

**DESCRIPTION AND OPERATION (Continued)****Interfering Noise**

The vehicle ignition system is a possible source of radio interference. This high-voltage switching system produces a radio frequency electromagnetic field that radiates at AM, FM and CB frequencies. Although components have been designed into the vehicle to minimize this concern, the noise is more noticeable if the radio is tuned slightly off channel when listening to FM programs. Vehicle electrical accessories and owner add-on accessories may also contribute to radio interference. Furthermore, there are many noise sources which are external to the vehicle. These include power lines, communication systems, ignition systems of other vehicles, neon signs, etc.

Noise or static may result from many causes. Two of the most common sources of radio noise are listed below:

**Ignition Noise**

The most effective method of evaluating ignition noise is to compare the radio performance with the engine on, versus engine off. If ignition noise is present with engine running:

- Check to see that the spark plug wires are the suppressor type and that the spark plugs are the correct resistor type.
- If so equipped, check to see that the carbon center insert in distributor cap is secure.
- If so equipped, check distributor cap and rotor electrodes for silicone grease as this may cause ignition noise on FM. This noise is characterized by a "motor boat" type sound on weak to moderate strength stations. The noise can only be eliminated by replacing the distributor cap and rotor with a cap and rotor that does not have grease.

NOTE: Silicone grease must not be removed from vehicles equipped with powertrain control module (12A650) PCM.

**Missing or Malfunctioning Noise Suppression Components**

- Noise suppression components may be malfunctioning or missing.
- Check bond strap grounding effectiveness by wedging a large file between metal parts to ensure proper ground, such as between the tail pipe and body, or between the fender and frame, while radio is playing and engine is running. Listen for a decrease in the objectionable radio noise. If a reduction in radio noise is noted, first try tightening body and exhaust system clamps and brackets. Then, if necessary, install a new bond strap between the two metal parts to ensure proper ground.

**FM Flutter**

Flutter can best be described as repeated pops and hissing bursts heard in the speaker, during an otherwise good broadcast. Usually this condition exists while traveling in the fringe area of the station. Flutter will become more severe beyond approximately 40 km (25 mile) of the station. The signal loss becomes greater away from the station, until finally noise takes over and reception becomes impossible. Flutter may also be noticed near the station because of the line-of-sight characteristics of FM radio waves. This condition can happen when a building or large structure is between the radio receiver and the station being received. Some of the FM signal bends around the building, but certain spots have almost no signal. Some of these signal losses are only a few inches wide and if the vehicle is parked in one of these dead spots, you will only hear noise from the speaker. After moving out of the shadow of the structure, the station will return to normal. Flutter will not occur on AM because the AM radio waves are much longer than FM waves.

**FM Multi-Path Cancellation**

Another effect caused by the line-of-sight characteristic is called cancellation. This condition exists when the radio waves are reflected from objects or structures. The noise produced by cancellation is similar to flutter, with the addition of distortion in the program. A more familiar description of cancellation is its similarity to the multiple ghosts and picture jumping that occurs on television when a low flying plane passes. The same condition exists in the vehicle, except that the vehicle is moving and the reflecting structure is stationary. The reflected signal cancels the normal signal, causing the antenna to pick up noise and distortion. Cancellation effects are most prominent in metropolitan areas, but can also become quite severe in hilly terrain and depressed roadways.

**FM Strong Signal Capture and AM Overloading**

FM capture is an unusual condition that occurs when traveling in the vicinity of a broadcast tower. If listening to a weak FM station, when passing the broadcast tower, a stronger station may interfere without changing the tuning control. When passing the tower, the station may switch back and forth a few times before returning to the station originally tuned. When several broadcast towers are present (common in metropolitan areas) several stations may overload the receiver resulting in considerable station changing, mixing and distortion. Fortunately, this condition is localized and it will not harm the receiver. Some overloading may also be noticed on AM, but usually to a lesser degree.