Understanding Catalytic Converters – July 2009

UNDERSTANDING CATALYTIC CONVERTERS

By BACLV Technical Editor, Ron Couturier

General Motors is credited with developing the first production model catalytic converter in 1975. Catalytic converters, coupled with the use of unleaded gas, has become the leading means of pollution control on automobile engines. Early converters did the job but were heavy and robbed the typical engine of power. The early converters were a two stage set-up sometimes using oxygen pumped into the converter using an air valve or an engine driven air pump which further reduced power.

A modern car's catalytic converter is a three stage affair to reduce emissions.

FIRST STAGE: This is called the reduction catalyst stage which reduces the nitrogen oxides which is a contributor to smog and acid rain.

SECOND STAGE: This is the oxidation catalyst stage, which reduces the unburned hydrocarbons and carbon monoxide by burning them over a platinum and palladium catalyst

THIRD STAGE: This stage controls the system, which monitors the exhaust stream, and uses this information to control the fuel injection system. This is accomplished using an oxygen sensor. The sensor tells the engine computer how much oxygen is in the exhaust. The computer can increase or decrease the amount of oxygen in the exhaust.

The two main structures used in a catalytic converter are a honeycomb and ceramic beads. Precious metals are used to manufacture the interiors of catalytic converters. That's why catalytic converters aren't cheap. One interesting fact about all this is that a catalytic converter works best when the engine is hot. When you start your engine and the engine is cold, the catalytic converter does very little to reduce pollution. Happy Motoring.....Ron Couturier

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