

# Radios and Antennas List

## Radios:

- Yaesu FT-891 HF radio, 1-50MHz, with auto-tuner
- Cobra 18 WX ST II CB radio
- Uniden BCD536HP scanner
- 3x Motorola XTL5000 radios: VHF, UHF and high band 900MHz

## Antennas:

- Hustler HQ-27 center loaded CB whip, feeds CB radio and scanner via a Comet CF-360A duplexer
- Mobile Mark A55136TBS-DKM tri-band antenna (VHF/UHF/900MHz), feeds XTL5000's via a Comet CFX-4310C triplexer
- Custom made dual-whip 10/6M HF whip, feeds only the HF radio

## Antenna details:

### *Hustler HQ-27 center loaded CB Antenna:*

- Antenna is mounted to a TRAM NMO-to-3/8 stud adapter. The cable is run to the front dashboard, where the CB, scanner, and duplexer are. The duplexer splits the RF at ~40MHz. The low band RF goes to the CB, and the high frequency RF goes to the scanner. This setup disables the weather RX function in the CB radio (WX stations are at ~160MHz, sent to scanner instead.)
- This antenna was chosen because of the center load. The car's body panel is too weak to support a full 11M CB whip, and a base loaded antenna filters VHF/UHF RF, harming the RX sensitivity of the scanner. With a center loaded whip, the bottom half of the whip can act as a wideband receiver antenna for the scanner.

### *Mobile Mark A55136TBS-DKM tri-band antenna:*

- Pre-tuned tri-band antenna with some gain on all bands, a good all-rounder to maximize performance of the Motorola radios.
- Triplexer allows all 3 radios to be attached to the same antenna with no interference.

## Custom HF whip

- Custom assembly to maximize performance on the common mobile HF bands. BreedLove brass mount (nickle electroplated by me for corrosion resistance) with steel plate backing under the vehicle body panel for added support. Threaded into mount is a clevis "rod end bolt" with a custom welded end stop. Attached to that is a clevis rod end, into which is threaded an 11M CB whip. The whip is also bolted through a 6" piece of flat bar aluminum stock at one end, and at the other end of the bar is a 6M whip. At the top of the 6M whip is another custom part: two hinged standoffs secured to both whips, connected by a length of nylon threaded rod. This acts as a spacer to keep the whips from hitting each other while driving the vehicle.
- The antenna assembly is hinged because the antenna puts the vehicles height at just about 11 feet, too tall for drive-throughs and some low hanging bridges. Attached to the front of the antenna assembly is a linear actuator with 2" of travel, and built-in limit switches. The other end of the actuator is attached to the vehicle body panel. Power for the actuator is run to a dual-position momentary toggle switch on the dashbaord, which when activated, either extends or retracts the actuator, raising or lowering the antenna. Fully retracted, the antenna leans forward, height is about 8 feet. Extended to full, the antenna is fully vertical.
- Aside from the whips and brass BreedLove mount, all the parts are steel, so everything has to be weatherized with paint or grease (WIP, some parts still rust a bit.)
- The dual-whip assembly allows the antenna to be naturally resonant on 10M and 6M, and with the auto-tuner, can tune down to 20M no problem, and 40M with limited sucess (which covers most mobile-friendly HF traffic, good enough for me!)

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