

289 Ford + Stock Parts 294 HP

Save those Autolite box tops, listen to the Pico Rivera flash, and get ready to hang it on a small-block Ford



Text and photos by John Thawley ■ There's a fellow down in the land of Yinga Yinga (Pico Rivera, California) who has figured out how to get an additional 133 horsepower from a stock 2V 289 Ford — and all of this increase in horsepower comes from stock Ford parts. Of course it should come as no surprise that the fellow in charge of the parts swapping is Ford Performance Advisor Ak Miller. But the horsepower is yours just for asking — the guy behind the parts counter.

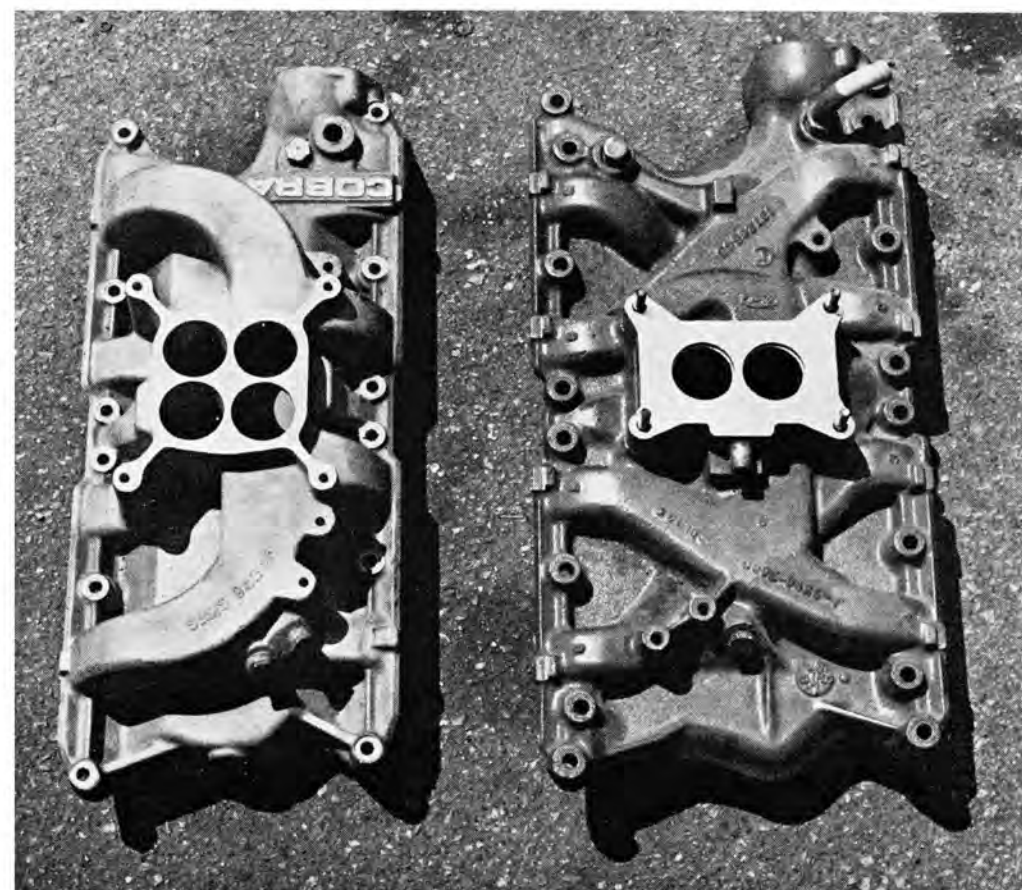
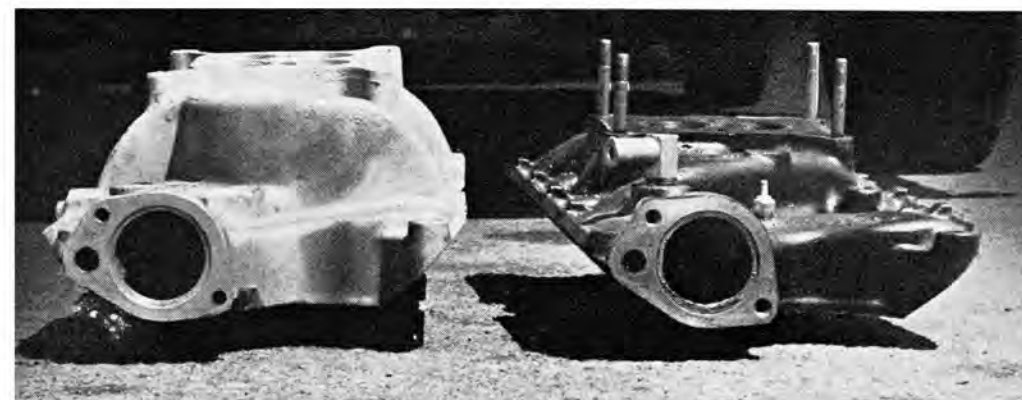
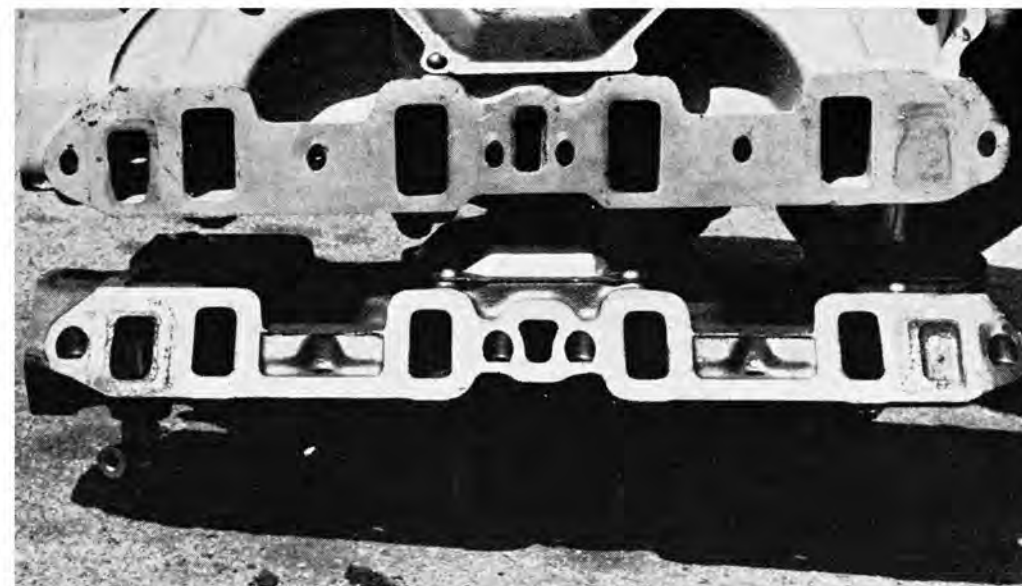
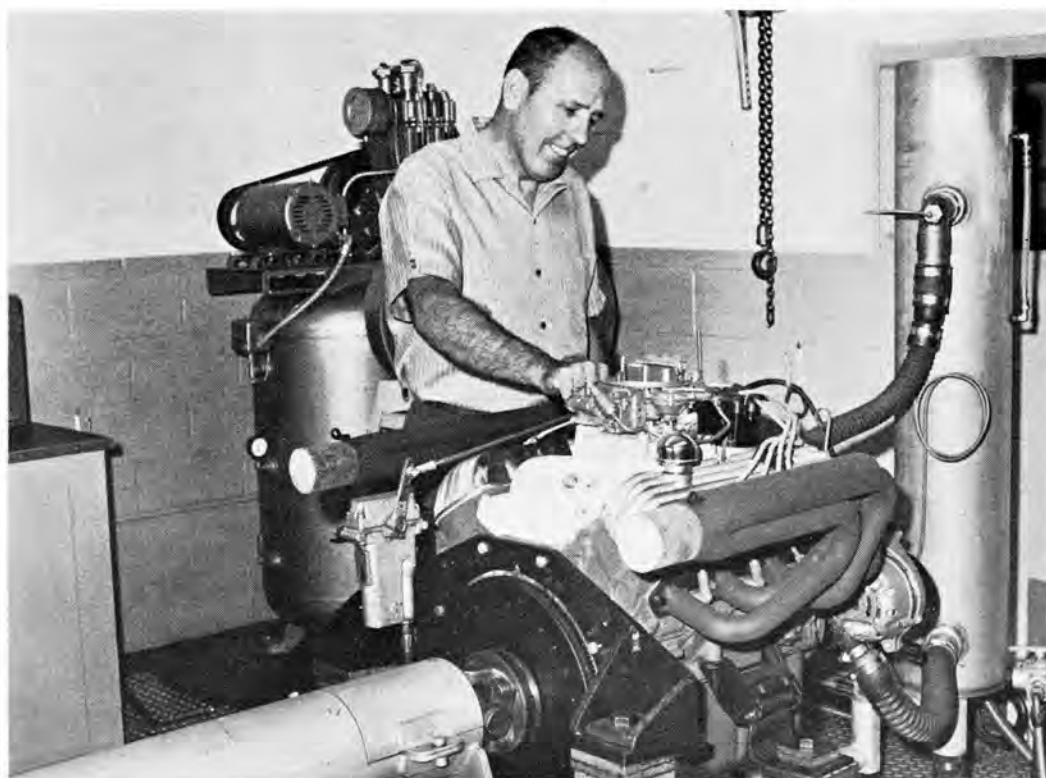
Ak started this test program by prying the nails out of the crate housing a dead-stock, 2V 289 Ford, factory-rated at 200 hp at 4400 rpm. After a run-in time of three hours, the Offenhauser dyno came up with a net corrected reading of 161 hp at 4500 rpm. Ak explained that there is a considerable difference in the correction factor between his method of testing and that usually done back in Dearborn. Also, it is customary that a baseline run at the factory would involve six hours of break-in time, then a complete teardown, measuring, and reassembly before the power reading is taken. Needless to say, everything is dead right when the engine goes back together. Thus, the factory reading is taken with what might be called a loosened blueprinted engine. A fair way to do the testing — but also fair for you to know, since this variance is very capable of producing the 39 horsepower difference shown between the factory rating and Miller's baseline reading.

"All right, already, tell us about how to get all those extra horses."

The second run involved only one change. The stock 289 exhaust manifolds were unbolted and a set of stock 351 exhaust manifolds were strapped on. The same exhaust pipes were used. No tinkering with the jetting or moving of the distributor — just exchange one set of exhaust manifolds for the other. Five horsepower was gained at 3500 rpm, 2.5 at 4000 rpm, and 4 at 4500 rpm. We'll take the four horsepower in working our way up the overall gain of 133 by the end of the test.

The third run found the cast iron, two-barrel intake manifold being sacked and the four-barrel aluminum high-riser being bolted in place, topped off by a 600 cfm Holley (see the parts list). Spark plugs were changed to Autolite BF 32 gapped at .030-inch. Kerpow! The carb, manifold, and plug

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Akton prepares another 289 to strain away at the leash as part of the extensive test program that evolved into the Ford Muscle Parts program. Incidentally, that's not the engine used as the test bed for our story — difference is in the exhaust system. When the 351 heads were bolted on, different pistons were needed to compensate for the larger 351 combustion chambers. These pistons decrease chamber volume about 10cc and will increase compression ratio to about 10.5:1. Engine need not be rebalanced with these pistons. Piston ring C90Z6148A should be used with this piston. The high-rise lightweight aluminum manifold and four-barrel carb was worth 27 horsepower over the cast iron two-barrel setup. Several size carbs were tried — stock Ford four-barrel offered a surprising increase in horsepower compared to some of the larger units. Kits of parts programmed by Ford begin with Impressor, then to Controller, with the final level being the Dominator. Each is then broken down into stages, resulting in a steady build toward usable horsepower. Performance parts are matched up for the 289 and 302, the 351, the 390, the 427, and the 428. Ford's Muscle Parts catalog lists all parts numbers, description, and prices. Watch for other manufacturers to follow suit with staged performance parts. Check Ford dealers for parts catalog (78 pages) which details program. All of this is the result of drag racing, Trans-Am campaigning, and consistent efforts on the large "down South" circuits. Though not spelled out in ad campaign, muscle parts also apply to Mercury. Ford execs promise full availability of parts and competitive price.

294 HP

change picked up 27 horses. This is in addition to the four horses previously gained with the 351 exhaust manifolds. Check the dyno chart before getting greatly excited — like most all high-performance intake systems, it sacrifices a few horses in the lower rpm range. This one, however, loses fewer than most.

Test four involved unbolting the 600 cfm Holley and going to the smaller 550 cfm unit. With the increased velocity, horsepower was up slightly over the entire rpm range. In our running total, we'll use the three-horse gain at 4500 rpm.

In a sly move, Ak switched over to the stock Ford carb — which comes on the stock 289 rated at 225 horsepower by the factory. The carb is at 470 cfm. Check off a three-horse-power gain and our total gain goes up to 30 horsepower.



Large intake port area is readily apparent when compared to the stock 289 unit. 351 head gaskets are a must for sealing.

By now it should be fairly evident that the Ford was getting peak horsepower at peak revs but was incapable of turning more than 4500 rpm. Logically the next step would be a camshaft change in an effort to rev higher.

The stock (hydraulic) cam came out and in went one of the Ford performance cams (No. C90Z6250C), the high-performance springs, and special spring retainers which are listed. With 62 degrees overlap and a duration of 290 degrees, this stick is an excellent choice for the street when coupled with a four-speed or automatic. Operating engine rpm is supposed to be extended 1000 rpm over stock (says Ford). With this sort of motion, steady spark might get to be a problem, so in went the Ford dual-point distributor to give the coil more time to build up voltage. An initial lead of 14 degrees was dialed in and the horsepower rolled on up to 234 at an even six grand. So the cam and guaranteed high rpm spark netted 36 horses and our running total on horsepower climbed to 73 — and the parts are still stock.

The next step required a little effort, but any rodder with enough brainpower to heat up his hair oil should be able to manage. The much-talked-about Cleveland heads for the small-block Fords are just not on the parts shelves yet — so forget that for now. Ak did the next best thing in an effort to get the little 289 to breathe deeper. A set of deflector-head Triplex pistons were slipped into the stock bore. They'll swing from the stock 289 rods and the assembly doesn't even have to be rebalanced, since the deflector heads are within the weight tolerances listed for the stock pistons. To go along with the pistons, Ak milled a set of 351 heads (.050-inch) to keep the compression ratio in the ball park and strapped them in place. When doing this, be sure to use the 351 cylinder head gasket and the 351 intake manifold gasket. Also, to do the job correctly, you should pick up ten C80Z6065A and ten C80Z6065B cylinder head bolts. These are trick little units with the washers integral with the head. This added washer area prevents brinelling that might occur, since the 351 has 1/2-inch bolt holes and the 289 block is threaded for 7/16-inch bolts. Keep in mind that we're still running the cast iron exhaust manifolds — no trick headers. With the new heads and pistons, the Ford ticked off 254 horses at five grand, 253 at 5500 rpm, and then swiftly went downhill floating the valves and not holding a load on the dyno. But any way you cut, it the pistons and milled heads are worth twenty horses at five grand. Our total net gain in horsepower is 93.

With more valve area and a harder working combustion chamber to play with, Ak went back to the 600 cfm Holley, leaving everything else alone, and grabbed 264 horsepower at 5500 rpm. This is a ten-horse gain, and we've now got 103 horses out of these Autolite boxes and one trip to the machine shop (the milled heads).

Another camshaft was tried, and this one got impressive in a hurry. The mechanical cam listed is known as the Le Mans cam, and this thing is hotter than a two-dollar pistol in a back alley on a Saturday night. Ford points out that this baby should only be used with a manual transmission. The reason is obvious. You'll have to live with a split duration (318 degrees intake and 304 degrees exhaust) and an overlap of 94 degrees. Think twice before you install this one. With a low rear gear (numerical) and an automatic, you'd start looking for excuses not to drive.

You can figure, though, that if they used this one in the GT 40s at Le Mans there had to be a reason — like 292 horses at 6500 rpm, 28 horsepower gain over the hydraulic cam, and an additional 1000 rpm. The running total goes to 131 horses.

The big Holley (735 cfm) was bolted onto the high-rise to round out the test by allowing 294 horses to shake on the dyno at 6500 rpm. So that's the way they do it down in the land of Yinga Yinga, where they spend a lot of time leaning hard on stock engines with stock parts that can yield as much as 133 extra horses from a 289 Ford — if you know the right combination. And now you do. ■ ■

Run No.	RPM	Torque	Corrected BHP	Parts Descriptions
1	4500	154	161	Stock baseline
2	4500	184	165	351 exhaust manifolds
3	4500	187	192	600 cfm Holley. Cobra High Rise
4	4500	187	195	550 cfm Holley
5	4500	224	198	470 cfm Ford carburetor
6	6000	200	234	Hydraulic cam C90Z6250C
7	5000	260	254	351 heads, Triplex pistons
8	5500	246	264	600 cfm Holley
9	6500	228	292	Mechanical cam C7FE6250A
10	6500	232	294	735 Holley

289 FORD Parts — listing and number

351 exhaust manifolds	C90AZ9430A (right),	C90Z9431A (left)
Aluminum 4V high-rise intake manifold	C90Z9424E	
550 cfm Holley	1849	
Hydraulic cam	C90Z6250C	
High-performance springs	C3AZ6513B	
Special valve spring retainers	C90Z6514D	
Triplex pistons	C90Z6108AA (right),	C90Z6109B (left)
600 cfm Holley	C8AZ9510AD	
351 cylinder heads	C90Z6049	
Solid-lifter cam	C7FE6250A	
Dual-point distributor	C50Z12127E	
735 cfm Holley	C9AZ9510N	
351 intake manifold gasket	C90Z9433A	
351 cylinder head gasket	C80Z6051B	
Guide plate	C90Z6A564B	
Threaded rocker arm stud	C30Z6A527B	
Non-rail rockers	C20Z6564A	
Pushrod	C90Z6565F	
High-performance lifter	C30Z6500A	
Oil deflector	45218-S8	