

TECH



10 THE HARD SWAY

Will an otherwise stock Mach 1 run 10s with just a blower? Yes. Sort of.

BY BARRY KLUCZYK

Lidio Iacobelli was a man with a mission—add a Kenne Bell blower to his “Westinghouse” white ‘04 Mach 1 and post a 10-second quarter-mile time. Just about everything else on the car would be left alone—stock trans, rearend, and exhaust manifolds.

Did he do it? Yes. Well, sort of. It all depends on what your definition of “it” is. If “it” means running 10s, as he promised, then yes. We watched Iacobelli post a 10.89 at nearly 132 mph on drag radials.



Lidio Iacobelli purchased this Oxford White ‘04 Mach 1 automatic with the sole purpose of drag racing it. Specifically, he wanted to run 10s with little more than a bolt-on blower.

The iffy part of the argument comes with the follow-up run—one he almost didn’t make, as the starting-line official at rural Uby Dragway balked at the 10-second street car’s lack of rollbar. Iacobelli begged and cajoled

the guy for one last run. He got it, and it was a doozy. At the top end, a puff of smoke derived from a ventilated block ended the day, but not before posting another 10-second pass. “We learned a lesson,” Iacobelli philosophized immediately afterward. “We’ll fix it and get back on the track.”

Most people would be a little less sanguine about killing the motor of a new car, but Iacobelli runs Alternative Auto, and his shop certainly has the resources to get the car repowered. In fact, he already had a 4.6 block holding down the floor and looking for a new home.

This story, however, isn’t about attempts and failures. It’s about trial and error—what works, what doesn’t, and how to overcome the hurdles. Iacobelli intends to offer a similar Mach 1 supercharger package to his

customers, and he’s incorporating what he learned at the dragstrip, including custom brackets that allow the factory Shaker scoop to mount above the blower and poke through the hood in a stock manner.

DRAG CAR IN WAITING

Iacobelli was focused on driving an otherwise stock Mach into the 10s from the moment the car hit the street.

“With the strong 4R75-E automatic transmission and solid rear axle, it was a drag car in waiting,” he says. “I knew that if we could make around 600 hp to the tires, it would go 10s—no question about it.”

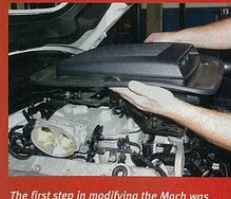
Six hundred rear-wheel horsepower wasn’t that big of a chore, as some of his “Terminator” customers were putting that down on Alternative’s DynoJet on a regular basis. Those cars, however, weren’t as stock as Iacobelli’s normally aspirated Mach 1. To reach the 600-rwhp threshold, he reached for the big gun—Kenne Bell’s 2.2-liter blower rather than the typical 1.7-liter unit used on most street cars.



Although most street cars equipped with a Kenne Bell supercharger use the 1700 1.7-liter compressor, Iacobelli decided he needed the extra boost airflow delivered by KB’s larger, 2.2-liter blower. He was looking for the car to make around 600 rwhp. Pump gas is out of the question with the 2200 blower and the Mach 1 engine’s 10:1 compression.



Here’s the basic kit delivered by Kenne Bell. For Iacobelli, it was a custom kit, with cherry-picked parts. It included numerous factory Ford parts, too, such as an ‘03 Cobra lower intake manifold.



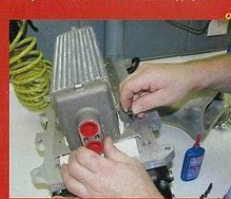
The first step in modifying the Mach was the removal of the intake tract and air scoop. Reattaching the scoop with the blower in place was a chore that couldn’t be contemplated until the supercharger was bolted down.



Next, the stock lower intake manifold was removed. Some trimming in the valley was necessary to make room for the blower kit’s intake, but it was comparatively minor surgery.



The stock fuel rails were retained but fitted with 60-pound fuel injectors. The car also was upgraded with two in-tank ‘03 Cobra fuel pumps and a Kenne Bell-supplied Boost-A-Pump. The Mach 1 would not lack for fuel.



Kenne Bell’s kit also includes the intercooler from an ‘03 Cobra, which, conveniently, nestles down inside the supplied Cobra fuel intake. The cooler is first mounted to the compressor.

Boost was the big reason. The 1700 blower is good for about 12-14 pounds, but Iacobelli was hoping to pull away about 18 pounds out of the 2200. But with the Mach 1’s 10:1 compression ratio, that meant a strict diet of at least 100-octane racing gas.

We followed the installation of the supercharger, and it was fairly straightforward. The only real tricks came when fitting the Shaker scoop—Alternative’s Marc Smielewski crafted some brackets that did the job nicely.

On the dyno, Iacobelli didn't quite see the 600 rwhp he expected, but the car did spin the rollers to the tune of 568 horses and 536 lb-ft of torque. "It should still get us into the 10s," he says.

If you're thinking he couldn't possibly have attached a KB 2200 blower and nothing else, you're right. But the list of additional components hardly compromises the description of the combination as "mostly stock." Here's the rundown of nonstock parts.

- Two '03 Cobra in-tank fuel pumps (combined with the Kenne Bell-supplied Boost-A-Pump)
- Superchips BA 2400 mass air meter
- 60-pound fuel injectors
- Tuning, including increasing the firmness of the transmission shifts

The 2200 also required an eight-rib pulley compared to the 1700's six-rib setup. That's really about it. The engine retained the stock fuel rails and fuel lines, too.

When completed, the blown 4.6 exhaled through stock exhaust manifolds that blew into a Bassani X-pipe with two high-flow cats and a pair of Flowmaster three-chamber mufflers. In fact, Iacobelli cites the exhaust system as one of the reasons the car didn't make 600 horses on the dyno. "The engine is still pretty corked up," he says. "Headers and no cats would make a big difference, but we were trying to prove a point."

Iacobelli also points to the automatic transmission as a horsepower sponge. "With the heavy, 13-inch converter, it'll sap another 5 percent or more compared to a manual transmission," he says.

Apart from the firmer shifts via tuning, the 4R75-E trans is stock, too, right down to the 13-inch converter and its roughly 1,800-stall speed.

From a chassis standpoint, Iacobelli added a Ford Racing aluminum driveshaft and HPM Mega-Bite Jr. lower control arms. The stock rear wheels were widened by 1.5 inches—more for looks than a wider footprint (see sidebar)—but the rear axle's 3.55 cog set was left untouched. The passes at the track were made on BFG g-Force 315/35R17 drag radials.

WHAT WENT WRONG?

Driveability was not an issue with the Mach 1. Iacobelli drove the car around town for days before the dragstrip test—even taking his kids to school in it—and the 568-rwhp Mustang was docile and didn't even hint at detonation. It also didn't go lean on that fateful backup run.

Iacobelli surmises the problem lied in the



With the Cobra lower intake manifold in place, the compressor is lowered into position. The wide front fenders and straight-down mounting position makes it a two-person job.



Iacobelli ordered the optional, Accufab-supplied "big oval" single blade throttle body (bottom) to replace the stock, twin-port throttle body.



One of the other minor deviations from absolute stock was the addition of an SCT BA 2400 90mm mass air meter. The Kenne Bell kit supplied the rest of the intake system.



The heat exchanger was mounted below the front bumper. Finding an easy place to drill mounting holes proved difficult, as the Mustang's high-strength steel bumper is darn hard to drill.



The installed blower, minus the Mach 1's Shaker scoop, looks at home atop the 4.6 engine. The basic installation was straightforward. The engine still wears the original exhaust manifolds, too.



Retaining the Shaker scoop required some careful measurements and the bending of a few custom brackets.



Here's how the scoop looks after its modifications. Three brackets hold the scoop in place, while the lower front section was cut out to clear the compressor case. The scoop would no longer be functional.

Mach 1 engine's reciprocating assembly, which simply wasn't as strong as the versions used in '99 and '01 Cobras. Mach 1 engines, for example, use Two-Valve engine connecting rods instead of the stronger design used in the Four-Valve Cobra engines.

Once his Mach 1 had bled its fluids all over Uby's return road and pit road, it was yanked and rebuilt using Iacobelli's replacement block. This time, it has forged pistons and rods, but it still retains the stock 10:1 compression ratio. "I still want everything else to be just like the stock Mach 1 engine," Iacobelli says. "We've just upgraded the reciprocating parts."

Interestingly, Iacobelli says his big blower combination is worth even more at the track. "It didn't 60-foot very well," he says.

The 10.89 run netted a 1.68-second 60-foot time, with the backup run posting a 10.92 and a 1.74 60-foot time, but with premature converter lockup thanks to Iacobelli's experimenting with the computer. He figures a 60-foot time in the 1.5-second range will put the basically stock Mach 1 through the traps in the 10.60s—that is, if a track will let him run without a rollbar. "I'm really resisting the idea," he says. "I don't want to put a cage in it."

Iacobelli also plans to add slightly taller

gears and a looser converter. As for the similar packages he's developing for other Mach 1 owners, he will definitely replicate his project, but with all necessary warnings. A less extreme—and street-friendly—alternative is his recommendation for the smaller Kenne Bell 1700 blower. "It'll make a bit less power," he says. "You probably won't go 10s, but you won't break the motor, either."

The lower boost pressure allows the engine to be tuned for pump gas, too.

Some might argue as to whether Iacobelli achieved his goal with the Mach 1, but what he really did was probe the outer limits of the engine, and he found them. ■■■

SOURCES

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SUBTLE MACH 1 MAKEOVER



Although running 10s was Iacobelli's goal when he acquired his white Mustang, he couldn't help but address what he saw as a few of the car's aesthetic deficiencies.

A close look reveals a few subtle but careful mods that, to the unknowing eye, look absolutely stock. Take the rear wheels—they've been widened from 8 inches to a full 10.5. And while this helps put down a bigger footprint, Iacobelli really wanted to fill out the fenders. "The stock wheels just look too tucked in," he says. We agree. The width was added to the back of the rim, so at first glance, it all looks stock as a rock.

And to get the wheels looking more at home in the fenders, he sliced three-quarters of coil out of each rear spring, evening out the ride height, and he

dropped the car about 3/4 inch. The other external enhancement was the addition of custom, rolled-tip exhaust outlets. They're 3.5 inches in diameter, up from the stock tips' 3-inch diameter. Again, they fill up the wide space of the bumper's cut-outs, but are shaped just like the factory parts. "Nine of 10 Mustang guys never even notice," Iacobelli says.

They're great details, nonetheless.



A close-up look at the subtle visual tricks of Iacobelli's Mach 1 reveal stock rear wheels that have been widened by 2.5 inches, and a slightly lowered ride height (thanks to stock springs with three-quarters of a coil removed). The stock-looking exhaust tips are 1/2 inch wider than the stock 3-inchers.



The modified scoop looks positively factory installed when the hood is closed. Iacobelli's technicians used "before" photos to help ensure the scoop was positioned correctly. Interestingly, the scoop now acts as a sort of echo chamber and amplifies the engine's—and supercharger's—sound at wide-open throttle. It's a good sound.



Although the factory exhaust manifolds were left in place, a Bassani X-pipe, two high-flow cats, and a pair of three-chamber Flowmaster mufflers were installed. Also note the Ford Racing aluminum driveshaft, which is connected to a stock rearend with stock 3.55 gears—Iacobelli didn't even remove the "balancer" from the centersection.



On the dyno and sipping 100-octane unleaded race gas, the Kenne Bell 2200-fed 4.6 made about 18 psi and put down 568 rwhp and 536 lb-ft of torque—a bit shy of the 600 horses Iacobelli expected. Most of the blame fell to the too-restrictive exhaust system and parasitic loss of the automatic transmission.



Just more than 10 seconds after this photo was taken, Iacobelli's experiment ended with a ventilated block—but not before posting a 10.92 with an admittedly lousy 60-foot time. It was backup to a 10.89 at nearly 132 mph. Iacobelli has replaced the block with one outfitted with forged reciprocating parts.