



Tech Articles

Upgrading your Fiero Sound System

by Byron R. Daugherty

The problem driving around with the sunroof off and the windows open is that you can't hear the radio at highway speeds. Oh sure, you can hear some of the beat, but you would be hard pressed to tell exactly what song is playing. It's not hard, nor overly expensive to upgrade the sound system in your Fiero. It just depends on how much money and time you want to put into the project.

Phase I - Speaker replacement

- **Fiero Specifications:** If you have headrest speakers, it's hard to find aftermarket replacements
- **Dash** - Any 4"x10" fit.
- **Rear Side Panels** - Any 4"x6", 1.75" or shallower with tweeter 0.25" or less in height.
- **Training in "Speaker-eze":**
- **Tweeter** - A speaker that only reproduces high sounds, like the crash of a symbol or breaking glass.
- **Mid-Range** - A speaker that only reproduces middle of the road sounds, like voices, singing, folk guitars.
- **Woofers** - This speaker only reproduces low sounds, like drums, bass guitars.
- **Sub-Woofers** - A specialty speaker that handles frequencies below what a woofer would reproduce, it's mostly activated by very low drums and computerized or synthesized bass tones. These are the units that shake your rear-view mirror when a neighbor gets inconsiderate.
- **Sensitivity** - A measurement of how many decibels (dB) a speaker puts out from 1 watt of power. This gives you a clue as to how efficient the speaker is. The higher the number, the more efficient the speaker, and therefore the better.
- **Frequency Response** - A measurement of what frequencies the speaker can reproduce. Expressed in hertz (Hz). A wider range is better, the lower number represents the bass and the higher the treble.
- **Watts** - How much power you can apply to those speakers and not have them rip to shreds.
- **RMS** - This is the watts reading you want. It represents the amount of watts a speaker can handle over a period of time, and still function normally.
- **Peak Watts** - Be careful! This is usually the watt rating people give for speakers, but this only represents a temporary peak that the speaker can handle, and it is far above the RMS, sometimes more than double!

By far the largest gain per dollar will be simply replacing those awful factory speakers. If you've got more than 30,000 miles on your Fiero, and use the stereo a lot, it's a good chance those paper cone speakers have lost over 60% of their bass response. Not to mention the fact that even new these speakers sound muddy.

Clarity and frequency response, as well as better bass response, will result with new speakers. Simply putting 3-way (Woofers, Mid-Range and Tweeter) Pioneer 4x10's in front and Advent 2-way (Woofers and Tweeter) 4x6's in back, I could now hear the detail and the vocals of the music on the radio, no other change was made. The difference is like night and day!

Here are some examples of speakers:

Front:

- **Pioneer TS-A4105 3-way, 2-35W RMS, \$120**
- **Pioneer TS-4103 2-way, 2-35W RMS, \$100**
- **Kenwood KFC-411G 2-way, 2-35W RMS, \$100**

Rear:

- **Jensen JFX-1246, \$20**
- **Pioneer TS-4603, \$70**
- **Pioneer TS-4602, \$60**
- **Pioneer TS-A4605, \$100**
- **Pioneer TS-P461, \$130**
- **Infinity RS-4602, \$80**
- **Infinity 46P, \$80, High power needed!**
- **Infinity Kappa 462P, \$150, High power needed!**
- **Advent 4.6i \$80**
- **Polk EX462, \$80**
- **Kenwood KFC-463V, \$70**
- **Kenwood KFC-HQ460, \$130, High power needed!**
- **Sony XS-PL46, \$100, High power needed!**

Phase II: Bass Enhancement

- **Fiero Specifications:**
- **Sub-Box Behind Seat** - 18" Width, 24" Height, 4" Depth (seat fully back)
- **Training in "Subwoofer-eze":**
- **Uni-Directional Sound** - Subwoofers reproduce frequencies so low, so small, that there is barely any time for one ear to hear it before the other. Thus, the location of the subwoofer will not be picked up by the brain. You can mount it anywhere in the interior, and it will sound like it's everywhere.
- **Sealed Boxes** - This is a subwoofer that is in a box that does not have any other openings. This box requires much more power for volume, but the bass is tight, more accurate. Best used for jazz, light rock, light country or classical.
- **Ported Boxes** - Ported boxes have a vent, the port. This allows more output than a sealed box because the subwoofer is moving air from both sides of the speaker. This has a looser, more forceful sound, but it's best trait is more bass from less space and less power. The factory subwoofer is a version of a ported box. It actually has a tube that is about 1.5 ft long, that helps the bass resonate louder under the dash. This is a "tuned port". A ported box is best for rock and other hard-edged music
- **Bandpass Boxes** - This box is totally enclosed except for a port. The subwoofer is inside a 2-chamber box and aims toward the port. Although the sound is narrow range, it's very efficient. Bandpass boxes are very loud and boomy. Rap and hard rock lovers will enjoy these.

- **Free-Air Subwoofers** - These are for sedans that have a back deck. The subwoofer mounts on the deck and uses the trunk for a box. These types need more power, as do the sealed boxes

Now you can hear more of your music than ever. But you're still missing out on the full spectrum. A subwoofer can drastically improve the bass of your system.

There are two ways to get a subwoofer in your Fiero: find a Fiero equipped with a factory subwoofer, or install an aftermarket unit.

I've seen some interesting installations. One was a SAS Bazooka Tube (a subwoofer in a long, round case) velcroed to the passenger side of the center console. Not very subtle. Another is in member Tim Hill's car. He built a custom enclosure with matching carpeting that takes up the left front of the passenger foot compartment. More subtle, but can be a problem with 9 inch stilettos.



Fortunately, in response to the current rash of small pickups, Pioneer has responded with a subwoofer box (the X-30) that can fit behind your seat. This box requires a separate amplifier that you can also mount back there.

Phase III: Amplification

- **Training in "Amplifier-eze"**
- **Regulated Power Supply (MOSFET)** - Your battery is not a very reliable source for high performance stereo equipment due to the demand placed on it by other vehicle electrical systems. Some amps have a regulated power supply that makes sure the voltage is stable. MOSFET are high performance transistors that provide higher efficiency and quicker response to peaks.
- **Discrete Output** - The circuits use separate transistors to provide louder and cleaner current. This is a must for subwoofers.
- **Bridged** - This is the combining of both the right and left channel of an amp's output to a single speaker. This is perfect for a mono subwoofer.
- **2-Ohm Stable** - Ohm is a measure of the resistance a speaker will offer to current. Usually home speakers are 8 Ohm and car speakers are 4 Ohm. If you put two 4 Ohm speakers parallel on one line, you have lowered the resistance to 2 Ohm. A 2-Ohm stable amp will not be stressed under this condition.
- **Crossover** - Some amps feature crossovers. These items prevent or reroute certain frequencies. For example, you wouldn't want subwoofer frequencies to be sent to your dash speakers, they cannot handle them at high power, so you would use a crossover to reroute the bass frequencies to the subwoofer.

There is very serious debate on whether amplification is the next step, or replacing the radio itself. There is good thought behind the theory that if you buy a new head unit (the radio,

cassette or CD) that you not only get improved sound, but some high power units eliminate the need for a separate amplifier for 2 or 4 speakers. Let's assume you want maximum theft proof, in other words, you want thieves to see Delco and not break into your car knowing that you might have other expensive stereo equipment.

An amplifier does more than just make the sound louder. Even if you're happy with the volume levels you can obtain now, an amplifier would increase your listening pleasure. With the amplifier's ability to put out more watts comfortably, the dynamic passages (when the music goes really soft then spikes or crescendos) in a classical song, for example, are much clearer.

Increased ability to produce wattage also makes for much better bass and treble response and increases clarity. Speakers are most often blown by distortion, and not by high wattage.

Phase IV: Replacing the Receiver

- **Fiero Specifications:**

Any E Euro-Din (mounts from the front), U (shaft style that fits 3 hole opening), or S (similar to U but with a taller nosepiece or offset shafts) up to 6" in depth will fit. If rear support is removed, up to 7.50" depth.

- **Training in "Receiver-eze"**

- **Detachable face** - There are 2 types, partially detachable where only the main controls go with you, and fully detachable where the whole face removes from the unit. You can take the face with you, the unit is inoperable without it and therefore less attractive to thieves.
 - **Switchable illumination** - Some receivers allow you to change the colors of the display background or the information itself from green to amber. This is so that you could have the information green to match the dash of your Chevy Vega and then switch it to amber to match the new Fiero you are putting it into.
 - **Preamp Outputs** - This allows you to send a cleaner, more balanced signal through RCA-type patch cords to your amplifier.
 - **Loudness** - Bass boost at low volume for a fuller sound.
 - **Signal-to-Noise Ratio** - This is how well a cassette or CD player silences the background noise. Higher dB rating is best.
 - **Full Logic Controls** - Pushbuttons instead of mechanical controls.
 - **Automatic Music Search** - Ability of a cassette deck to go automatically to the start of a song or to the beginning of the next song.
 - **Radio Recall** - Ability to have the radio play while the cassette deck is rewinding or fastforwarding a tape.
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- You've got your speakers, subwoofer and amplifier going, but you're running against the limitations of Delco's low tech, by today's standards, radios. It's time to think about what you really want. Just an AM/FM cassette? CD? Cassette with CD-Changers? The choices are endless and can be tailored to your specific tastes.

Pioneer, again, happens to make a few radios especially suited to GM and Chrysler's large, but not deep radios.