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DYNO DON'S 351 PINTO

PETERSEN PUBLISHING COMPANY

DYNO DON'S PINTO

Hang in there, Ford fans; Dyno Don Nicholson has done it again

By Bill Wood

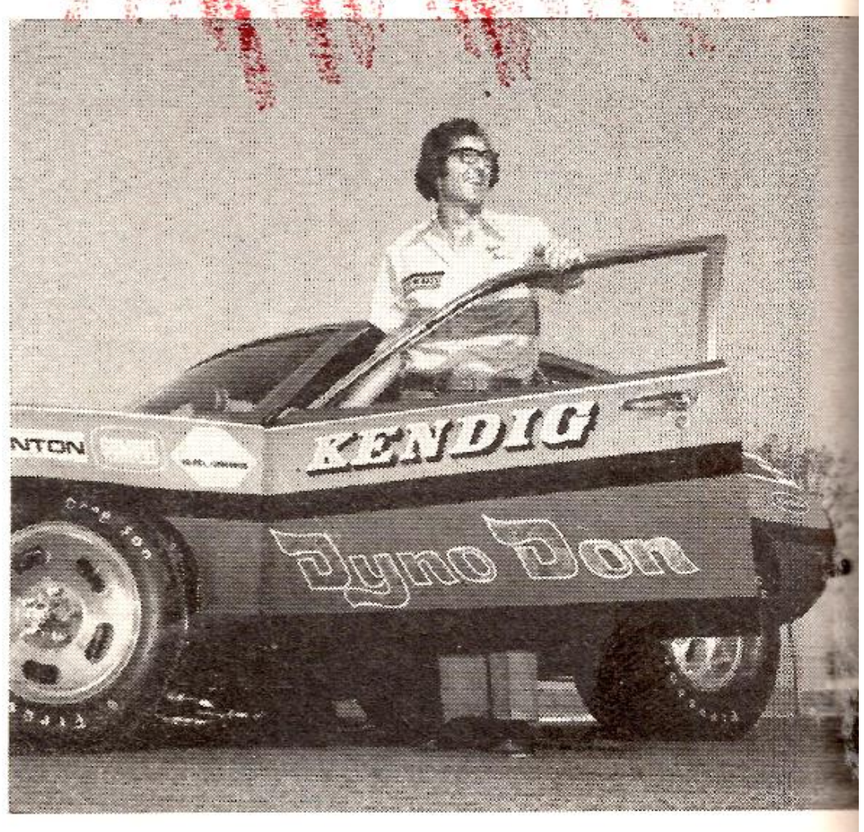
Since Bill "Grumpy" Jenkins' Chevrolet Vega was the first to strike it rich with the new-concept, small-block Pro Stockers, everyone else who rolls to the line in the new mini racers will be accused of jumping on the Jenkins bandwagon. But that's not quite the story. Jenkins just proved what Don Nicholson knew would work all the time.

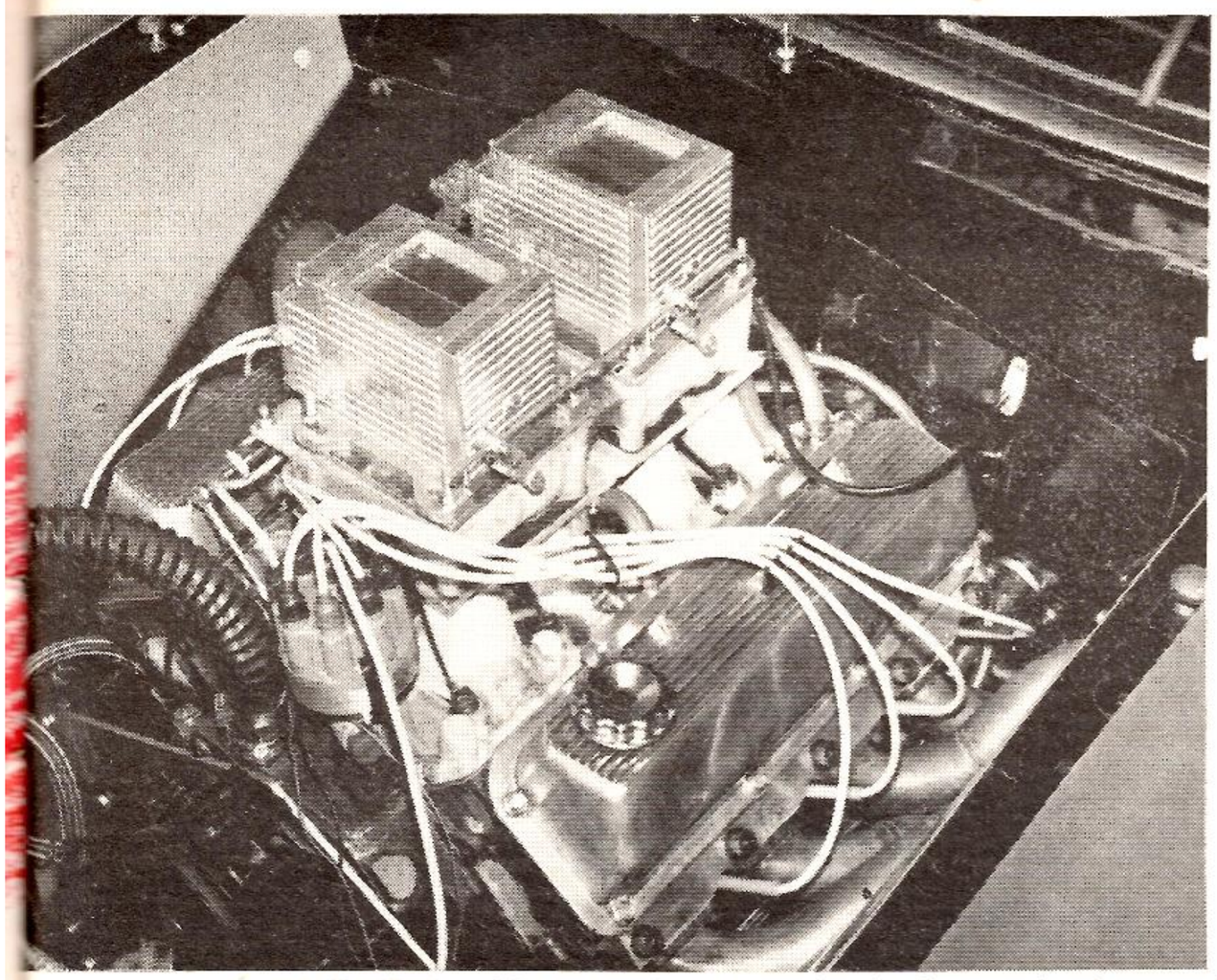
Actually, while "Dyno Don" thrashed about with his Maverick at the 1972 Winternationals, his psychedelic Pinto was being painted by George Cerney in Norco, California.

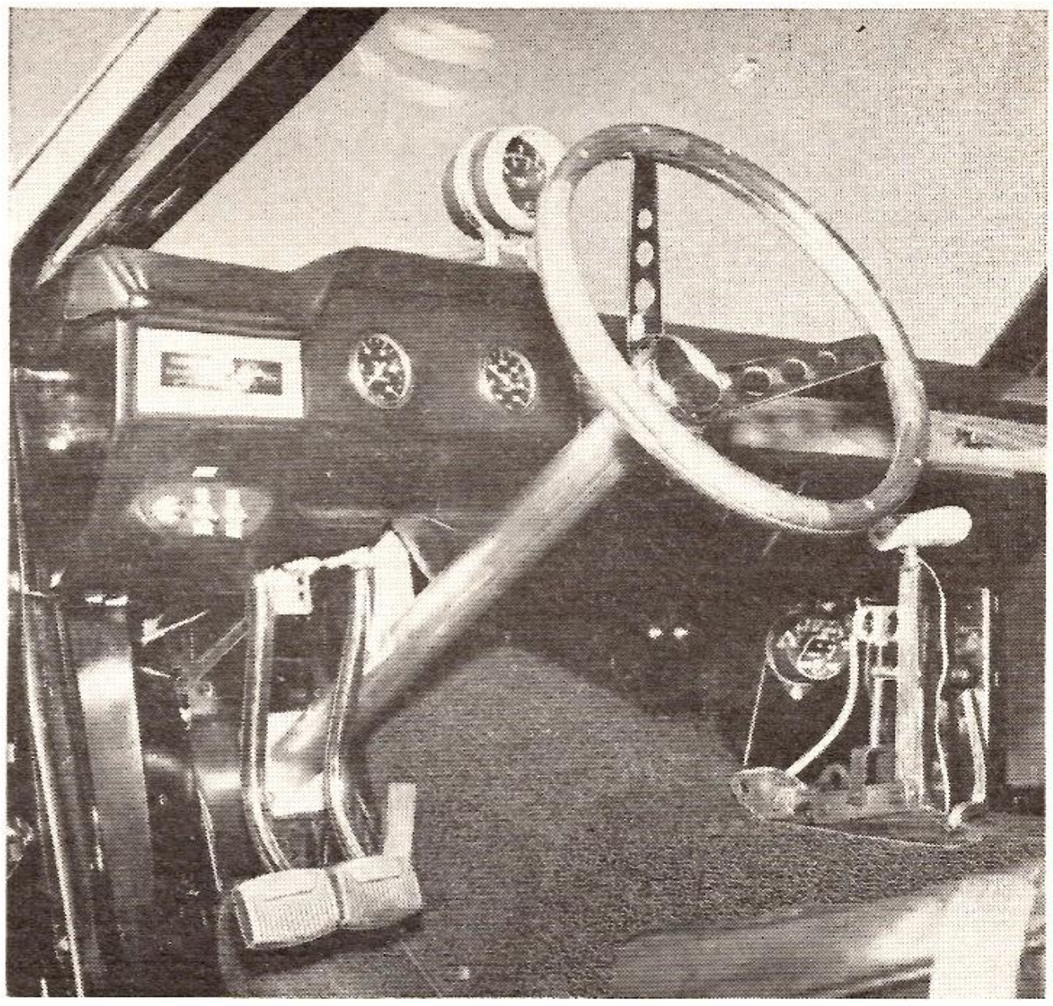
Nicholson says he decided to make the switch for several reasons, most of which hinged around money. As he puts it, "I could build a competitive small-block engine for what it costs to repair the SOHC Ford I used last year."

Keeping his affiliation with Ford, Dyno Don chose a Pinto body and a Boss 351 Ford engine for power. His objective was to be competitive using as many Ford parts as possible. Nicholson managed to wrangle a bare steel, body-in-white Pinto from Ford. In the automotive trade, a body-in-white is a pre-sprayed, pre-painted and pre-assembled car body. The only material on the bare metal is a white sealing compound —hence the name. The body was then sent to M&S Welding in Azusa, California, where it gradually became a race car under Nicholson's supervision.

First the unibody and all three doors







photography: Craig Cutler

ABOVE LEFT — Nicholson's 351 engine is the result of many development hours on the part of Edelbrock, Kendig, Airflow Research, Jardine, General Kinetics, Weaver and, of course, Dyno Don. ABOVE RIGHT — Don is a pro at building race cars, relies heavily on Mr. Gasket shifter.

of the Pinto Runabout were sent to Aerochem in Orange, California, for an acid bath that removed about 80 pounds of bulk. The two front fenders, hood and front splash panels are fiberglass from A&A Fiberglass in Atlanta, Georgia. Most of the other fixtures (lights, grille, windows, etc.) are stock items.

Nicholson had the insides of the acid-weakened body reinforced with polyurethane by CC&C Plastics in Brea, California. The polyurethane strengthens the weakened body panels against flexing under racing loads and acts as insulation to keep the heat out during hot, muggy Midwestern summer afternoons. It weighs practically nothing. Next, M&S went back over all the seams in the unibody to make sure the acid hadn't eaten away any welds that would weaken the structure.

A full roll cage, similar to NASCAR safety cages, was built into the Pinto. The area around Nicholson was formed from .125-inch chrome moly tubing, while the rest is .090. Generally, the main rails of the roll cage form a triangle, with the frame rails tying the whole car together from a structural standpoint. Under hard acceleration, a weak unibody chassis will flex, and Nicholson says he's seen several instances of the rear bodywork bent downward several inches.

Once the body was secured, a sub frame had to be added to the rear of the car for strength. The men at M&S used 1½x2-inch chrome moly tubing to build frame rails from the stock front substructure to the rear of the car.

The rearend (all chrome work was done by Orange County Plating) is a combination of custom parts and Ford equipment. The heavy-duty rear axle housing is taken from the Ford Thunderbird and station wagon line. It's been narrowed to 37 inches and fitted with Summers Brothers full-floating hubs and axles.

The 9-inch ring and pinion gear is from Ford. Nicholson used a stronger Dana unit in his Maverick last year, but that car was about 200 pounds heavier than the Pinto, and the SOHC Ford put out about a hundred more horses. The Ford ring and pinion was heat-treated to lower the Rockwell hardness from 63 to 55. The softer gears means they will be less brittle and won't break as easily under sudden racing loads. The differential is a Summers Brothers spool unit. The tri-leaf springs and wheelie and traction bars are all custom-built by M&S to Nicholson's geometric specifications.

The rear slicks are Firestone Drag 500s, 13½ inches wide and mounted on Fenton 11-inch mags. Nicholson says he will run about seven or eight pounds of air in the slicks, depending on track conditions.

The rear disc brakes are Summers discs with Airheart calipers.

The front suspension is all stock Pinto, but it's been doctored quite a bit by Nicholson and M&S. The theory is to get the front end as low to the ground as possible and maintain full control. In getting the car low enough (ground clearance is less than three inches), Nicholson found he was having a problem with the upper A-arms. Their travel under acceleration pulls the front tires into a negative camber. For stability at high speed, Nicholson likes a full footprint from the six-inch-wide Firestones in front. He says that problem will be sorted out when testing begins.

Nicholson sets the caster in the front end at ten degrees. The idea is, the greater the caster, the straighter the car will roll. It's much like the front wheels of a shopping cart. There's so much caster there that the cart will always straighten itself out and roll in one direction. Many Funny Cars have as much as 30 degrees caster. Camber is as close to zero as possible.

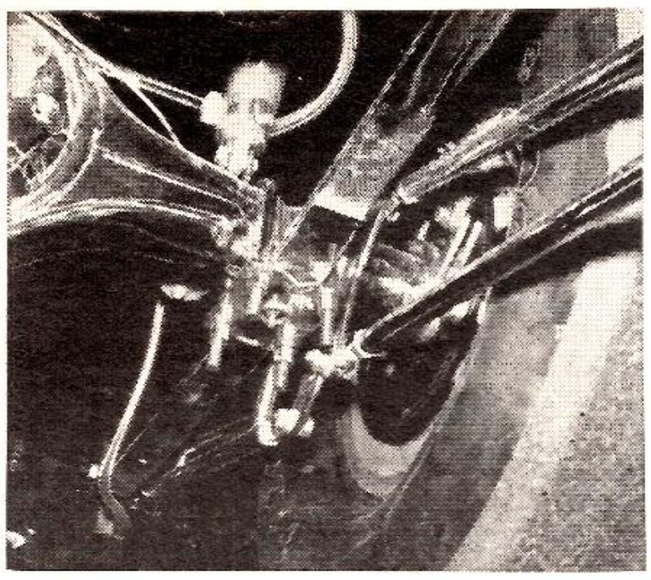
The front discs were custom-machined by Loc Performance Engineering in Detroit, Michigan. The aluminum hubs and 10-inch steel discs are stopped by Airheart calipers.

There had to be some alterations to the engine compartment to fit the bigger V8 engine. The stock front crossmember was exchanged for a removable steel bar and lowered about a half-inch. Much more than that and it would have changed the geometry in the Pinto's stock rack and pinion steering. The removable bar makes it easier to get to the bearings through the oil pan without removing the entire engine from the car. Nicholson also built a custom engine plate to take the place of the front engine mounts.

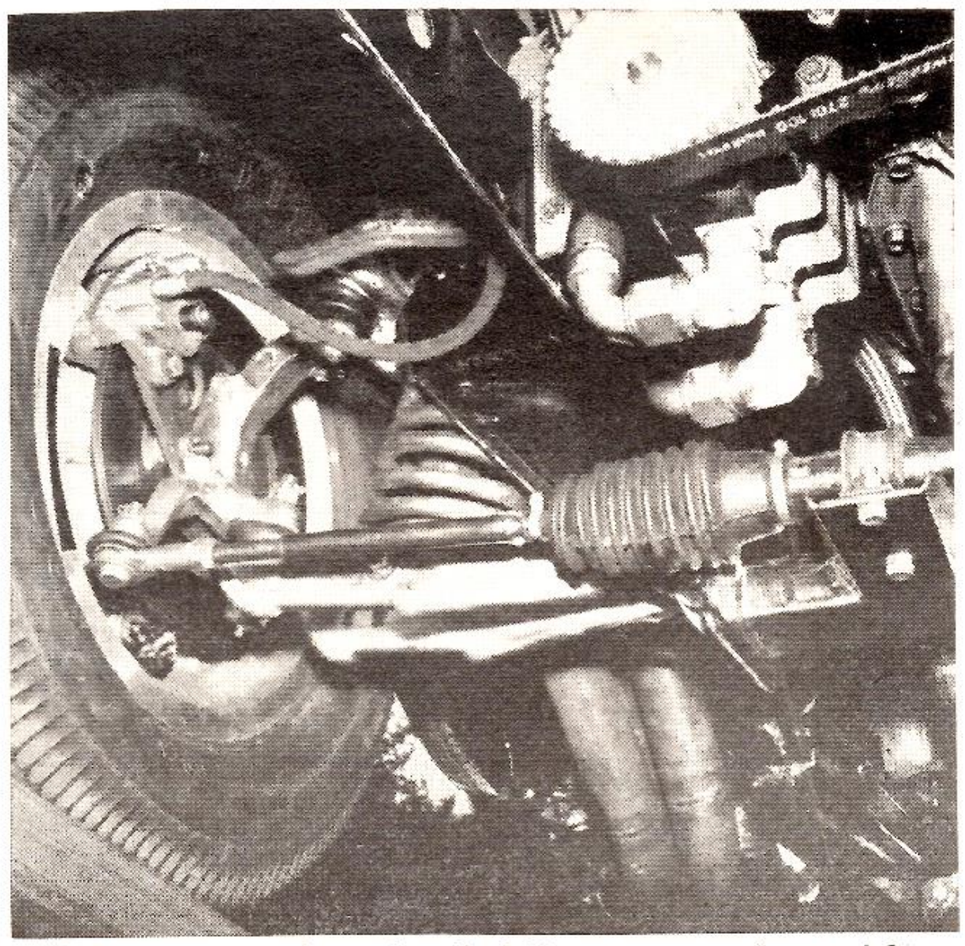
The engine and firewall were set back about seven inches. Since Nicholson will be racing the car in all three major drag racing associations, he's got to fit the range of alterations allowable in each organization.

So what makes this Pinto a stallion? A Boss 351 engine undergoing extensive development by Nicholson, Edelbrock and Ford. Some of the valve train problems in the Boss 302 engine have been passed on to the Boss 351. Nicholson

(Continued on page 72)



LEFT — M&S built the Pinto's suspension to Don's specifications. Like his Maverick, the Pinto uses the ladder bar-type traction bars and leaf springs. RIGHT — The Pinto rack and pinion steering is retained. Note Weaver pump.



DYNO DON'S PINTO

says he wants an engine that will develop as much horsepower as possible between 7000 and 8500 rpm. The problem, however, is that Falconer and Dunn Racing in Culver City, California, has done quite a bit of research on the small-block Ford, and they maintain that the valve train literally turns to bubble gum above 8500. To combat that, Nicholson installed a JoMar rocker arm girdle to tie all the rocker arm studs together. Before one arm can flex, they all have to give a little. Thus stud wobble is virtually eliminated.

While trying to install the girdles, Nicholson discovered the intake studs were drilled at the wrong angle on one head. The few thousandths difference was enough to throw everything off. Nicholson also believes this was causing some of the excessive float at the top end. After correcting the situation, Nicholson ran the engine and found it was stronger above 8000, indicating that the girdle does reduce valve float.

D&D Engineering in Gardena, California, supplied the pushrods. Nicholson says the tapered pushrods, made of an aircraft alloy metal, are strong enough to withstand an explosion in a fueler engine.

The rest of the valve train is now, or eventually will be, Ford. Nicholson uses the Ford titanium valves and needle-bearing rocker arms. He experimented with aluminum rockers but felt there was no horsepower gain. General Kinetics supplied the cam (.614 lift and 332 degrees duration) and the valve springs (inner, outer and dampener set for 140 pounds of seat pressure). Nicholson says he's experimented with Ford cams and springs but hasn't come up with a combination that works as well for him as the GK.

Nicholson, along with Airflow Research, completely rebuilt the exhaust ports. Research at the flow bench showed the exhaust port was nearly at a right angle to the valve face. So Airflow raised the entire port 35 degrees. An aluminum bar was added to the trough between the rocker arm galley and the top of the ports so that a new port roof could be carved out. The dimensions of the port weren't changed. Nicholson says the port size was perfect, but that the shape left something to be desired.

Jardine made special header flanges for the Pinto. As it turned out, raising the ports was just about the only way Nicholson was going to get the headers over the frame rails in the engine compartment. With the engine sitting so low in the chassis, the old port location would have left no room for the headers.

While Airflow was working on the exhale, Edelbrock was experimenting with the inhale. They found the engine will breathe better with a big, short port rather than the long-runner manifold. This is especially true at the top end. Ford came close to the idea in the mid-'60s with their tunnel-port small block. That may have been the illogical extreme, since the engine worked best at an rpm range that nearly disintegrated the rotating parts. In any event, Edelbrock will probably market the final configuration.

To cap off the intake system. Nicholson is using two of the new Kendig carburetors (see "Kendiguretor," March 1972 HRM). They're rated to flow 1200 cfm, but that cavern they call a venturi looks quite a bit bigger. He's experimented with Holleys (660 cfm and the 4500), but Nicholson feels the Kendig will be a better carburetor when he gets the development bugs worked out.

To light the fire, a Mallory Super Mag distributor is used, with ten degrees initial advance set at 1500 rpm and 42 degrees total. Stewart-Warner gauges keep watch over the engine, and an AutoMeter tachometer with the automatic ignition shutoff rev limiter keeps the engine under control in case of a missed shift or some other mishap.

The short-block is fairly straightforward. The 4.00-inch bore on the 351 is opened up .018 and filled with Forgedtrue pistons and rings. Nicholson is experimenting with compression ratios around 12- or 13-to-1.

The rods are also Forgedtrue, but were originally designed for a Chevrolet. The journals on the 351 modular iron crank are reground to fit the bigger Chevy rods. Ford bearings are used on the mains, and Federal-Mogul Chevrolet bearings are used on the rods.

Nicholson is experimenting with a Weaver Brothers dry sump system with four oil sump pickups. S&S Pans in Azusa, California, built him an oil pan that spreads out under the engine for the extra oil capacity. But a dry sump would eliminate two problems with a pan — ground clearance and oil pump clearance.

Nicholson wants, and is expecting, about 600 horses from the Boss 351. It shouldn't be too hard to come by. On one dyno run, it turned more than 575 horses with valve float at 8000.

Engine power is sent through a 10½-inch Hayes clutch and 40-pound flywheel, all covered with a Lakewood safety housing. Doug Nash built the four-speed transmission and is currently working on a five-speed. The fifth gear would be a lower first-gear ratio for a better bite out of the hole. Nash reworks the synchros (slick shifts them) to make the gears engage easier at speed. Nicholson says he makes his three shifts in the first six seconds of his 9½-second runs. All the shifting is through a Mr. Gasket in-line shifter.

Factor all this into a 2500-pound car and it comes out to middle nines for starters, and the season is just beginning. A Chevrolet Vega may have been the first subcompact Pro Stock last January in Pomona, but a Ford Pinto may get the last laugh next Labor Day in Indianapolis. ■■