

# CB Radios<sup>1</sup> and Touring

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It's a car club; why do we need CB radios? Touring is probably the most fun thing we do as a club and keeping it fun means keeping it safe. One of the ways we keep it safe is being able to communicate. CB has been found to be a very effective means of communications from the time Larry Whitney, the only club member still with us who attended the first Trillium Club meeting, suggested using radios after years of his touring with motorcycles connected by CB radios.

Trillium's most common use is for CB radios is by tour group leaders to inform participants about routing and advising of road hazards. Almost all tours are enhanced by the use of a radio. Tour sweeps affirm leaders that the group is still together or let leaders know if cars are stuck at traffic lights. If a tour has to be redirected the CB radio is a tool one doesn't want to be without. If a tour member has an emergency and needs to stop, they can indicate that there is a problem by via CB radio.

Most drivers have a passenger who acts as navigator and radio operator. A permit to operate GRS or "CB" radio has not been required in Canada for years. Anybody can do it. However, it is the lone driver who is at a disadvantage; he/she cannot use the radio transceiver unless it features "hands free" operation. Even with hands free operation there's the question of turning on the transmitter which in most cases is with a PTT (push to talk) switch which requires holding down a button while talking. A push on push off switch would work, but if one didn't push off after pushing on, anything said after completing a transmission (and forgetting to turn off the transmitter) would be heard anywhere. Just stop and think about that!

The CB radio systems are relatively simple but there are a number of connections that must be made. The "box" is the radio to which you plug in 12 Vdc (often via a cigarette lighter plug), an antenna, a microphone and maybe an external speaker. CB isn't like the "full duplex" telephone where you can talk and listen simultaneously. You can only receive or transmit; you can't do both at the same time. The technology is "mature" and although newer radios are smaller, less expensive, and more reliable, some aspects of CB radio haven't changed and it is these that challenge those who want to install and use the technology in a Miata/MX-5. Before getting into installation, a few words about CB radio operation.

The simplest radio has an off/on volume control, a squelch control, and a channel selector. Most have a S meter and channel display. The volume control is used to adjust the audio level received. The squelch control is used to eliminate natural radio background noise, or distant stations with signals weaker than your tour participants. If your squelch is set too high you may not hear other tour members. If it is set too low constant noise interfere with your enjoyment of the tour. Adjust your squelch appropriately and you will derive maximum pleasure, not be assaulted by noise, and you will know what's going on.

Proper use of the microphone is another consideration. Speak too loudly and you will "overmodulate" producing distortion and your transmission will be unintelligible. Place or hold<sup>2</sup> the microphone about two to four inches from your mouth so your voices "crosses" the front, and speak clearly in a normal voice. If you expect a response to your transmission say "over" when you finish. When touring, the group leader and sweep should be the only people transmitting on a regular basis.

Everyone else should be listening unless they need to communicate something significant, i.e., the need to stop for a bio break, require a message to be repeated, or to pass on a message should there be difficulties communicating between the lead and the sweep.

The most challenging issues are the technical requirements. Mounting the radio, providing reliable power, and mounting the antenna are complicated by the lack of space especially in the ND.

Power can be provided by a cigarette accessory socket plug which provides adequate power. We know of no CB equipment that can be powered by a USB charger outlet. Permanently wiring the radio to the ACC ignition line enables the radio to be used any time except when the ignition line is turned off. If you have an older car it's easier to install wiring. Newer cars owners should consider warranty issues before attempting to change wiring. In any case the CB should not be turned on without a properly tuned antenna attached.

Mounting the radio so that it is stable is important. You don't want that piece of gear bouncing around. There are examples of how this can be accomplished in the Trillium web-site [Library File](#) document entitled "Hands-Free CB Radio Committee Report"

The antenna can be attached with a magnet mount which can be used on all models. There are brackets made to fit hardtop attachment points on the rear deck of NA and NB models. There is a similar attachment point on NC soft tops which could accept a similar bracket . There are other antenna installation options, such as a trunk lip mount, and God forbid, drill hole mounts.

Now that you have the radio mounted with power and the antenna in place there's another step. The antenna requires tuning. Radios operate at a specific range of radio frequencies which relates to a specific wave length. In the case of CB it's the eleven meter band. A quarter wave length antenna would be ideal but at over 9 feet in length such an antenna can cause some problems. Shorter antennas are available that use a combination of antenna length and a coil the achieve the correct electrical length. The car type antenna by itself is only part of the antenna system. The car itself acts as the "ground plane" part of the antenna and therefore it is important that you do not insulate the antenna from the car with cloth under a mount. Since cars are all different, the antenna which is designed to resonate, requires tuning (i.e., appear to the transmitter as the correct length)..

Tuning not only optimizes the efficiency of the radio's transmission and reception, it protects the radio from damage caused by reflected radiation. An antenna can be adjusted to the correct length by using a SWR (Standing Wave Ratio) Bridge or even more effectively with an Antenna Analyzer, both tools used by Amateur Radio hobbyists. The antenna tuning process may requiring cutting the whip in some cases.

There are a number of Amateurs in the club who have such equipment and can adjust your antenna in just a few minutes. Once the tuning is completed the antenna can be removed for storage when not in use but should be replaced at exactly the same place when your CB is required for a tour.

#### **Notes:**

<sup>1</sup> CB or "Citizen's Band" radio, or in Canada GRS (General Radio Service) is regulated by Industry Canada. Here is a link to the regulations provided in an information circular in PDF format:

[https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/ric18-issue4-oct08.pdf/\\$FILE/ric18-issue4-oct08.pdf](https://www.ic.gc.ca/eic/site/smt-gst.nsf/vwapj/ric18-issue4-oct08.pdf/$FILE/ric18-issue4-oct08.pdf)

This specifies which channels can be used for specific purposes and provides other useful operators' information. It doesn't go into propagation characteristics of the frequencies (eleven meter band) which result in interference that make communications somewhat difficult from time to time.

<sup>2</sup> Drivers' operation of GRS (CB) radios is under the purview of the Ministry of Transportation in Ontario. The use of a hand held device i.e., a microphone or transceiver is prohibited under Ontario's Distracted Driving Law. However there is a permanent exemption for licensed Amateurs of which there are currently six in the Club. This new regulation replaces the temporary provision that expired in January 2021. See <https://www.ontario.ca/laws/regulation/090366> for complete details.