Active Noise Cancellation (ANC)

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-What is it?

Active Noise Cancellation is best described as the attenuation or reduction of a certain frequency by emitting the same frequency from a loudspeaker, but with the phase inverted. The inverted phase tone essentially cancels out the unwanted noises. This technology has been used since the 1950's in helicopters and commercial aircrafts to reduce cabin noise. Using software and digital signal processors has allowed the price of these systems to come down in recent years and Active Noise Cancellation is now found in many new vehicles. The system works using strategically placed microphones throughout the interior cabin of a vehicle, these will be transmitting information to the on board module, which will in turn put out a signal to the speakers of the vehicle to counter the noise.

There are also certain manufacturers that are doing the exact opposite to certain noises by using this technology. Since newer vehicles have become so quiet, there are models that are accentuating the vehicle's engine noises through the sound system to make the driving experience more enjoyable.

-Why does it matter?

Without being brash, most of these very sophisticated audio systems and processors leave a lot to be desired in terms of sound quality and audio reproduction in general. Most vehicles that employ these "high end" and "premium" sound systems lack the low end bass response that gives music true feeling, others have a very flat midrange and high frequency response that takes away the soul from the our favorite music. Being the everwanting consumers, we start to look for ways to bring back what's missing from our "premium" sound, but with so much processing being done to the audio signal in the vehicle the aftermarket world is now faced with a few hurdles to get around.

Adding a subwoofer to a vehicle, which used to be a very easy process, now results in unwanted reverberations from the subwoofer in vehicles with Active Noise Cancellation because the processor in the vehicle is trying to "cancel out" unwanted noises the new subwoofer reproduces the out of phase frequencies.

Upgrading a full set of speakers and adding an aftermarket amplifier would have been a straightforward job for a professional installer, but because of ANC systems the installation can be more involved because otherwise there is a horrid amount of distortion any time the customer accelerates their vehicle.

-How do we deal with it?

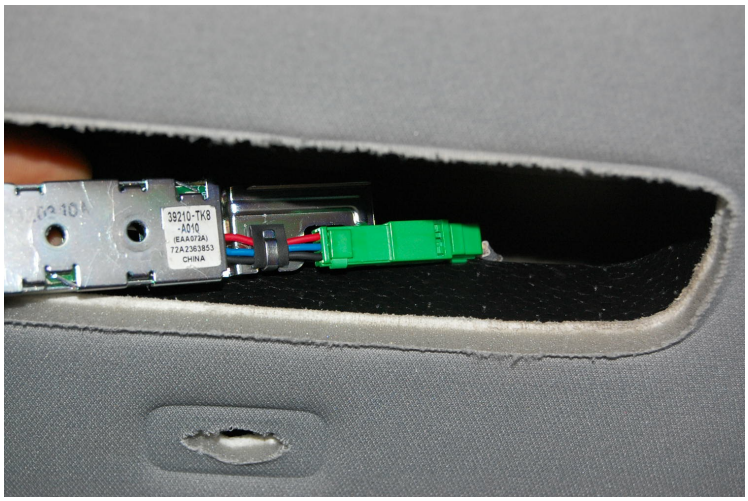
The simplest answer is to deactivate the Active Noise Cancellation system, but sometimes it's much easier said than done. By disabling the ANC system we will be making the vehicle's cabin more susceptible to ambient sound that wasn't there with the ANC in place, in order to overcome this we use true noise damping methods like adding sound deadening materials to the inside of vehicle to keep out the unwanted noise. This last step will result in much better response from the upgraded audio system, and helps tie together all the steps to achieving great sound in the vehicle. Below are three different approaches to disabling the ANC system in a vehicle.

Option 1: In some cases, the manufacturer can disable the functions by simply connecting their [very expensive] computer systems to a vehicle. While this is the most desirable option, there are many automotive dealers who either do not know how to do this or simply refuse to make the change.

Option 2: Physically disconnecting the microphones in a vehicle has become a popular way of dealing with this issue, not necessarily because it's the easiest but it's the one that works *almost* every time. The tricky part is making sure all the microphones are disconnected, the most popular locations include the headliner (front and rear of vehicle) and inside of the door panels (driver and passenger front

doors).This works great for many of today's ANC systems, but vehicles that accentuate engine noises also use a signal generated by the motor to feed the processor in the noise cancellation system and this method would not address that issue.

2012 Honda Pilot - rear microphone removal



*NOTE: It is important to verify the only microphones being disconnected affect the ANC system and not the Bluetooth/Handsfree system.

Option 3: Disconnecting the signal wires at the factory radio, amplifier, or ANC module is a guaranteed way to stop the system from interfering with your upgraded audio system. Using different available programs, professionals can look up the wiring schematics of a vehicle to find where the microphone or engine RPM signal wires are going connected in relation to the ANC system. By interrupting these wires, we eliminate the possibility of the system damaging our audio signal.

2012 Honda Crosstour - ANC harness removal