

Reinterpreted

A Boss Mustang that eschews correctness for contemporary function

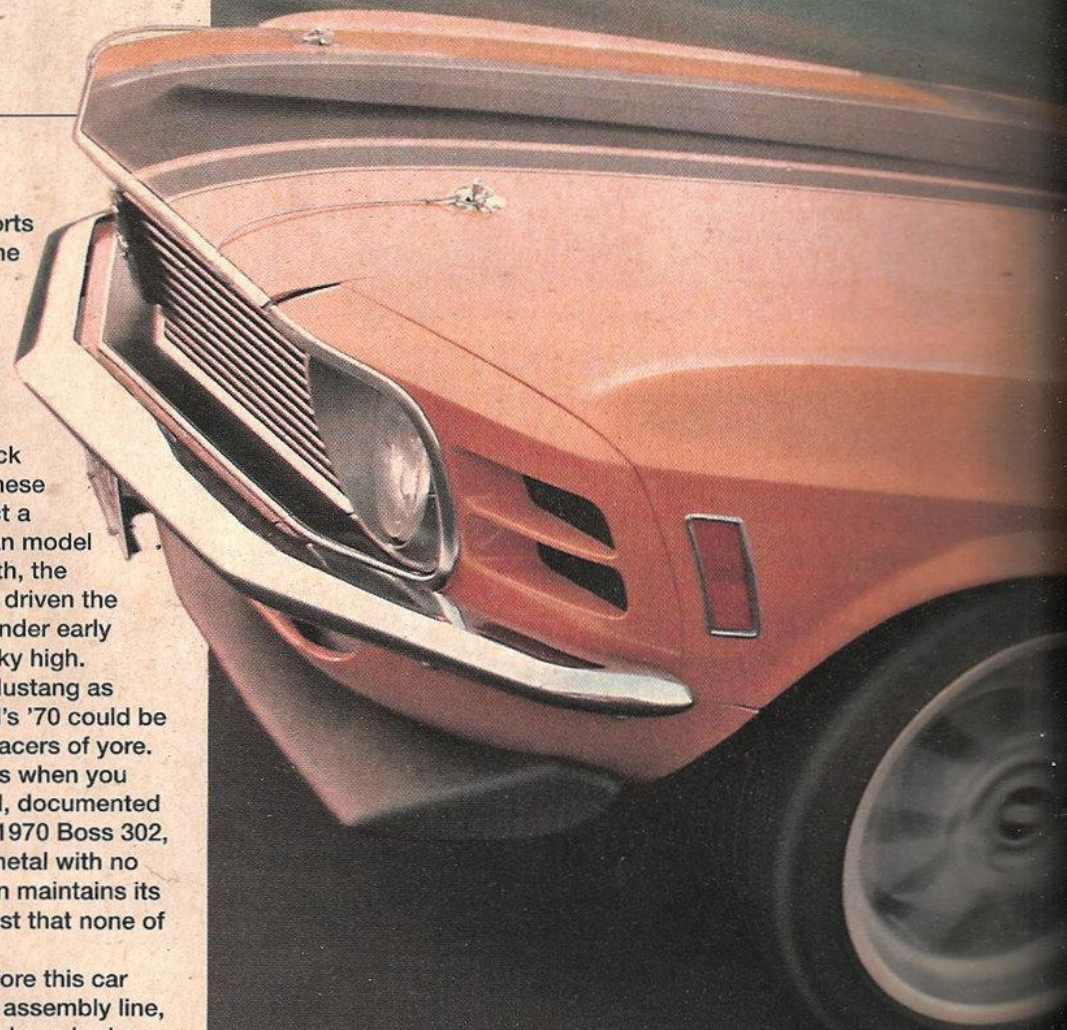
Words by Terry McGean

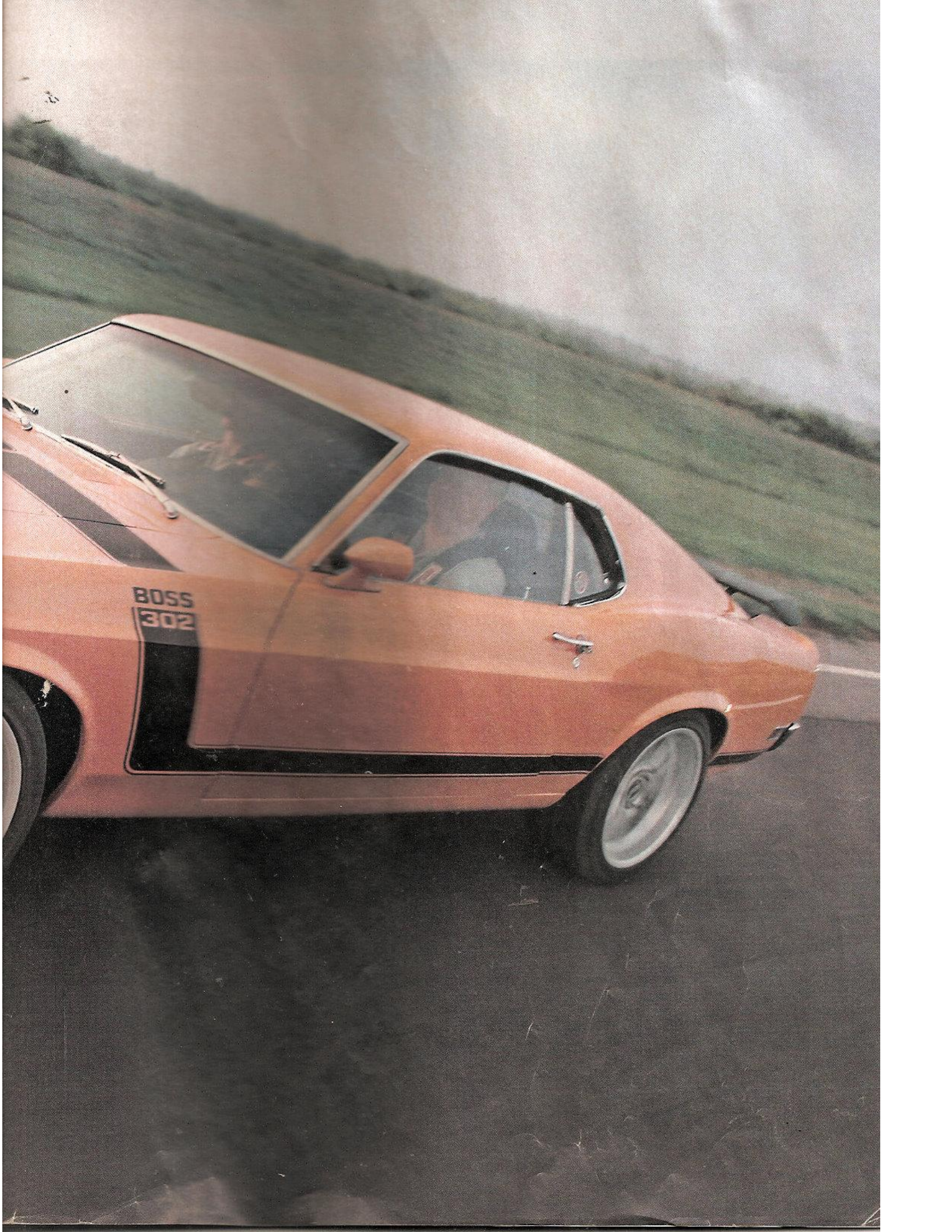
Photography by Daniel Strohl

Any car that was manufactured to emulate the efforts of Trans-Am racing teams from the golden age of 1966-'72 is today highly valued, fervently sought and frequently copied. Those factors would generally lead one to believe that any early Z/28, Challenger T/A or Boss Mustang with obvious deviations from stock is likely not a "real" example of these homologation specials, but in fact a clone built from a more pedestrian model sharing similar sheetmetal. In truth, the popularity of such facsimiles has driven the value of even the lowliest six-cylinder early Camaro or Sportsroof Mustang sky high.

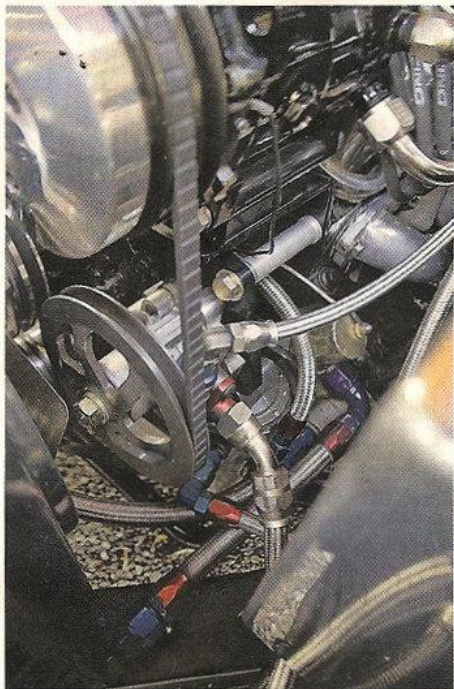
So it stands to reason that a Mustang as heavily tweaked as Tom Goddard's '70 could be assumed to be a tribute to road racers of yore. But then, you know what happens when you assume. This is indeed a certified, documented specimen of that rare breed, the 1970 Boss 302, still wearing all its original sheetmetal with no significant patches. This one even maintains its original drivetrain — all of it. It's just that none of it is actually installed in the car.

The story begins way back before this car had even made its way down the assembly line, and probably before the Boss package had even been conceived. Tom and his brother had been car enthusiasts since their youths, and as young adults, participated in SCCA racing, as many gearheads of their generation did. Tom spent most of his time in the pits and turning wrenches in the shop while his brother did some driving. During the time the two were involved with open-wheel race teams — mostly Formula B (now Formula Atlantic) — the Trans-Am series was at its peak of popularity, and all those legendary cars and drivers were sharing the same pits and paddocks with the Goddard brothers. Their influence was surely unavoidable.

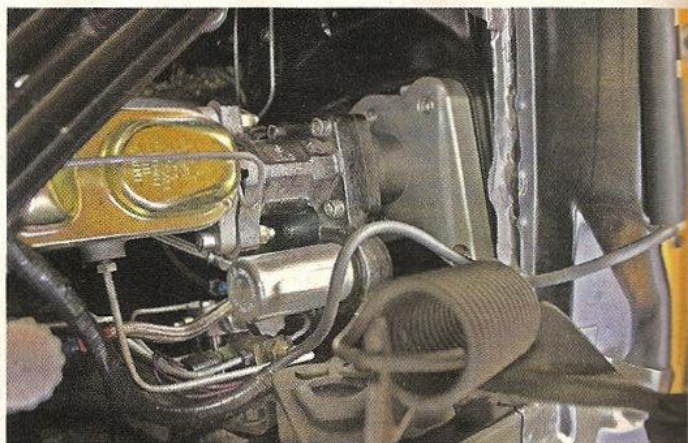




BOSS
302



KRC pump feeds power steering and brakes; Roush 342-cu.in. crate engine makes broad, reliable power band while original Boss 302 sleeps safely



Race-prepped BLP carburetor mounted to Edelbrock Victor Jr. intake feeds Roush engine; Hydratech makes the hydraulically powered brake booster

A few years later, the Goddards decided they needed to own one of those Boss Mustangs they'd admired on the track. It was becoming clear that Detroit was changing its ways, and high performance was on the way out, while the Pinto-based Mustang II was coming in. The brothers located a decent example of a Boss still with its original owner, bought it, and immediately set out to restore the car—a somewhat unusual practice at the time, since most muscle cars were only a few years old. This would have been around 1975, and at that point the Mustang showed 47,799 miles and had been spared most of the harshness of the winters in its Rhode Island home.

The Goddards enlisted the help of Hank Fourier, who'd been involved with Tasca Ford's racing efforts a few years prior. Fournier handled the bodywork and laid down the first Grabber Orange

paint job. Tom explains, "This car left the factory in that Lime Green metallic color that we thought was awful. To us, a Boss should be Grabber Orange, just like the Bud Moore race cars for '70."

So it was that the Goddard's Mustang received a color change, a move that many owners of muscle cars made during the mid-to-late '70s, and one that was often regrettable as the value of these models rose. In the Goddards' case, it was obviously the right choice, as 30 years later Tom is still smitten by the hue, passing on the chance to return the car to stock.

But what about the years in between the car's restoration in the mid-'70s and the second project of a few years ago? "My brother drove the car—it was really his—for about four years and took good care of it. Then he parked it in a storage building and it sat there for 25 years."

That storage must have been kind,

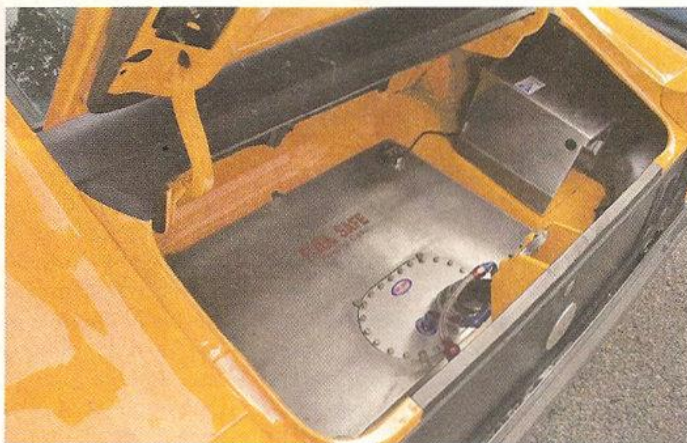
because Tom's plans to revive the Boss after acquiring it from his brother were initially fairly mild. "Actually, the paint from the mid-'70s was still in excellent shape when I started this project in 2003. I hadn't planned to repaint it, but as the project went forward, the plans got bigger and bigger."

The project Tom refers to was to be more than a simple revival of the previously restored Boss. The idea was to prepare the car for competition, but Tom was never interested in placing the desirable Boss in peril. "I wanted to use the car for some form of competition, but club racing or other on-track events present plenty of opportunity for bent sheetmetal, and this car's body is just too straight and original to jeopardize. Vintage racing presents the same dangers and would have required too many permanent modifications."

Instead, Tom found that rally racing



Auto Meter gauges reside in stock dash, rally timer gear mounts to passenger side; long shift handle bridges distance from Corbeau seats to five-speed



Cobra Automotive provided expertise and suspension components, power rack and pinion came from Total Control; fuel cell neatly replaces stock tank

offered the perfect forum to use the Boss for its intended purpose of racing, but without fender-to-fender issues. As a bonus, Tom's wife, Lisa, could also participate as navigator.

But not all of the rallies would be simple over-the-road time/distance trials. There would be closed-course time trials and hill climbs as well—events where improved performance would provide an advantage. Though the Boss 302 engine was born for road racing, its design doesn't quite fit with modern performance engine theory. What makes a Boss different from garden variety Ford small-blocks is its Cleveland-style cylinder heads, which featured fairly huge intake and exhaust ports. When combined with the little 302-inch mill, as per SCCA's 5.0-liter limit for the "big" Trans-Am cars, those mammoth ports were thought to enhance high-rpm engine breathing—and, to a

certain extent, they did—but they also pretty much required it, leaving low-rpm operation typically sluggish.

We figured Tom opted to swap engines to overcome the torque deficit Boss engines carry but, actually, that had nothing to do with his choice. "The stock engine had already been rebuilt once, and was bored .020-inch over. I figured it only had one more rebuild left, so I decided to stash it for preservation." And what directed him to the Roush crate engine as an alternative? "Roush is a known entity and they provide a complete engine with a dyno sheet and a warranty. And it comes in the mail." Fair enough.

The particular crate package Tom selected is the 342R, so named for its displacement, resulting from a 3.40-inch stroker crank (3.00 inches is stock for a 302), which is forged along with the pistons and connecting rods. Roush recommends

this package for those wanting maximum performance with limited space, referring to the engine bay. While 1970 Mustangs have certainly housed much larger engines, a small-block is a comfortable fit that leaves plenty of room for headers and other accessories. The 342R is rated for 450hp and 420-lbs.ft. of torque, which it delivers on premium pump gas, and with those forged internals and the main-cap girdle, it should withstand plenty of hard use.

With the factory drivetrain stashed, the door was left wide open to further upgrades, like the Tremec TKO-600 five-speed gearbox, which slips in place of a Toploader four-speed. The shifter location differs from stock, though by using a custom shift lever, the knob falls right into the driver's right hand. The Centerforce clutch is actuated by hydraulic linkage from JMC, and a custom 3-inch-diameter steel driveshaft with heavy-duty Spicer



Undercarriage of this Boss is as clean and meticulous as topside, including custom 2.5-inch exhaust

1330-series U-joints ties the gearbox to the custom-made rear axle.

The Boss left the factory with a 9-inch rearend, but Tom wanted to make some alterations, so rather than modifying the factory axle, it was stored while Moser Engineering built a new housing and corresponding axle shafts. The new rearend assembly is slightly narrower than stock to accommodate the larger rear wheel/tire combo without requiring body modifications. The housing mounts a Ford nodular carrier fitted with 3.89:1 gears and a Detroit Locker differential.

Remember Tom mentioning that the project kept getting bigger? Somewhere along the way, as the seriousness of the final product continued to escalate, Tom

enlisted the services of Cobra Automotive in Wallingford, Connecticut, to perform some of the work. With recommendations from Cobra Automotive's Carl Vogt, a suspension system was devised and installed to vastly improve the Mustang's road feel and handling capability. Up front, the time-honored practice of lowering the upper control-arm mounting points was utilized, dropping them 1¼-inch to fasten the Cobra Automotive competition control arms. Global West provided the lower arms and a Cobra Automotive "big spindle" kit ties them together. Cobra Automotive also provided the 1¼-inch hollow front anti-roll bar, while Global made the 620lb. competition coil springs, as well as the 150lb. rear leaf springs,

mounted using Cobra Automotive 1½-inch lowering blocks. Twelve-way externally adjustable QA1 Stocker Star shocks are used front and rear.

One of the more extreme aspects of this Mustang involves the brakes. Baer Brake Systems builds the massive monoblock six-piston calipers, so named because each caliper body is actually machined from a single chunk of billet aluminum to thwart flexing that diminishes brake force. The rotors are similarly huge, measuring 14 inches in diameter front and rear. To assist in actuating all of those caliper pistons, a Hydratech hydraulic brake booster system was employed, taking its fluid pressure from the power steering pump. This is actually the second brake system the Boss has seen since the most recent set of renovations, and Tom says it performs fantastically.

The broad, European-styled wheels are from BBS, and though not offered for vintage Fords, they were used on Panoz sports cars, which use Ford mechanical bits. Tom discovered this and selected them because he felt they offered a modern interpretation of the classic Minilites used on the 1970 race cars.

Cobra Automotive also handled the body restoration, begun after plans to

OWNER'S VIEW

I'd already owned a 1965 G.T. 350 and a '67 G.T. 500 from new by the time my brother and I were involved with the Formula B cars around 1970. I had a really good view of those Bud Moore cars that Parnelli Jones and George Follmer were driving, and I'd wanted one ever since. When my brother bought this car in the mid-'70s, we knew what color we wanted.

When I bought the car from my brother in 2003, I wanted to prepare it to be used in some form of competition, and the rally racing seemed perfect, since the likelihood of damage to the car is relatively low and my wife is able to participate as my navigator.

Storing the original drivetrain means I don't have to worry about damaging something that's irreplaceable, and allowed me to make other changes I wanted, like the narrower rear axle and the overdrive trans. I don't think I'll ever put it back to stock, but if someone ever wanted to, I have everything and there's nothing that couldn't be changed back to factory form. — Tom Goddard

PROS

- + Genuine Boss 302 with numbers-matching drivetrain in tow
- + Modern crate engine makes broad power band for street or track
- + No permanent mods that would prevent car from returning to stock

CONS

- Preserving gennie sheetmetal still raises concerns in traffic
- Big rollers and low ride height can be an issue over rough roads
- Replicating this car, even from a six-cyl, would be pricey today

retain the '70s paint job were abandoned somewhere along the way. Steel work was minimal, thanks to the excellent condition of the factory panels, so after the car was completely disassembled, the previous finish was removed via media-blasting and then the body was primed. Next, a coat of filler/primer was applied and board-sanded to eliminate minor imperfections in the surface; a urethane filler primer was used next and again board sanded. The Grabber Orange was applied over a sealer primer, and despite current base/clear paint trends, a single-stage system was used to provide a restoration-type finish (though it's far better than the one Ford laid down in 1970).

The flattened-black accents on this Boss are actually 1969-spec, as Tom feels it looks better than the rough paint used in 1970. All stainless trim is original and restored, and even the bumpers are factory pieces, albeit treated to fresh plating.

The cockpit of a rally car is a critical place. It needs to provide support for aggressive driving, comfort for long rally sections and ready access to a variety of data sources. This Boss was first fitted with a full layer of foil-backed heat insulation/sound deadener before replacement carpets were laid. Corbeau seats were then installed, with mounting points dropped and moved rearward, as Tom stands over six feet tall. A custom headliner was also used to increase headroom. The rear seat was removed and replaced with a '66 Shelby package tray, reinforced to support a spare front wheel and tire, à la the '65 G.T. 350.

The stock dashboard has been retained, but fitted with a reproduction A/C-style dash pad to accommodate the Classic Auto Air Perfect Fit A/C system that Tom felt he and his wife would probably appreciate during long summer road tours. The stock gauge bezels now house Auto Meter Phantom white-face gauges, and the passenger side features a custom aluminum panel mounting a Brantz rally odometer, speedometer and rally timer units. The custom trans-tunnel aluminum panel mounts switches for the wipers, which can now be operated in an intermittent mode or with a momentary switch, and headlamp controls, providing high beam flash capability.

Despite the show-car detail of the finished product, Tom immediately set out to use it as he'd planned. It's paid off, as the Goddard team and their Boss tied for first place in their first rally, the 2006 New England 1000. Many more events are planned, as Tom puts about 4,000 miles on the Mustang per year, and keeps it out until the weather turns nasty in late fall.

We think Bud Moore would approve. 🍷

1970 Ford Mustang Boss 302 SPECIFICATIONS

Engine

Package	Roush 342R crate (342-cu.in. V-8)
Block type	Ford production 302-cu.in./5.0-liter, two-bolt main
Crankshaft	Roush forged 4340 steel
Cylinder heads	Roush aluminum, CNC ported
Displacement	342 cubic inches
Bore x Stroke	4.00 x 3.40 inches
Compression ratio	10.0:1
Pistons	Wiseco forged, Plasma Moly rings
Connecting rods	H-beam, Forged 4340 steel
Horsepower @ rpm	450 @ 6,250 (est.)
Torque @ rpm	420-lbs.ft. @ 5,200 (est.)
Camshaft type	Roush hydraulic roller; specifications are "Roush proprietary"
Valvetrain	2.02-inch intake valves and 1.60-inch exhaust valves, 1.6:1 roller rocker arms, hydraulic lifters
Fuel system	Edelbrock Victor Jr. Air Gap intake manifold, race-modified BLP 650hp four-barrel carburetor
Ignition system	MSD electronic distributor
Exhaust system	JBA stainless steel long tube headers, 1.75-inch primaries and 3-inch collectors, Dr. Gas X-pipe 2.50-inch Magnaflow mufflers, Flowmaster 2.50-inch tailpipes
Original engine	302-cu.in. V-8

Transmission

Type	Tremec TKO-600 five-speed manual with modified Hurst shift lever and ball, Center Force dual-friction 10.5-inch clutch and pressure plate with JMC hydraulic clutch conversion
Ratios	1st 2.87:1 2nd 1.89:1 3rd 1.28:1 4th 1.00:1 5th 0.64:1 Reverse 2.56:1

Differential

Type	Ford 9-inch "N" carrier with custom Moser axles
Ratio	3.89:1

Steering

Type	Total Control power rack and pinion with Woodward Racing servo and KRC pump
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Brakes

Front	Baer EXTREEM-PLUS 14-inch vented, slotted, drilled discs on 6061-T6 alloy spindles, Baer 6S six-piston Monoblock aluminum calipers, braided stainless flex lines
Rear	Baer EXTREEM-PLUS 14-inch vented, slotted, drilled discs on 6061-T6 alloy spindles, Baer 6S six-piston Monoblock aluminum calipers, custom-made lines

Suspension

Front	Cobra Automotive upper A-arms, Global West competition lower A-arms, QA1 Stoker Star 12 aluminum shocks, 620-lb. competition coil springs, Cobra Automotive 1.25-inch diameter hollow anti-roll bar
Rear	Global West 150-lb. rear leaf springs, Cobra Automotive 1.50-inch lowering block kit, Energy Suspension polyurethane shackle kit, CalTracs traction bars

Wheels & Tires

Wheels	BBS Front 18 x 8.50 inches Rear 18 x 10 inches
Tires	Bridgestone Potenza Pole Position Front 245/40ZR18 Rear 275/40ZR18