

## Transponder Key Technology

What are these keys called??

- \* RFID Key (Radio Frequency Identification).
- \* PATS Key (Passive Anti-Theft System).
- \* Transponder Key (Transmit + Responder = Transponder).

What is a transponder?

A transponder is short for: transmitter + responder.

The word came into use around 1944. In basic terms a transponder is a miniaturized electronic chip that has what is called nonvolatile memory. Nonvolatile memory is the type of memory that does not need constant energy for retention. Along with that electronic chip is a set of windings; very fine wire coiled around a tube. These windings look similar to the windings you would find in an electric motor.

There are two basic types of transponders. The first are the Electric Coupled Transponder systems. Electric coupled transponder systems are not limited to small areas for transmission but can transmit messages or signals for different ranges of distance including several inches to miles, as used in Satellites and Airplanes. These systems require large amounts of constant electricity to operate.

The second type is what automobile manufacturers are using and they are called Magnetic Coupled Transponder systems. Magnetic Coupled Transponder systems are passive in nature. This means they do not require constant electricity and thus do not need a power source of their own. They operate in the frequency range area of 125KHz. Since Magnetic Coupled Transponders do not have their own power source they are very limited to range of communication and generally operate in the range of 1cm to 15cm. Since this is a radio frequency it can penetrate materials that would make the transponder not directly visible, such as the plastic or rubber in the bow of a key.

The process of key identification is similar in most automotive transponder systems. Once a key is inserted into the ignition lock and turned to one of the 'on' or 'run' positions, the induction coil that is mounted around the ignition lock sends out an electromagnet field of energy. The windings in the transponder chip absorb that energy and power the electronic chip to emit a signal. The signal is usually an alphanumeric set of digits which is considered the Identification Code. The induction coil reads the signal and sends it to some type of computer device to recognize the signal. If the signal is recognized as being already in the computer's memory the signal is accepted and other electronic components in the vehicle are set into motion to allow the starting of the vehicle or the continuation of the engine running.

How can I make it work??!!

- \* Buy the key/keys at... [www.carolinalockandkey.com/mysporttrac](http://www.carolinalockandkey.com/mysporttrac)
- \* You will receive the key within 3-5 of days.
- \* Get the key/keys cut; from the above link, at the dealer, locksmith shop or hardware store.
- \* The key needs to be active or programmed to your car before you can use it. You can program the key/keys by yourself if you have two working (programmed) keys for your car. No tools needed, it's easy, and takes 30 seconds. See programming instructions at [www.carolinalockandkey.com/mysporttrac](http://www.carolinalockandkey.com/mysporttrac).

If you don't have two working keys, you can have the second key programmed at the dealer or professional locksmith. Call your local dealer or locksmith and ask for programming, some dealers will do it free of charge.

Why do I need a transponder key?

- A transponder is a benign electronic device implanted in the head of a key which remains dormant until awakened by energy derived from its close proximity to an induction coil/antenna at the threshold of a vehicle's ignition lock. When a transponder becomes energized by the ignition lock being turned ON, it transmits a unique Alfa/numeric identity code back to the antenna coil and the on-board computer - for comparison with values stored in the computer's memory. If the RF transmission from the transponder is an exact match then the engine can be started.

