CARE AND RACE PREPARATION

The Corvette

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Photo by Larry Tomaras

Don is a graduate of Pennsylvania State University in Business Administration, and has been in the automobile business for the past ten years. He has operated an exclusive Corvette Service Center for the past three years, and has already serviced and prepared 20 SCCA Corvettes for active competition. He is now entering a team of Corvettes in National races.

In 1953 a fiberglass two-seater roadster was shown at the General Motors Motorama. So great was its acceptance by the spectators that Chevrolet decided to produce this vehicle on a small-scale basis. Starting from scratch, it took four years of crash engineering and development to strengthen the breed into a full-fledged competition sports car. Since that time (1957), the Corvette has racked up four National class championships and has almost completely dominated the B Production group. This vehicle lends a partial paradox to the term "Detroit Iron", and should instill a bit of pride into every American who drives one.

Before delving into the preparation of the Corvette for racing, let us consider the equipment available for this automobile. I will state bluntly that without the following options the Corvette cannot seriously be raced. While it is true, I have heard, that some people compete without all of these options, I feel that they are wasting their time and perhaps endangering their lives.

Mandatory Options:

Positraction rear axle—#675	$ 43.05
Heavy-duty brakes (with special steering)—#678	333.60
315 hp fuel-injection engine—#354	484.20
4-speed transmission—#685	188.30
Wide-base wheels—#276	no chg.
Straight-through mufflers	no chg.

For your information, the manufacturer's suggested retail price for the basic car is $3,934, plus freight. (For example, the Western Pennsylvania freight charge is approximately $50.)

It is hypothetically possible to fit racing tires and a roll bar to the above equipment and "go racin' ". However, as in most sports cars, careful preparation goes a long way in changing a good competitor into a trophy winner. (Don't tell your wife about this until after you have purchased the car!)

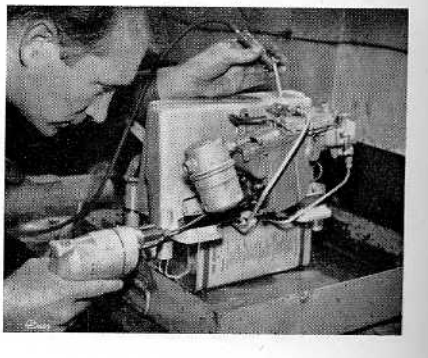
I. Making It Go

A. Fuel Injection: The Rochester fuel injection is one of the most delicately balanced and precise operating units of its type in the world. Many mechanics find it superior to the more expensive, so-called "controlled leak" variety. It naturally follows that a carefully calibrated injection adds to the performance, but this type of operation can only be done by an expert with proper equipment. Nevertheless, there are a few things which the individual owner can perform in his own garage.

Unless the course is extremely sandy, I would recommend the removal of the air cleaner. A fine mesh screen of about screen-door consistency should be installed at the entrance to the tube. It would be advisable to remove the nozzles and the nozzle block vent line (which serves as pressure equalizer for the nozzles) after practice is over, and clean them thoroughly. This will preclude the possibility of a clogged nozzle.

If you have any doubts about your fuel injection, bench testing may offer a method of trouble shooting. A powered drill can be connected to the drive cable which is, in turn, connected to the fuel meter pump. The unit should be blocked up over a pan. Next, fill the fuel meter with fuel. Running the injector with the drill will graphically illustrate the fuel flow. The streams of fuel from the nozzle should be almost perfectly aligned with each other, and of equal volume. (See Figure #1.) If they are not, check the following: (1) Kinked nozzle fuel lines; (2) Partial blockage of the fuel distributor outlets;

Fig. 1—Bench testing—fuel injection.



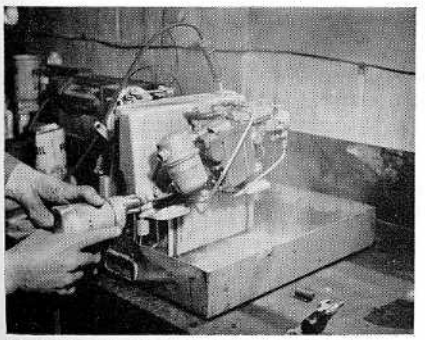
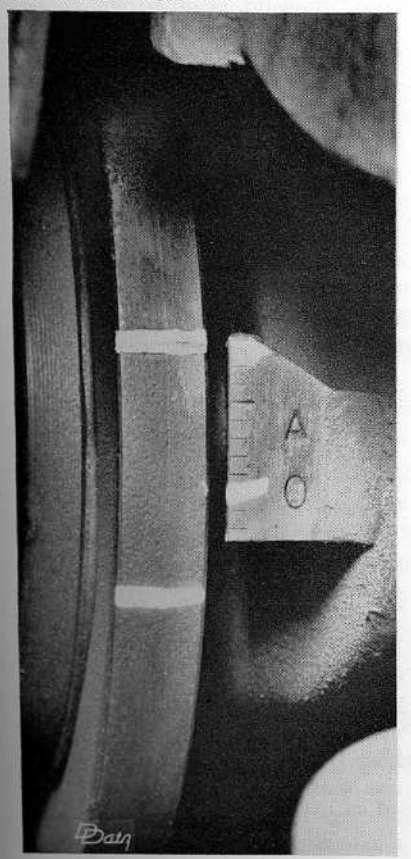


Fig. 2—Bench testing—simulating full throttle.

(3) Partial blockage of the affected nozzles; (4) Mismatched nozzles (check code on side of nozzle). By pulling a vacuum on the fuel enrichment diaphragm line (the tee on top of the fuel meter), you can duplicate the injector running at full throttle. (See Figure #2.)

The use of an exhaust analyzer or "smoke box" is the easiest way to check for the proper fuel mixture. The ideal mixture at 4,000 rpm's will usually be between 11.5-1 and 12-1. Mixture adjustments can be made by turning the idle or low-speed enrichment stops, which are controlled by a small movable lever located on the left front side of the fuel meter. For a richer mixture, adjust the enrichment diaphragm

Fig. 3—Marking timing advance.



lever to a position closer to the engine. Be sure when adjusting this stop to compensate for it by making an equal adjustment in the same direction of the maximum enrichment stop (the one closer to the engine). Mixture ratios that are leaner may result in slight engine performance increases, but almost invariably can be depended upon to put holes in your pistons.

B. Timing: Since all Corvette distributors do not have precisely the same rate of advance, it is impossible to categorically state a correct spark advance for every engine when it is static or idling. Unless a distributor stroboscope is available, the best method is to mark 2″ (38°) in advance of the existing mark along the circumference of the vibration damper. Looking at the timing tab, your 2″ mark will go toward the left front fender (See Figure #3). With the timing light installed on the #1 wire on the distributor cap (make *sure* it's #1), run the engine to 5,000 and line up your new mark with zero on the scale. Of course, timing is accomplished by loosening the distributor and rotating it. For the sake of precaution, the timing should be checked just once at 6,000 to make sure the distributor is not advancing too much at engine speeds of over 5,000 rpm's. An advance of not more than two or three degrees can be considered normal. Be sure to run a check on your timing after practice. New rubbing blocks wear quickly.

C. Exhaust: Much can be gained by removing the present exhaust pipes and substituting a straight pipe design. The stock system on the 1961 Corvette somewhat resembles a pretzel. Arrange your system to travel just inside the frame rails on either side, and exhaust just forward of the rear wheels where the frame starts to loop over the wheels. If you wish to keep your Corvette a dual-purpose car, suspend straight pipes to the rear of the car and install clamp-on silencers. (See Figures #4-5). "Racket busters" seem to do the job well.

D. Balance: Engine balance a la factory is quite satisfactory and is best left alone. Naturally, if at some time a crankshaft is replaced a balancing job is required.

E. Tires: I do not like to be placed in the position of giving tire testimonials (especially since I have received no financial remuneration!)—thus the following statements are my *personal* opinion only. The Michelin "X" 6.70x 15 is an excellent all-purpose tire. It has exceptional wearing qualities and,

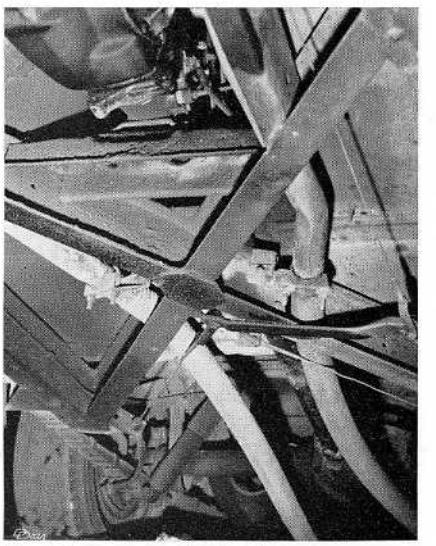


Fig. 4—Dual-purpose exhaust system.

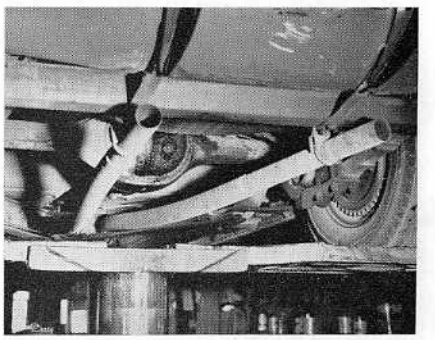


Fig. 5—Dual-purpose exhaust system.

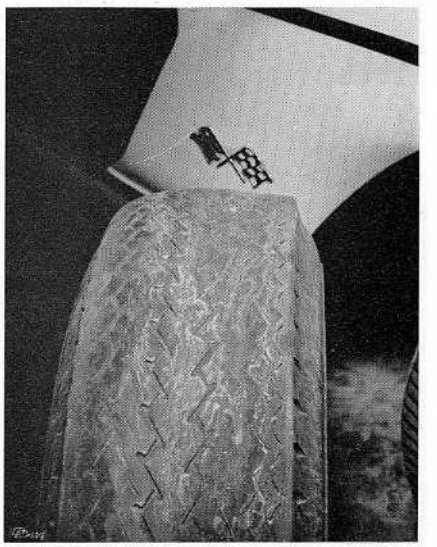


Fig. 6—Typical tire wear pattern.

as a rain tire, can't be beaten. When using them in the dry, inflation should be 48 to 50 pounds. When the course is wet, lower pressure to 30 psi or less. Caution: if speeds of over 110 mph are encountered, raise "wet" pressure to at least 35 psi.

If you can afford two sets of tires