

Seven Tips for Better Repeater Operating

Most of this article is from the ARRL On-The-Air May/June magazine for use on our repeaters.

Repeaters do one thing: repeat signals. Thanks to repeaters, VHF and UHF signals that might only travel a few miles on their own can span tens and even hundreds of miles. These seven +1 tips will give you insight into how and why repeaters work the way they do, and how you can be a courteous repeater user.

1. Recognize the Squelch Tail

When a repeater relays a signal, the repeater continues to transmit for a couple of seconds after the signal disappears. This provides a moment of silence so that another station can break into the conversation before someone else begins talking. If you're using your transceiver's squelch to block noise when you aren't receiving signals, the repeater's transmission will keep your squelch open so you can hear other signals that might appear. This is known as a squelch tail. When the repeater finally stops transmitting, your radio's squelch will close with a soft "pop" or "pfft" sound.

2. Obey the Courtesy Beep

Many repeaters send a chirp or beep as part of their squelch tails. This is a part of a system to enforce courtesy, which is why it is called a courtesy beep. (Our repeaters also have a unique tone or series of tones to help operators with vision problems identify which repeater they are listening to).

Some inconsiderate repeater operators will immediately begin talking at the moment the other station stops transmitting (this is called riding the tail). This doesn't leave enough time for anyone else to be heard, which can be a serious issue if a station needs to interrupt with an emergency.

Waiting to transmit until the courtesy beep sounds allows time for another station to be heard. Hams who don't wait for the courtesy beep before they begin talking are being rude, and repeaters have some built-in discipline for them – the time-out timer.

3. Beware the Time-Out Timer

Most repeaters impose a limit on how long they will relay a given signal. A 3-minute limit is common.

When you begin transmitting through a repeater, a timer starts running. When you stop transmitting, the timer resets to zero. However, if you keep talking beyond the limit, the

repeater shuts down – you’ve “timed out” the repeater. When you finally stop talking, the repeater will resume operation.

Timing out a repeater can be embarrassing. When the repeater resumes operation, you’ll often hear that talkative ham sheepishly say. “Oops! I must have timed out the machine.”

The courtesy beep also plays a role. If you start transmitting before hearing the courtesy beep, the time-out timer won’t reset to zero. Instead, it keeps running, counting down to the inevitable 3-minute shutdown.

4. Break In the Right Way

If you need to break into a conversation, take advantage of the silence in the squelch tail, but be courteous. When one station stops transmitting, and before the courtesy beep sounds, press your push-to-talk button and say your call sign. That’s all you need to do.

The other operators should stop talking, acknowledge you, and allow you to continue. You will usually get a response like “your (call sign) acknowledged. Go ahead. Never use the word “break” or “breaker” unless you have an emergency.

5. Dealing with Doubling

Things sometimes go wrong, despite the best intentions. When it comes to repeaters, two stations will occasionally transmit at the same time. This is called “Doubling”. A repeater responds to doubling by trying to relay both signals simultaneously!

On FM repeaters, the two signals will combine to create an incoherent screeching, growling noise that will continue until one station or the other stops talking. That’s when you’ll probably hear someone else say, “You guys were doubling”, meaning nobody understood a word that was said! Occasionally the stronger signal will dominate and will block out the weaker signal.

6. Kerchunk If you Must, Butt...

It’s understandable that you’d want to test a repeater before you attempt to make a contact, to see if the repeater is hearing you. A short transmission will cause a repeater to respond – assuming it hears you – and you’ll hear its squelch tail.

Because of the sound of the squelch tail, this practice is called “kerchunking”. If you say your call sign when you conduct your test, kerchunking is legal. But if you don’t identify yourself, kerchunking is illegal.

7. Stand By for the ID

Repeaters identify themselves on a regular basis, and often do so at the beginning of every hour. Many repeaters send their call signs in Morse Code, while others use voice recordings.

If you're using an FM repeater that sends a Morse Code or voice ID, it is courteous to stop talking until the identification is finished. Besides, it may be difficult for others to understand you if the repeater is "talking" at the same time!

One last tip (+1)

When you begin talking, press your push-to-talk button and wait a fraction of a second before you start talking. Most transmitters and transceivers have a short delay when you activate the push-to-talk switch and the transmitter begins to transmit. The repeater also has a short delay before it begins to retransmit. These delays add together and often results in the first fraction of a second of audio being cut off resulting in a call sign or someone's name being truncated causing confusion and misunderstanding especially in a role call situation such as a net. Just remember, push the PTT, pause for a fraction of a second and then start talking.