

Fuelies—The Story Behind the Story

So is it worth paying a 15%–20% premium for a car with a notoriously troublesome FI system? The market seems to say it is



Rochester FI unit atop 283 V8

In the early years of the horsepower wars, in the mid-1950s, Detroit was looking for ways to get a jump on the competition. The new frontier was fuel injection, with Mercedes-Benz introducing mechanical fuel injection on the 300SL in 1954.

Racers were also using fuel injection as a power-adding device, so why not make it a regular production option? By 1956, Zora Arkus-Duntov had worked with Rochester to develop the Ram Jet fuel injection system, which became the first domestic fuel injection system offered to the public. The Ram Jet was a continuous flow system that operated on various vacuum signals and low-pressure fuel injection nozzles, unlike Mercedes' diesel-style high-pressure nozzle metering system.

The option was available mid-year on the 1957 Corvette and its 283 ci engine, and it became the first engine to have an advertised one horsepower-per-cubic inch. Officially, the Ram Jet-injected 283 produced over 290 hp in factory testing, but for advertising it just sounded so much better to have it be 283/283. The Corvette wasn't the only car to benefit from this new system, as Chevrolet made fuel injection available on its entire line, in both 283-hp solid-lifter and 250-hp hydraulic-lifter versions. FI was a \$484 option, or about 15% of the \$3,465 base price of a new Corvette.

GM also offered a very similar Rochester FI system on the 1957 Pontiac Bonneville, fitted to its 347-ci en-

gine. It produced 310 hp, as opposed to the 290-hp Tri-Power carbureted version, the next best performance option.

Bendix's electromatic gamble

While GM was cranking out these somewhat primitive Rochester FI systems, Bendix Automotive was working on a state-of-the-art electronic system for AMC and Chrysler. Called the "Electrojector," this system was similar to what hit the market nearly 30 years later in the mid-1980s. It was a throttle-body-based system with two "black box" electronic control units that used various sensors to measure engine load, temperature, atmospheric pressure, and just about every other parameter imaginable.

The Electrojector was adapted from Bendix's aviation FI system, and to make it work in an automotive application, Bendix had to take a system mainly concerned with idle and wide-open throttle and make it tractable throughout the rev range. This was perhaps an overly optimistic goal, given the quality of available electronic components at the time; wax-paper covered resistors and capacitors didn't have the weather or vibration resistance needed for automotive applications. The first installation of the Electrojector system was on a handful of 1957 Rambler Rebels with the 327-ci engine. In this application, the 327 made 288 hp.

Unfortunately, teething troubles resulted in all of these cars being retrofitted with conventional four-barrel carburetors before being sold. Undeterred, Chrysler also opted to try the Electrojector system on 35 cars in 1958, including 16 Chrysler 300D letter cars and five DeSoto Adventurers. At a staggering \$637, against a base price of \$4,071, not many buyers stepped up for this 361-ci/345-hp option. Those who did weren't happy, as in real world conditions, it just didn't work. All Bendix Electrojector-equipped cars were recalled and fitted with dual four-barrel induction by Chrysler. Only one 1958 EFI DeSoto is reported to have survived with its original Bendix system intact. As proof of just how far ahead of its time Bendix was, and how great an idea the EFI system was for automotive use, Bosch purchased the Electrojector system and all patents from Bendix. If you have a car with EFI today, chances are it is a Bosch system, and chances are a Bendix engineer from the early 1950s would feel right at home under the hood.

Rochester FI still worth the premium

Today, Rochester FI cars are the only domestic fuel-injected collectible car most of us will ever have to care for and feed. So is it worth paying a premium for a car with a notoriously troublesome FI system? The market seems to say it is, as 1957–65 FI Corvettes and 1957 Bonnevilles bring roughly a 15%–20% premium over their carbureted stablemates, which oddly enough, is the same premium they brought when new.

If all you wish to do is keep an early FI car for display and never drive it, great; just push it into position and throw away the keys. However, if you wish to drive it, most notorious Ram Jet sins really are a result of uninformed mechanics or years of neglect. The main Rochester FI issues have always been cold starting, hot engine vapor lock, and a nasty tendency to leak down and fill cylinders with fuel, quickly hydro-locking the engine so connecting rods get pretzeled when the car is started. The key is setting up the system correctly using a manometer and tuning the engine under load.

Once it is set, don't fool with it. It is tempting to turn just that one little screw, but



1957 283/283 'Vette, part of the Special Collection at Bloomington Gold

you won't like the result. Many issues aren't really even caused by the FI unit, but rather by poor ignition system performance. Reproduction plug wires suck, and it is crucial to find the now-discontinued AC #46 spark plugs or a modern equivalent. FI engines need perfect spark, spot-on ignition timing, and good fuel.

Too quick to boil

Which brings us to point #2—modern reformulated fuel is even more damaging to performance than repop plug wires. Fuel “boil-off” levels have been reduced to ri-

diculously low levels, down from well over 250 degrees in the 1960s to about 150 degrees today. Low boil off means that fuel percolates easily, and your car won't run right, if at all. In a modern high-pressure EFI system this doesn't matter, as high pressure raises the boil-off level, and modern EFI runs idle pressures of 40 psi and up. A Rochester FI system has a whopping 0.2 psi at the injectors at idle.

Quick fix: race gas. Always use straight 110 octane leaded race fuel for your Ram Jet car.

Besides “adjusting” things yourself, the biggest problem is letting an FI system sit. They need to be run at least once a month. Aftermarket kits are available to stop fuel leakdown when the ignition is turned off, and they are a good idea. Another key issue with restored cars is making sure the engine builder used an FI-friendly camshaft. When in doubt, use a stock grind cam. Lastly, always carry a spare fuel injection drive cable with you, and make sure to follow the proper starting procedure when cold (no throttle) and hot (3/4 throttle).

With a little care, these remnants of the first round of Detroit's horsepower wars are actually worth the premium. Nothing sounds like a finely tuned “Fuelie,” and like the fellow at the recent Bloomington Gold Corvette show in St. Charles, Illinois, who had covered 250k-plus miles with his, you can even drive them a little as well. ♦

COLIN COMER is founder and president of Colin's Classic Automobiles and recently completed the Copperstate 1000 in his 289 Shelby Cobra.



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