands for SSB communication, and USB is used on the 14 MHz and higher bands (the 10 MHz band is used for CW and data modes only).

3. Rotate the Main Tuning Dial knob to adjust the operating frequency. Alternately, you may use the **[UP]/[DWN]** scanning buttons on the **MH-31B8** Hand Microphone to sweep up or down the current band.
4. Press the microphone’s **PTT** (Push To Talk) switch to begin transmission; speak into the microphone in a normal voice level.

#### ADVICE:

- The “**TX**” indicator will light up in the display area, confirming that transmission is in progress.
- When transmitting in the AM mode, set a maximum (carrier) power output of 25 Watts via the Menu item “176 TX GNRL AM CARRIER”. See Box on the next page for details of the setting.

5. Adjust the microphone amplifier gain to match the microphone and your voice level: Press the **[▲/▼/◀/▶]** button to select the “**METER**”, then press the **[SELECT]** button to select “**ALC**”.

Close the **PTT** switch, and speak into the microphone in a normal voice level.

*In the SSB mode*, adjust the **[MIC/SPEED]** knob so that the ALC meter stays within the ALC zone of the meter (up to half scale deflection) on voice peaks.

*In the AM mode*, adjust the **[MIC/SPEED]** knob so that the ALC meter does not deflect at voice peaks.

#### ADVICE:

The frequency display will show the relative microphone gain level for 3 seconds whenever the **[MIC/SPEED]** knob is turned.

6. Release the **PTT** switch at the end of your transmission. The transceiver will return to the receive mode.

# SSB/AM MODE TRANSMISSION

## ADVICE:

- ❑ ALC meter deflection may be caused by excessive drive power, but also by reflected power detected in the antenna system. If the impedance presented to the transceiver is different from 50 Ohms, ALC meter action may be observed that is not related to the proper setting of the [MIC/SPEED] knob. Therefore, we recommend that you make the [MIC/SPEED] knob adjustments into a dummy load or antenna system presenting impedance very close to 50 Ohms.
- ❑ *In the SSB mode*, you may set the desired power output via the Menu item “175 TX GNRL TX MAX POWER”. The adjustment range is between 5 Watts and 100 Watts. You should always use the minimum power necessary to maintain reliable communications.
- ❑ When performing “on air” tests (such as the setup of microphone gain), be sure to check the frequency be-

fore transmitting, to avoid interference to others who may already be using the frequency.

- ❑ Four techniques for exercising Transmit/Receive control are provided on the **FT DX 3000**. You may choose the technique(s) that best suit your operating needs:
  - Pressing the microphone **PTT** switch will engage the transmitter.
  - The rear panel **PTT** jack may be connected to a foot switch or other manual switching device in order to engage the transmitter.
  - Pressing the front panel [MOX] button will lock the transmitter on. Press the [MOX] button again to return to receive.
  - The VOX (Voice Operated Xmit) circuit will engage the transmitter automatically when you speak into the microphone. For details of VOX operation.

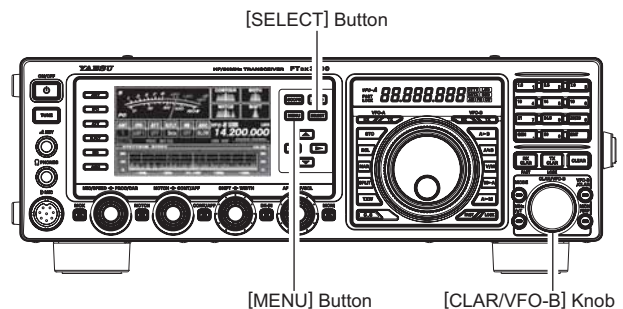
### Adjusting the SSB TX Power Output

1. Press and hold in the [MENU] button for one second to enter the Menu mode.
2. Rotate the [CLAR/VFO-B] knob or press the ▲/▼ button to select Menu item “175 TX GNRL TX MAX POWER”.
3. Press the [SELECT] button, then rotate the [CLAR/VFO-B] knob or press the ▲/▼ button to adjust the desired power output on the Multi-Display Window.

#### ADVICE:

The value (5 -100) displayed in the Multi-Display window is a relative percentage of the maximum TX power available in the selected mode. It is not the true TX output level.

4. Press the [SELECT] button, then press the [MENU] button to save the new setting and exit to normal operation.

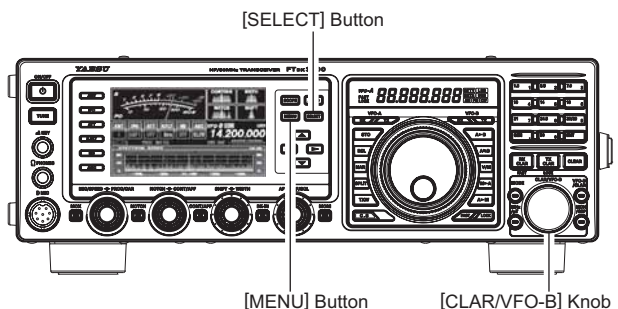


#### ADVICE:

The TX Power Output setting cannot be stored in any of the memory channels.

### Adjusting the AM Carrier

1. Press and hold in the [MENU] button for one second to enter the Menu mode.
2. Rotate the [CLAR/VFO-B] knob or press the ▲/▼ button to select Menu item “176 TX GNRL AM CARRIER”.
3. Close the **PTT** switch. Do not speak into the microphone. Rotate the [CLAR/VFO-B] knob to adjust the PO meter reading is “25 W”.
4. Press the [SELECT] button, then press the [MENU] button to save the new setting and exit to normal operation.



#### ADVICE:

The AM TX Power Output setting cannot be stored in any of the memory channels.