SUMMER 2001

PRODUCT INFO

NEWS ABOUT CARQUEST ENGINE AND TEMPERATURE CONTROLS

TCD is Now QS9000 Certified

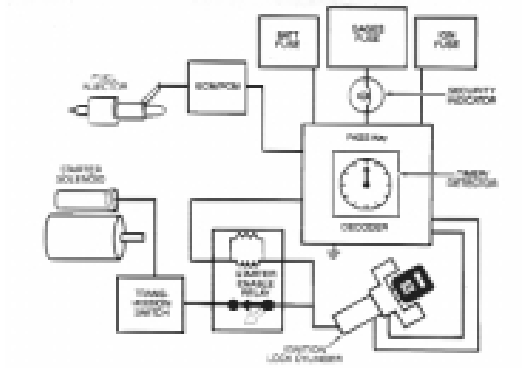

Certificate of Registration

Earlier in 2001, the entire Grapevine, TX operation of our Temperature Control Division earned QS9000 certification, a quality program sponsored primarily by GM, Ford, and Daimler-Chrysler for its key suppliers. QS 9000 contains all the requirements of ISO 9001, with the addition of tough automotive industry specific requirements. Tier 1 suppliers who want to do business with the US automobile manufacturers must be QS 9000 registered.

The Grapevine facility is the largest compressor-remanufacturing operation in the world, and we are intensely proud of the QS9000 achievement. We have been working toward certification for many years, and it will bring increased business from aftermarket distributors as well as new OES (Original Equipment Service) orders from auto manufacturers. To the best of our knowledge, no other compressor remanufacturing facility has QS9000 certification.

How GM VATS Keys Work

On a GM car with the VATS anti-theft system, the original ignition key has an embedded resistor pellet which has a calibrated resistance. The resistance is measured by electrical contacts in the lock cylinder, and a decoder module (usually mounted in the relay center located behind the passenger side of the instrument panel) compares this resistance with its own internal code. If the codes match, the decoder energizes the starter enable relay and enables the ECM to pulse the fuel injectors. If the codes don't match, the decoder shuts down, and won't accept any other inputs for 2 to 4 minutes.



CARQUEST's replacement ignition switches US-160L, US-161L, US-205L, US-212L, US-218L and US-222L do not contain embedded resistors, and will not work on a VATS-equipped car. The original ignition key contains the correct resistor, and this should be reused, but a locksmith needs to change the ignition lock tumblers to match the original ignition key. This is expensive, but it eliminates the need to install a matched set of ignition lock and door locks, or to have the ignition key different from the door key.

If the original ignition key is damaged, a new key with the same resistance value may be purchased from a GM dealer. This key then can be cut using the original key codes.

O2 Sensors: Titania vs. Zirconia

(By the way, "Titania vs. Zirconia" is the correct designation.) These two types of oxygen sensors are completely different, and one type of sensor can't be substituted for the other; the one called for in our catalog must be installed. Zirconia sensors actually generate electricity — a small voltage, typically less than 1 volt. The voltage generated by the sensor varies with the oxygen content in the exhaust — ranging from high voltage when the mixture is rich, to almost zero

voltage when the mixture is lean. Zirconia sensors fit the majority of applications; there are over 400 different part numbers in the CARQUEST product line. Zirconia sensors must be hot to work. Early sensors depended on exhaust heat to get them to operating temperature; later models are connected to battery voltage for heating.

On the other hand, Titania sensors, which are far less common, don't generate electricity. Instead, the sensor acts like a variable resistor that changes in value according to the oxygen content in the exhaust, ranging from low resistance (higher voltage) when the mixture is rich, to higher resistance (lower voltage) when it's lean. Titania sensors in the CARQUEST line are SG20 and SG22.

Titania sensors are used only on certain 1988 to 1990 Chryslers, Jeeps and Eagles. Zirconia sensors are installed in all other vehicles. As a piece of side information, CARQUEST E.C. is the only company in the world to manufacture Titania oxygen sensors for Chrysler vehicles; all the other "makers" buy from us.

Ignition switches for Ford cars

When the ignition switch goes bad on a 91-95 Ford Escort, EXP, or Mercury Tracer, it's no longer necessary to replace the complete switch assembly if the lock cylinder is OK, and the problem is only in the ignition switch itself. Replacing just the electrical portion (the "switch") saves both a complicated repair job and a significant amount of money, vs. the car dealer method of replacing the entire assembly (the switch plus the lock cylinder).

Your CARQUEST parts store now carries US-301 (the electrical portion of US-222, US-223, US-237 and US-238). For most other Ford products, the electrical portion of the switch and the ignition lock cylinder are already sold separately, so you can replace only the part that's faulty.

Do CARQUEST fuel injectors fit?

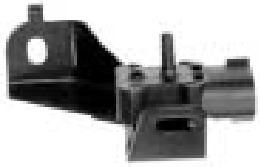
It's important to use the correct fuel injector for the appropriate application. OE uses many different style injectors in various vehicles. Some injectors have different nozzle ends or deflector styles, or even lengths; misapplication of a fuel injector may cause drivability concerns, lost power, and failure to meet state vehicle emission requirements. However, you might encounter almost-identical vehicles manufactured in the same OE factory only a few weeks apart, with two different types of injectors. The moral is, appearance or overall length is not the determining factor for proper fit.

To find the correct replacement, match the number off the original injector to the listing in the CARQUEST catalog. The critical dimension is the O-ring to O-ring dimension. The O-rings do the sealing, not the metal body, and the fact that an injector is longer or shorter than OE doesn't mean it will leak, nor will it have the wrong spray pattern.

Our engineers test every one of our injectors against OE samples, to make sure that they exactly match the critical OE dimensions and spray pattern, and exactly replace the OE injector. If an application checks out but the CARQUEST replacement injector appears to be different, compare the O-ring to O-ring dimensions to be sure they match. This will ensure correct fit and function in every cataloged application.

One last note: Injectors should always be installed as per the manufacturer's recommended service manual procedure. When in doubt, the manual should be consulted for any special cases or pointers with regard to installation.

Fuel Pressure Sensors

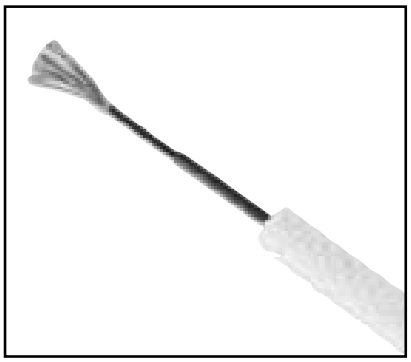


Today's OBD-II vehicles are much more sensitive with regard to illuminating the Maintenance Indicator Lamp (MIL) than their OBD-I predecessors. A simple loose gas cap will cause the lamp to illuminate!

While OBDII cars are relatively new and many are still under warranty, the first of them are just starting to come out of warranty. This means potential selling opportunities for you and your customers with regard to emission repairs and diagnosis. Bolstering this fact is that many states have adopted enhanced emissions testing to comply with the Clean Air Act.

CARQUEST Engine Controls keeps you on the cutting edge of coverage by offering you Fuel Pressure Sensors for Toyota and GM, which we catalog in our "MAP Sensor" section of the Engine Controls Application Guide. In many cases, these sensors are mounted on the fuel pump module which is located in the fuel tank. Coverage is offered through model year 2001.

Mag Core vs. Resistance Core



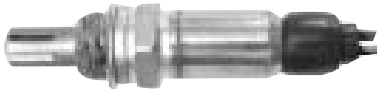
The core of ignition wire is usually a non-metallic, semi-conductive string-like material that's called "resistance" wire, with a DC resistance of 3000 to 7000 ohms per foot. On most of their late model cars, GM, Ford and Chrysler now use silicone core, a higher-heat version of resistance-type wire — and CARQUEST Premium exactly follows OE by using the same silicone core wire. Most of our aftermarket competitors use a carbon-core wire, which is cheaper but inferior.

Since the mid 90's GM engineered its new engine platforms with magnetic-suppression wire, and CARQUEST Premium also follows OE by using magnetic-suppression wire on these applications. Magnetic-suppression wire, sometimes referred to as "mag" wire, has a carbon core with a coil of very small diameter Monel or stainless steel wire wound around it, creating an "inductance core." This type of core has a low DC resistance of about 600 ohms per foot. CARQUEST Premium wire also includes "ferrite" which adds greater impedance (AC resistance) to higher frequencies, allowing spark voltage to pass with little resistance while reducing high frequency interference that may cause radio noise or interfere with other on-board electronics.

Because we use exactly the same materials as OE, we can proudly say that CARQUEST Premium is the only true OE wire in the aftermarket, other than OE itself.

Two "Universal" O2 Sensors?

Some smart technicians have asked us why we have both SG300 and SG450 in the line — after all, both are "universal" 4-wire oxygen sensors. If there's a difference, why not just supersede the earlier one with the later one? And if there's no difference, why was SG450 added?



Like all good questions, there's a good answer. SG300 has an isolated signal ground (only through the ground wire of the sensing unit), while SG450 grounds the signal through both the ground wire and the sensor body (i.e. the chassis). The two parts are different because the OE applications are different, and the listings in our catalog specifically indicate which one to use for which applications. SG450 is only for certain OBDII vehicles, while SG300 is for certain others; the catalog footnotes that say "Can use Universal Style Sensor SG——" should be carefully followed.

Incidentally, to know which wire on the vehicle to connect to which wire on the sensor, refer to the manufacturer's wiring diagram, or hook up your trusty DVOM (digital volt-ohmmeter). The hot (12v) lead to the heater connects to either one of the white heater wires on the sensor, and the heater ground connects to the other. The signal input from the computer goes to the black wire on the sensor, and the signal ground goes to the gray wire on the sensor.

Anti-Lock Brake / Traction Control System

At one time, anti-lock brake systems were found only on luxury cars, but today they have become a standard feature on most domestic and import vehicles. Designed as an interface between the driver and the vehicle, the ABS control module is a sophisticated device that constantly processes information from various sensors to prevent wheel lock-up during heavy braking. This module allows the driver to maintain steering control, while at the same time stopping the vehicle in a short distance. Some ABS modules are equipped with a Traction Control System (TCS) which also prevents excessive wheel slip during acceleration.

CARQUEST E.C. has expanded their line of Remanufactured ABS Modules to include the most popular 1990–99 domestic and import applications. In addition, some very rare Mercedes, BMW and Volvo modules that are not available at the car dealers are available from CARQUEST.