

DRIVING A FUEL INJECTION CHEVROLET

Since Chevrolet is now giving us the first U.S. volume-production system of fuel injection, the practical benefits can now be measured from behind the wheel:

- Is there any big improvement in acceleration?
- What's the throttle action like?
- Can a driver tell the difference between cars equipped with fuel injection and normal carburetors?
- Does fuel injection work better in hard turns?
- How about smoothness—and starting?

BY KEN FERMOYLE

THE 1957 MODEL introduction season was expected to provide a lot of surprises. It did, and the most surprising development of all was the introduction of fuel injection by Chevrolet.

What caught just about everyone, in and out of the industry, off guard was the fact that Chevrolet came out with injection on an across-the-board basis. There had been speculation that some form of fuel injection *might* be offered for Corvettes, but not even the wildest rumors included standard passenger cars in on the deal!

As we all know now, however, all four Corvette V-8s—two with carburetors, two with injection—have been made available as options for passenger car use.

So much for background; what everyone is waiting to find out is what it's like to *drive* Chevrolets equipped with fuel injection.

I was one of the fortunate people who found out early. I drove a number of new Chevrolets—some passenger cars, some Corvettes; some with fuel injection, some with carburetors; some with new Turboglide transmissions, some with Powerglide or stick shifts—before and just after the new models were announced.

There's no outward evidence to tip you off to whether or not a new Chevrolet has f.i. or carbs. There's none of the characteristic whistle you get with superchargers, for example.

There *are* some important differences which show up when you're behind the wheel, with your foot on the throttle.

Most obvious is the instantaneous response you get when you ask for it. Mash the throttle down and you're gone right now! There isn't a slight hesitation or the lag you often find with carburetor engines. That, of course, is because the fuel charge is lying right in the injector nozzle in the intake port just waiting for the valve to open.

Another thing you will probably notice when you first drive a Chevrolet with fuel injection is that there isn't any coughing, sputtering or momentary loss of power when you take a fairly tight turn at a rapid clip. This often occurs under similar conditions in cars with carburetors, due to temporary fuel starvation.

The angle of the car has no effect on fuel injection engines, however. Gasoline isn't sloshing around in the float chamber and depending on gravity and manifold pressure alone to get it thru the carburetor, manifold passages and intake ports. It's under pressure supplied by a gear pump.

One thing that surprised me slightly was the fact that you could slow down to just above idling speed in high gear, then floor the accelerator and take off smoothly with no bucking. I had heard in the past that low speed, high gear operation was one of the problems plaguing engineers. You certainly couldn't complain about Chevrolet's f.i. system in this respect, however.

I didn't have a chance to run performance checks on a Chevrolet passenger sedan equipped with the injection engine, but I did hold a watch on a Corvette with injectors. The results were little short of amazing.

First thing I did was make a series of runs from 0-60 mph. (We had previously checked speedometer error by timing the car thru a measured course at a steady, indicated 60 mph, since we did not have a chance to use the fifth wheel.)

A number of 0-60 runs in opposite directions averaged out at 6.8 seconds! The fastest was 6.7 seconds!

This was impressive, but I'm convinced that the car could have done even *better*. Big problem was to get away without wheelspin—and some practice undoubtedly would have taught us just the point to which you can rev the engine before popping the clutch without breaking traction. I know I was

able to improve times with the carburetor-equipped '56 Corvette I tested last year after I had experimented awhile.

At any rate, the way the Corvette took off was, literally, breath-taking. And it didn't quit at 60 mph, either. Several 0-80 mph runs netted an average of 11.3 seconds—pretty fair 0-60 time for most cars. The fastest of these runs was just a shade over 11 seconds flat.

Next on the agenda was a check of 50-80 mph times. All these runs were made in second gear. (Previous acceleration checks were made using first and second only, since the Corvette was equipped with the close-ratio, three-speed manual transmission which permits use of second to very high points in the speed range.) The average for these was 4.95 seconds. There was practically no variation in times in this case; all were either 4.9 or 5.0 seconds.

It's worth mentioning that all '57 Chevrolets I've driven so far have had remarkably little speedometer error. They've averaged just about two miles slow at 60 and you hit an actual 80 at about the 85 mark on the dial.

In studying the performance figures mentioned, it should be noted that the Corvette tested had the 250-hp V-8. There are two hotter engines available, along with another of 245 hp. The latter, which has a single four-barrel carburetor, is like the 250-hp V-8 in that both use hydraulic valve lifters.

They also use a cam with a milder grind than the two higher-powered engines. In fact, Chevrolet engineers refer to them as the "street engines" among themselves. The 270- and 283-hp V-8s are called "competition engines."

The 270-hp job has twin four-barrel carburetors. The 283-hp V-8 has fuel injection and a 10.5-to-1 compression ratio. (All of the other three have 9.5-to-1 ratios.) This, the hottest of the "hot ones," is a really high-winding engine. It doesn't develop maximum horsepower until it hits 6000 rpm!

I haven't had an opportunity to run fuel consumption checks on any 1957 Chevrolet—fuel injection or carburetor—as yet. So, I can't tell you what f.i. does in this respect. Chevrolet has purposely refrained from making any extravagant claims in this direction. One reason was they hadn't had time to complete exhaustive testing themselves. However, I talked to one engineer not long before this was written and he said results of tests to date have been a pleasant surprise.

There was only one slight blot on my experience with Chevrolet's fuel injection. After completing acceleration checks with the Corvette, I pulled off the track to make some notes. I stalled the engine accidentally—and we had a little difficulty getting it started again. Fuel injection is supposed to eliminate vapor lock, but it seemed like that was the trouble. Maybe it was just flooded, however. I'm not that much of an expert on f.i. that I could say for sure. At any rate, we finally got started again in five or 10 minutes.

One question that has been asked repeatedly since Chevrolet announced that it would offer injection for '57 is: "How reliable will it be? Will the continuous flow system used be practical for day-to-day use?"

The answer to that will have to wait, obviously. Until a number of Chevrolets with injection units have been on the road for awhile, there's no way of telling. Certainly the brief time I spent behind the wheel wasn't enough to tell.

If there's one thing that Chevrolet has been noted for thru the years, however, it's reliability. In fact, there was little else to recommend the make to the performance-minded for many years. So, it's hard to picture the company coming out with a feature it didn't feel would hold up in the type of service it will be subjected to, in all situations.

Certainly a lot of respected engineers who helped develop Chevrolet's fuel injection system feel it will get the job done—and with a minimum of fuss or trouble. A normal quota of bugs may crop up, as with any radically new automotive development, however. We'll just have to wait and see.

Another question heard a lot concerns the availability of fuel injection, either on Corvettes or Chevrolet passenger cars.

Theoretically, of course, you can get the system on *any* 1957 Chevrolet product (barring trucks). Practically, no evidence could be found of any being sold with f.i. as this was written. Could have happened, but not so far as we know.

When fuel injection Chevrolets do start to appear in any quantity, it's my guess that the bulk of them will have the 250-hp engines. (It looks also like the first f.i. models out will be Corvettes—which is only natural.) Cars with the 283-hp V-8 might prove rather hard to get for the average buyer. And probably won't be what the average buyer will want anyhow. Their hot cams, with attendant rough idle and relatively poor low-speed performance, make them better suited for competition or high-speed touring than normal driving.

The same is true, to some extent, for the dual four-barrel, 270-hp engines. Actually the performance of either of these hotter engines will be little, if any, better in the more commonly used ranges than the 250- or 245-hp Corvette engines. Acceleration under 60 mph probably won't be noticeably better.

There's one point about Chevrolet's fuel injection that hasn't been cleared up at this date. That is the one about just what the system will cost. At this writing, no official price has been announced, although many other prices are out.

There have been many guesses, however. Guesses ranging from "about \$90" to "in the neighborhood of \$300." One of the most reliable of many "informed sources" has set the figure at \$190. That sounds reasonable, but is still only a guess. Chevrolet brass may not even know for certain. This is something else we'll just have to wait for.

Since we're talking about questions that have come up concerning Chevrolet's fuel injection system, there's another one that might be mentioned. Some people have wondered just *why* Chevrolet elected to introduce it for 1957—and how long ago the decision to do so was made.

It isn't hard to figure out why. Chevrolet's important competitors all made major model changeovers, and it was common knowledge a long time ago that they were planning to do just that. Chevrolet, on the other hand, had decided to go the major facelift route for '57.

This meant Chevrolet couldn't expect to draw as much attention as, say, Ford and Plymouth. Both are all-new cars. What better way to equalize the situation than to drop an unexpected bombshell like fuel injection?

When did Chevrolet decide to take the step? That's hard to pin down, but there is evidence the decision was a last-minute one in auto industry terms. Best guess is that plans to introduce f.i. for '57 were made just this past summer. Of course, much developmental work had gone before.

About the same time I drove the fuel injection Corvette, I had a chance to ride in a car with a totally different f.i. system. The car was a '56 Chrysler and it was equipped with the Bendix Electrojector system (pictured in Special Reports last month).

A complete departure from past fuel injection systems, the Bendix unit is unique in that it is controlled and operated by electronics. It is a timed or metered system and is the only method of injection seen yet which requires no pump drive off the engine.

My experience was rather frustrating, since I didn't have a chance to drive the car and the ride I did get was confined to Detroit streets where traffic was rather heavy. As a result, I could tell little about Electrojector's virtues or flaws.

I did notice that the characteristic f.i. instant throttle response was there. The Bendix engineer driving kicked it a couple of times and the big Chrysler took off immediately. I noticed, too, that the car started very fast before we left on our short jaunt.

It was impossible to tell how the system lugged at low speeds, because the Chrysler had an automatic transmission. There were no flat spots within the limited speed range we explored. ●