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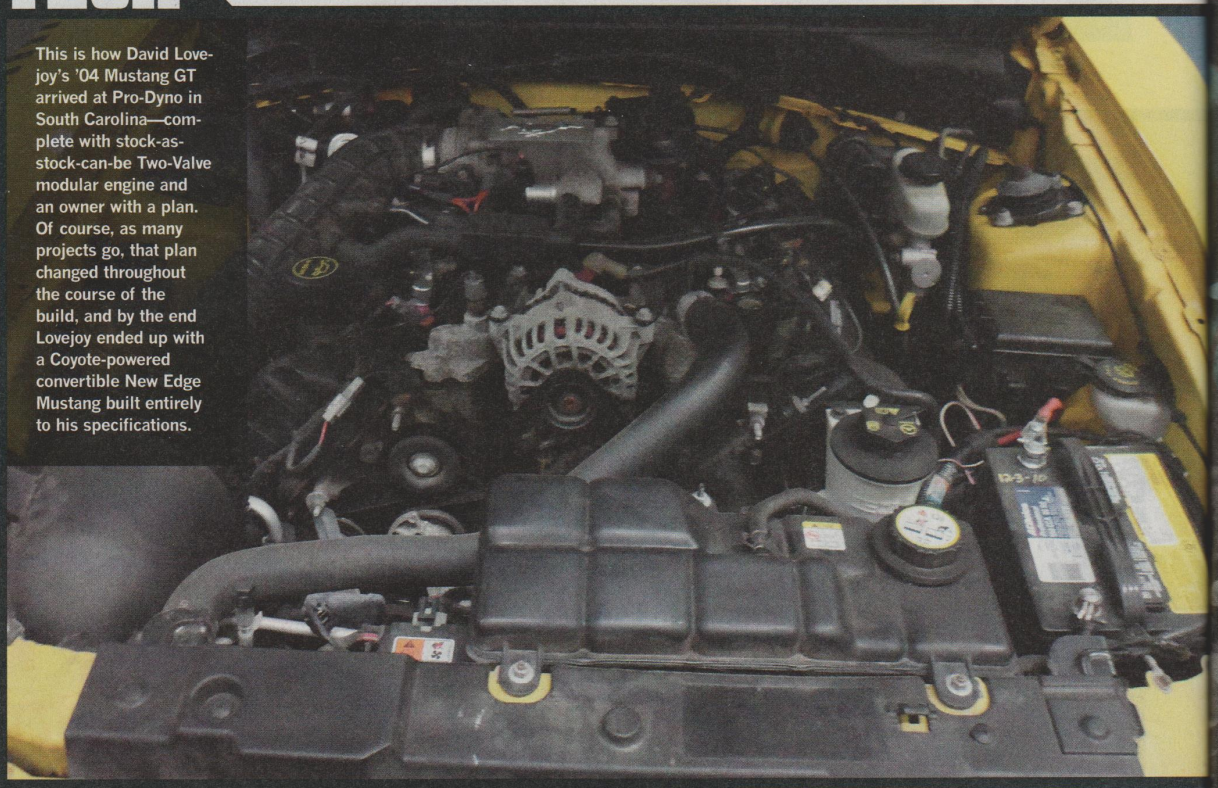


This is how David Lovejoy's '04 Mustang GT arrived at Pro-Dyno in South Carolina—complete with stock-as-stock-can-be Two-Valve modular engine and an owner with a plan. Of course, as many projects go, that plan changed throughout the course of the build, and by the end Lovejoy ended up with a Coyote-powered convertible New Edge Mustang built entirely to his specifications.

Over the Edge

Pro-Dyno gives an '04 'Stang a fresh injection of Coyote Power and other hot mods.

BY JASON REISS > PHOTOS BY AUTHOR

AS the '99-'04 Mustangs get a bit older, the engines become tired and ready for replacement. While the stock Two-Valve Modular engine was a fine performer in its day (especially when equipped with a supercharger, turbo system, or nitrous oxide), current-day performance can be had with a minimum of muss and fuss thanks to the Aluminator version of the Ford Racing Performance Parts Coyote 5.0L crate engine.

Installing a Coyote in a New Edge 'Stang is a direct swap for all intents and purposes. The engine itself fits directly in place on the K-member. However, a few changes must be made in order to complete the new-tech upgrade.

We received a tip that the crew at Pro-Dyno in South Carolina had the perfect car for this engine exchange, an '04 GT belonging to Pro-Dyno customer David Lovejoy. The project came about after Lovejoy realized putting a supercharger on his Pony's existing Two-Valve engine still wouldn't give him the performance he wanted. After consulting with the Pro-Dyno team, a decision was made to revamp the GT with a ton of custom touches and power that would equal the later-model '11-'14 S197 cars. The Aluminator NA en-

« Lovejoy's ragtop in stock form. It's a good thing cars can't anticipate their future, as many of this Pony's stock bits were removed, only to find a spot in the scrap heap.

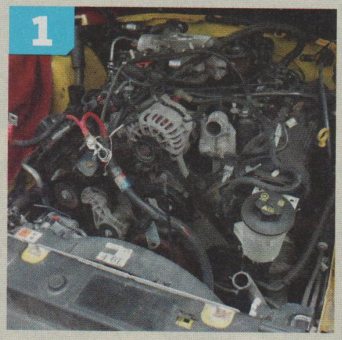
gine Lovejoy selected to be the focal point for the project is based around the design of the stock, 5.0L Coyote engine found in '11-'14 Mustang GTs.

Although this isn't exactly the world's least-expensive build, the result of the engine swap when combined with the other performance parts installed on the machine gives Lovejoy a Mustang he can be proud of—built in his vision of a perfect Mustang—and one that turns heads anywhere it goes with its updated engine platform and custom touches.

Pro-Dyno owner Dan Desio explains, "David originally came to us with the thought of building a new engine. Once he looked at the cost of what it would take to get his Two-Valve combination to make 375-400 hp to the tires, we started looking at the Coyote options, and from there it turned into a complete build—a ground-up conversion into a Coyote drivetrain along with more modifications. He bought the car only three months before sending it to us, and the car even went on the *Hot Rod* Power Tour after we put the engine in."

Lovejoy is recently retired. Shortly after the Pro-Dyno team finished his 'Stang, it was transported to his new home on the Hawaiian island of Maui, where he has been enjoying it ever since. He says, "The car was purchased from the Chicago area with only 40,000 miles on it. I love the car, and I just wanted to do more to it. I got tired of being dusted by GM products, and I got my wish. I ended up with the car of my dreams."

1



Lovejoy originally looked at rebuilding the stock engine in the car and putting a supercharger of some type on it. But once the cost of making the Two-Valve ready for boosted power was combined with the cost of the supercharging system and attendant gear, the Pro-Dyno team recommended using Coyote 5.0 power as a replacement. While the engine is a "drop-in" that will fit right into any home where a modular engine was once housed, many other items needed to be addressed during the course of the build to ensure that the car would work properly when complete.

2

The easiest way to take out the factory engine (provided you have a lift) is to just disconnect the transmission, suspension, exhaust, and harnesses, and then drop it right out the bottom of the car with the springs and struts still attached. As none of these pieces were reused, it made the task a quick one.

3

This is Ford Racing Performance Parts' 5.0L DOHC naturally aspirated Aluminator Crate Engine (PN M-6007-A50NA), which is the FRPP team's take on the "perfect Coyote" powerplant. Instead of using stock parts inside, it gets the full FRPP treatment, including a set of Mahle hard-anodized forged pistons complete with Mahle's Grafal low-friction skirt coating, a set of Manley H-beam forged connecting rods that are fastened with ARP2000 bolts, a set of Boss 302 connecting rod bearings, and a production aluminum block to keep both weight and costs in the reasonable area. It doesn't come with a PCM or harness—those must be purchased separately under FRPP PN M-6017-A504V.

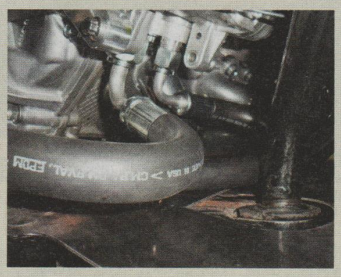
4

In order to make everything happy under the hood, the Pro-Dyno team sourced one of Vintage Air's Coyote Front Runner drive systems (PN 174020). The kit includes Vintage Air's aluminum A/C compressor cradle and power-steering mount, a Sanden SD-7B10 air conditioning compressor, a new power-steering pump, hard-anodized aluminum pulleys, a Dayco tensioner and belt, and ARP polished stainless fasteners—everything the Pro-Dyno team needed to keep the alternator and water pump drive on the left side of the engine for fitment.

5

Here's a quick look at how the A/C compressor will be positioned, within this billet mount. The original compressor is still on the other side of the engine in the factory position (and was later removed). The power steering pump will be mounted between the A/C compressor and the water-pump pulley.

6



With the use of the Vintage Air kit, the air conditioning compressor and power-steering pump required custom lines to be made at a hydraulics specialty shop to match up with the New Edge's factory components on the other end.

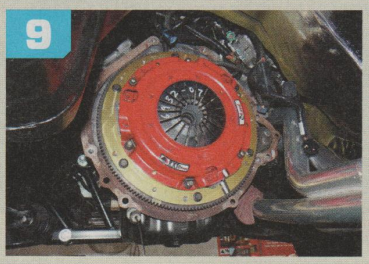
7

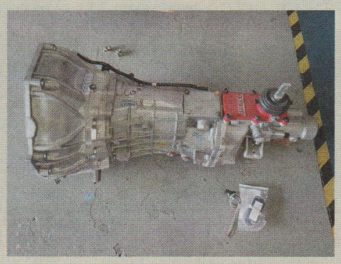
Another view of the completed Vintage Air kit installed on the front of the engine, with the power steering pump in place.

8

Pro-Dyno has had good success with using BBK's swap headers (PN 1634). They are designed to fit all '79-'04 Muatangs when employing the Coyote powerplant. The headers are available in a chrome or silver ceramic finish—Lovejoy opted for the silver ceramic pieces to help keep underhood temperatures down. The headers feature mandrel-bent 1 3/4-inch primaries and 3-inch collectors and required the use of BBK's matching catalyst-equipped 3-inch X-shaped crossover pipe (PN 1786). They also sourced an Anthony Jones Engineering K-member and used the stock front lower control arms to maintain the ride quality.

9





Initially, Lovejoy's machine was finished using the stock TR-3650 transmission, but after driving it with the five-speed box, they quickly realized that the gear ratios were all wrong for motivated Coyote performance. To remedy the issue, they selected a brand-new McLeod Racing RXT twin-disc clutch assembly (PN 6932-07) and Tremec T-56 transmission. The twin-disc clutch will harness all of the power Lovejoy's Coyote currently makes with ease, and both pieces give him plenty of power-handling capability to grow in the future should he decide to add more power.

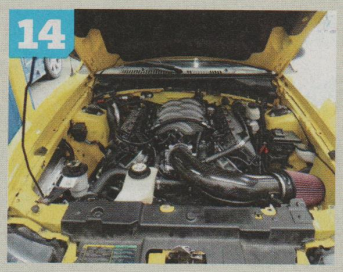
10

A complete fuel system from the experts at Fore Innovations was employed to provide the New Edge Coyote with the correct fuel volume. Fore Innovations even engraved the Pro-Dyno logo atop the new rails! The system arrived with all new hose, one of Fore's awesome dual-pump fuel hats, a pair of Walbro GSS342 pumps, filters, a 0 to 100-psi fuel pressure gauge, and all of the fittings and fasteners required for installation.

Also ordered with the Fore Innovations fuel system was one of the company's FC2 dual fuel pump controllers. This standalone controller permits the owner to retrofit existing installations or use in a brand-new install like ours. It has a 60-amp capacity for plenty of juice, replaceable fuses, and heavy-duty stainless terminals. The billet block was mounted in the trunk with the attendant wiring.

The engine in place—snug as a bug in a rug! Notice that in this shot the Fore fuel rails are installed and the fuel system installation is under way.

One item that the Pro-Dyno team needed to spend a lot of time fleshing out was the installation of the engine control computer. "The hardest part of the build was finding a place to put everything in this car," says Pro-Dyno's Dan Desio. "We ran two computer systems, the factory system remained in the car, with the OBD-II port in the correct place, and we made a custom panel to mount the engine control computer where the stock air intake used to be. The wiring harness was run from this position. Although the new harness comes with all of the OBD-II pieces, in the newer cars all of the computers are up underneath the hood. We had to come up with a way to get everything to work and still look good."



JLT's carbon-fiber cold air kit looks right at home here. The kit (PN CFCAI-FMG-11) retails for $429 and requires that a tune be custom-written to account for the extra power it provides. As Lovejoy's machine was being completely overhauled, the Pro-Dyno team was able to accomplish this with ease. Check out the dyno results in the sidebar!

Because the Coyote uses a drive-by-wire throttle arrangement, the use of a new throttle pedal assembly was required, along with come custom wiring to get everything to communicate correctly.

With underhood space at a premium, a new battery tray was sourced from Summit Racing Equipment, and an Optima Yellow-Top battery was placed in the trunk.

This build wasn't geared towards horsepower alone. Lovejoy wanted the car to handle as good as it looked. Steeda Caster/Camber plates were used atop the Tokico D-Spec struts in the front of the car.

The Pro-Dyno wiring cart got quite a workout during this built. This pile shows the remnants of what was removed from the stock harness. Paul Conner spent many hours to get all of the stock gauges to work, and ended up using an old-school Steeda Timing Adjuster to make the stock tachometer interface with the new engine computer—a use we're sure the Steeda engineers never intended.

19

In addition to the Tokico D-Spec struts, D-Spec shocks were uses in the rear, Ford Racing Performance Parts "C" coil springs were used in the front, and stock springs were used in the rear to get the stance just right. Steeda upper and lower control arms were also used. Here, the Pro-Dyno team welds in the Maximum Motorsports subframe connectors—a virtual necessity on a convertible car to prevent it from twisting up when the power is applied.

20

The last step on the performance modification train was a set of Baer's Big Brakes, designed to provide this pony with plenty of whoa to accompany the go. The front calipers were also finished in body-color powdercoating to finish off the look.

Sources

BBK Performance
951/296-1771
www.bbkperformance.com

JLT Performance
757/335-1940
www.jlttruecoldair.com

Maximum Motorsports
888/378-8830
www.maximummotorsports.com

McLeod Racing
714/630-2764
www.mcleodracing.com

Pro-Dyno.com
855/776-3966
www.pro-dyno.com

Steeda
954/960-0774
www.steeda.com

Tremec
734/456-3700
www.tremec.com

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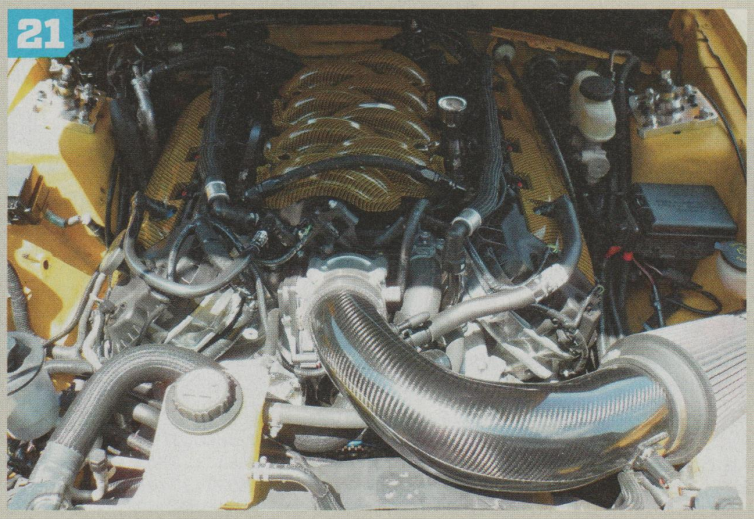
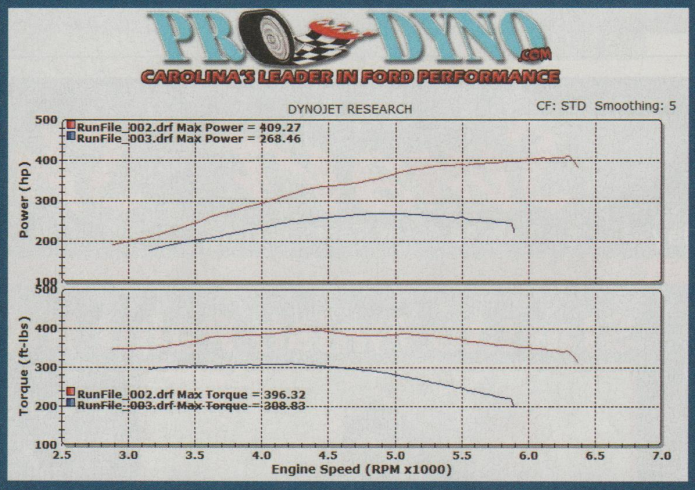


For the final touch on this wild build, Pro-Dyno's in-house paint specialist covered the coil covers, intake manifold, and PCM cover in the exterior's Screaming Yellow. The manifold and covers were subsequently hydrographic-dipped to provide a carbon fiber look over the paint—making this New Edge Coyote truly one of a kind.



ON THE DYNO

One of the main concerns David Lovejoy had when beginning this project was that the final product perform as well or better than a typical supercharged Two-Valve modular. Judging by the results we see from the dyno session, it has done exactly that.

Prior to ever cracking a nut loose, the original powerplant put down 268.46 hp and 308.83 lb-ft of torque down on the Pro-Dyno roller. The after? An excellent gain of 140.81 hp at the feet and 87.49 lb-ft of torque. That's a stunning showing from a crate engine, especially when you consider that there is no supercharger on this engine—just a quality, custom-written SCT tune by Desio and a lot of hard work from the Pro-Dyno team Lovejoy has a car that he can take anywhere. Although Maui's not that big, we suspect this wicked New Edge Coyote turns heads everywhere it goes.