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1970 FORD MUSTANG MACH 1 COBRA JET

by John F. Katz
photos by Roy Query

"BACK then we did some crazy things."

Ken Spencer spent the late sixties as a Ford design executive, working under studio director Joe Oros. One of the crazier things he and his colleagues did was to design a functional air scoop that bolted down to the top of the engine air cleaner and poked up through a hole in the front hood. "You should have heard the screams in the design studio," he recalled, with obvious relish. "The engineers went nuts...you know, they never would allow us to stick anything out through the hood, because when the engine rocks when you accelerate, it hits things."

Sure, the engineers screamed. But then they scurried back to their slide rules and figured out how to make it happen. There was still time for a little craziness, in the days before safety and emissions and other pesky social responsibilities loomed too large in the automakers' priorities. Even as the car on these pages was being built, however, that time was coming to an end. The 1970 Mustang was the last of the breed to have descended directly from the spectacularly successful 1964½ original. It was also the very last Mustang to offer the mighty 428 Cobra Jet V-8, itself the last of a line of engines that began with the Thunderbird 352 in 1958 and included the NASCAR-bred, Le Mans-winning 427. 1971 would bring a new

Driving Impressions

by Roy D. Query and John F. Katz

We remember the Mach 1 Mustang as a kind of Hot Wheels car for older kids — all scoops and stripes pasted over some of the sixties' most awful colors, as busy and overstated as a study-hall doodle. Somehow, though, Rick Parker's is different. Maybe it's the unusual black-on-black color scheme that lends Rick's car a certain cohesion and integrity that's just not possible in Medium Lime Metallic.

Inside, the massive dash and large-diameter steering wheel sit too close relative to the pedals; this would be an awfully awkward car for a short person to drive. But the seats offer decent comfort, and Rick, who stands just six feet tall, says that the car fits him fine.

The starter motor coughs once before the engine lights up and then settles down to a busy, whirring, almost liquid rumble. The shaker hood dances its restless mambo, immediately commanding the driver's attention. The sensitive clutch works like a toggle switch; either it's in or it's out, with precious little in between.

With no power assist to numb the steering, the wheel feeds back every sharp corner of the gravel in the drive. We pull onto the pavement and take her once through the gears, gently, limiting our shifts to 3,500 rpm: Snort, snort, howwww! howwww! howwww! Once above idle, the big mill makes more rush than rumble, a sound that somehow recalls the starship

Enterprise (old generation) hurtling past Warp 9. The nylon bias-ply tires haven't quite reached operating temperature, and they deliver a firm bumpity-bump to the seat of our pants. And then there's that hood scoop, twitching nervously between shifts, always in the corner of our vision.

The "competition" suspension delivers as rough a ride as we expected, and the hood shakes and rattles in true vintage Detroit fashion. The seats must soak up some of the harshness, because we can hear the suspension working over the few bumps we don't feel. Patched-up chuck-holes kick back through the steering wheel. But the power front disc brakes work surprisingly well for their age and era — and so does the heater.

The twisty service road behind the Port Columbus airport offers a number of challenging off-camber curves. Unfortunately, most of the curves offer telephone poles just beyond the apex. Despite its direct feel, the Mustang's steering is neither light nor quick, and with nearly 60 percent of the car's weight on its front wheels, it shouldn't surprise anyone that this old Detroit isn't particularly interested in deviating from a straight line. Not that it pushes real hard, but once in a turn we definitely feel as though the front end is going to slip out from underneath us before the rear end comes around. Of course, we're sure we could break the back

tires loose with a generous stab of power — but those telephone poles look pretty sturdy.

Clearly, the Mach 1 does its best work in a straight line. The accelerator is sensitive; our right foot barely toes the pedal and the big 428 stuffs us a little deeper into the high-back vinyl seat. There's a sharp rasp from the motor at 4,000 rpm that wasn't there below 3,500. We slow down to let the traffic pull ahead of us, then, coasting at 2,000 rpm in first gear, we punch it — hard. The engine rushes for the red zone with a hurricane howl. Did the tires slip? They didn't make any noise, and we don't see any tire smoke, but then it's pretty windy, too, so it's hard to tell. Into second at 3,000 rpm, we punch it again, bringing down a maelstrom of wind and engine and road noise. Two black marks, maybe 40 feet long, appear in the rear-view mirror. But there is still no tire noise and no fish-tailing — just two straight black lines stretched out behind us.

Rick offers to show us how it's done. He has no trouble wagging the tail and coaxing a squeal from the rear tires on a first-second upshift before a late-model Grand Am meanders into our lane. Passing the errant Pontiac, Rick burns rubber in the bottom three gears. Says he could do it in fourth, too, by side-stepping the clutch, but he doesn't want to treat his car that way. We can't say we blame him.





MUSTANG

continued

decade, a new Mustang, and, to an extent, a new era.

"The 428 was...a seven-liter engine that could be made at high volume," explained Bill Barr, the Ford engineer who headed the Cobra Jet project, "as opposed to the 427, which was more high-bred, special purpose." Less bore and more stroke not only endowed the 428 with more low-end torque than its famous ancestor, but simplified machining as well. The first 428s appeared in 1966 in Ford's police interceptors and as an option for the Galaxie XL and Thunderbird.

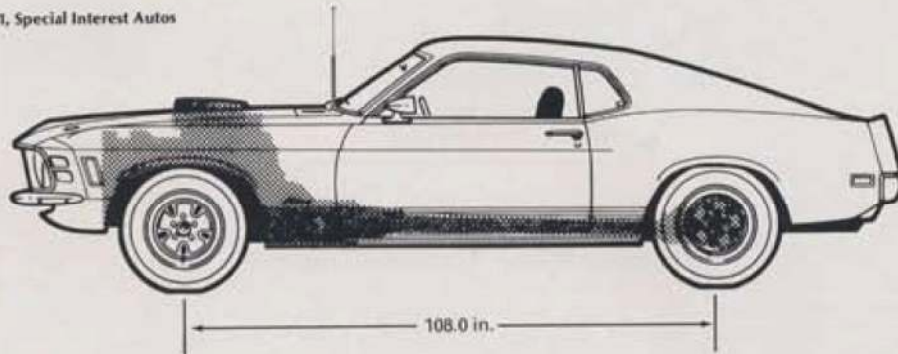
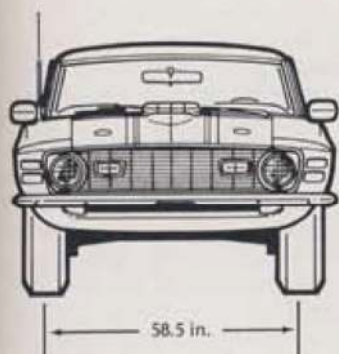
Ford built a few 427 Mustangs early in the '68 model year, but the company soon realized that a massaged and modified 428 could compete more cost-effectively against Chevrolet's new 396 Camaro. Then someone suggested that the Cobra name could be milked for some more mileage. "It was really a very simple project," Barr recalled. "We took a cam we were using in the 390 GT, [and] took what amounted to the 428 police interceptor intake manifold — which happened to be aluminum, but for the Cobra Jet in order to save money we made it out of iron." High-performance heads from the old 427 and an upgraded carburetor — from 600 to 735 cfm — completed the package. The Cobra Jet found its way onto the Mustang GT option sheet midway through 1968, bowing officially on April 1 of that year. Barr quipped that the hulking engine fit into the smallish Mustang only because the assembly-line workers didn't know that it couldn't possibly.

Nonetheless, Barr was present to watch one of those blissfully unin-

specifications

Illustrations by Russell von Sauers, The Graphic Automobile Studio

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1970 Ford Mustang Mach 1 Cobra Jet

Price	\$3,271
Standard equipment on Mach 1 includes	351 c.i.d., 250 hp V-8; electric clock; dual color-keyed racing mirrors; deluxe Decor Group interior; deluxe Rim-Blow steering wheel; competition suspension
Options on dR car	428 c.i.d., 335 hp Cobra Jet with Ram Air, \$376; 4-speed transmission, \$205; Traction-Lok rear end, \$43; power front disc brakes, \$65; AM radio, \$61; tachometer and trip odometer, \$54; quick-ratio steering, \$16; fold-down rear seat, \$97
Total price	\$4,188

TRANSMISSION	
Type	4-speed manual
Ratios: 1st	2.32:1
2nd	1.69:1
3rd	1.29:1
4th	1.00:1
Reverse	2.32:1

DIFFERENTIAL	
Type	Traction-Lok limited slip
Final drive	3.50:1

STEERING	
Type	Recirculating ball
Turns lock-to-lock	3.7
Ratios	16.1:1 (gear); 20.3:1 (overall)
Turning circle	37' 5" curb/curb

BRAKES	
System	4-wheel hydraulic, vacuum assisted
Type/diameter	11.3" vented disc (front); 10.0" drum (rear)
Total swept area	341 sq. in.

CONSTRUCTION	
Type	Unitized
Body construction	All steel
Body style	2-door hardtop coupe

SUSPENSION	
Front	Independent, coil springs, ball joints, upper wishbones, single lower arms with drag struts, anti-roll bar
Rear	Live axle, semi-elliptic springs, anti-roll bar

Shock absorbers	Tubular hydraulic, staggered in rear
Wheels	14x6" pressed steel disc
Tires	Goodyear F70-14

WEIGHTS AND MEASURES	
Wheelbase	108.0"
Overall length	187.4"
Overall width	71.3"
Overall height	51.2"
Front track	58.5"
Rear track	58.5"
Ground clearance	6.1"
Curb weight	3,647 lb.

CAPACITIES	
Crankcase	5.0 qt.
Transmission	1.0 qt.
Cooling system	20.0 qt.
Fuel tank	20.0 gal.

CALCULATED DATA	
Bhp/c.i.d.	0.78
Lb./bhp	10.9*
Lb./c.i.d.	8.5*
P.S.I. (brakes)	10.7*

PRODUCTION	
Total 1970 Mustang	190,727
Total 1970 Mach 1	40,970
Total '70 Mustang Cobra Jet	2,671
Total '70 Mach 1 Cobra Jet	N/a

*estimated weight

ENGINE	
Type	90-degree V-8
Bore x stroke	4.13" x 3.98"
Displacement	428 cu. in.
Compression ratio	10.6:1
Bhp (gross) @ rpm	335 @ 5,200
Torque @ rpm	440 @ 3,400
Taxable hp	54.6
Valve gear	ohv
Valve lifters	Hydraulic
Main bearings	5
Induction system	1 Holley R-4513 4-bbl. carburetor with vacuum secondaries, mechanical pump
Lubrication system	Full pressure
Exhaust system	Dual
Electrical system	12-volt



Facing page, top: Ribbed aluminum rocker panels were part of '70 Mach 1's dress-up trim. Center: Goodyear Polyglas tires were also stock equipment. Bottom: For 1970, Mustangs returned to dual headlamps from the quads used in '69. This page: Mach 1 has a purposeful yet graceful profile which bristles with promises of power.



Left: While '70 Boss 302 used a matte black lower panel, the Mach 1 uses this honeycomb trim. Right: Dual exhausts are standard, of course.

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continued

formed workers drive the first Cobra-Jet Mustang off the old Dearborn line, where the ancient wood-block floor was "covered with 40 years of grease and tire and dum-dum and oil.... The first one that came off...happened to be a four-speed top-loader, and...he just spun his way all across the area." Then they put the car on the rollers for testing: "This guy took off and flat-pedaled this 428.... He didn't stop until he ran it up well over 100 mph on the indicator.... The guy turned around, [and] he had [such] a grin. It was fortunate the top of his head didn't fall off."

Yeah, they did some crazy things back then.

1969 brought little mechanical change to the Mustang, but all-new sheet metal gave Ford's aging pony a racier, more muscular look. The new "Mach 1" model, named for the radically chopped and lowered Mustang show car that Ford had first displayed late in 1966, featured a stiffer "competition" suspension and a more deluxe interior than its plainer stablemates.

The "shaker" hood scoop appeared that year as well, as standard equipment on the Ram-Air Cobra Jet (428CJ-R for short) and as an option on selected other Mustang V-8s. A predetermined drop in manifold pressure opened a flapper valve between the scoop and the air cleaner, force-feeding cold air to the engine just when it needed it the most. Ever wary of trinkets and tomfoolery, the staff of *Car and Driver* tested a new Mach 1 CJ-R in November 1968 — with and without its scoop taped shut — and discovered, to their surprise and delight, that the pot-metal snorkel actually cut the Mustang's quarter-mile time by 0.2 seconds while boosting its trap speed two mph.

"If that's true," argued Spencer, "it was just pure luck.... I'm not sure the

Meet The New Boss

The 428 Cobra Jet was neither the largest nor theoretically the most powerful engine offered in the '69-70 Mustang. That distinction belonged to the very-limited-production Boss 429, a street-tuned version of Ford's hemi-head NASCAR powerplant. Despite the Boss's competition pedigree, however, enthusiasts today generally remember it as a high-strung dud, impressive on paper but useless on the street.

Could the Cobra Jet actually outrun the Boss? The only contemporary road tests we found pit an option-laden, automatic-transmission Cobra Jet against a lowered and blueprinted B/Stock Boss 429 equipped with drag slicks and bleach dispensers. (We ferreted out a test of the Plymouth Hemi-Cuda, too, as an exotic-engine benchmark.) We aren't about to pretend that the resulting table proves anything, except, perhaps, that the Boss 429 could turn a pretty mean quarter mile with just a minimum of modification.

Folks who know both cars well, however, invariably prefer the Cobra Jet. "It will blow the doors off [a 429]," says Parker, who should know. "In stock trim, there's no comparison.... Not only does the Cobra Jet deliver more torque sooner, it even gets the power to the pavement more effectively — despite its smaller, F70-14 tires."

Larry Shinoda, who designed the graphics for the Boss 429, as well as the far more

successful small-block Boss 302, once owned a Boss 302 with a blueprinted 428 Cobra Jet lurking inside. "It would actually outrun a Boss 429 hands down," he told us. He remembers drag racing against a Boss 429 at the Dearborn test track: "I had the air conditioner going and the stereo playing and I just flat blew him away. And [my car] was an automatic, not a four-speed. And they had the clock set up and everything, and with all that I cut a 14.50, at 107, and the fastest that Boss 429 would run was 99 at 15.01."

Out of the box, the Boss arrived with too little carburetor or cam to take advantage of its enormous, free-breathing heads. But the boss engine's problems ran deeper than that. Originally conceived for longevity and smooth cruising in full-sized luxury cars, the 429 V-8 carried three-inch mains and proportionately enormous rods and rod bearings. The race-bred Boss simply lacked the low-rpm grunt needed to overcome the rotating inertia of that kind of machinery.

"You could wind it up to 7,000 rpm and run there all day," said Barr — fine for running 500 high-speed miles on NASCAR's banked ovals, but hardly a useful advantage on a drag strip. "The advantage the 428 had was that at 2,000 rpm, it was pulling pretty good power.... As long as you got it up to 10 mph...you [could] squeeze on it and it would chug away. In a 429, you just couldn't do that."

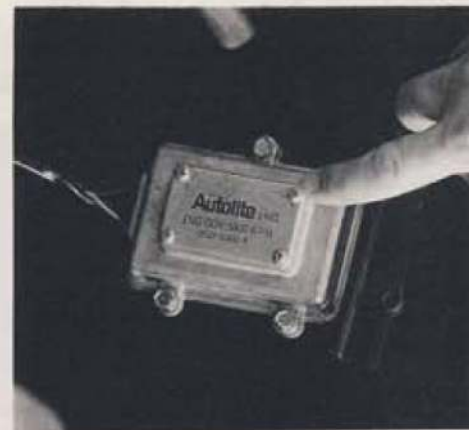
Comparative Specifications:	428 Cobra Jet	Boss 429
Displacement, c.i.	428	429
Bore x stroke, in.	4.13x3.98	4.36x3.59
Compression ratio	10.6:1	10.5:1
Carburetion, cfm	735	735
Inlet valve diameter, in.	2.097	2.285
Exhaust valve diameter, in.	1.665	1.905
Lifters	Hydraulic	Mechanical
Advertised bhp @ rpm	335 @ 5,200	375 @ 5,200
Advertised torque @ rpm, lb./ft.	440 @ 3,400	450 @ 3,400

Performance	Mach 1 CJ*	Boss 429**	Hemi-Cuda***
Weight of test car, lb.	3,607	3,400	3,880
Weight distribution, f/r	59/41	56/44	N/a
Transmission	3-spd. auto.	4-spd. manual	3-spd. auto
Final drive	3.91:1	4.56:1	3.55:1
Tire size	F70-14	7" slick	F60-15
0-30, sec.	2.1	2.2	2.8
0-60, sec.	5.7	5.3	5.8
¼ mile, sec. @ mph	14.3 @ 100	12.3 @ 112	14.0 @ 102

* *Car and Driver*, November 1968

** *Motor Trend*, April 1970 (test car had stock blueprinted engine, but its chassis was mildly modified for drag racing)

*** *Motor Trend*, May 1970



Rev limiter helps prevent daylight-seeking pistons.



darn thing worked." Who cared, though, as long as it looked neat on the street?

Not much changed for '70, really. Base Mustangs shed some vents and emblems for a cleaner look, largely at the behest of new Ford president Semon E. "Bunkie" Knudsen. "He didn't like fake scoops and things that didn't do anything," recalled Gale Halderman, a 35-year veteran of Ford Design. "He was trying to get rid of that kind of stuff." Despite Bunkie's best efforts, however, the '70 Mach 1 actually collected a bit more gingerbread, including heavy-looking ribbed aluminum rocker panels, grille-mounted driving lamps, and a bogus honeycomb grille between the taillamps. Quick-ratio steering became available as an option, a genuine Hurst shifter replaced the somewhat flimsy linkage used previously on four-speed models, and all Mustangs with competition suspension benefited from a rear anti-roll bar: ½-inch on 351s and ¾-inch on 428s.

Our featured 1970 Mach 1 Cobra Jet belongs to Rick Parker of Columbus, Ohio, a self-described "Ford nut" whose garage has also housed several Boss 302s, three Boss 429s (his white '69 Boss 429 appeared on the cover of *SIA* #75), plus a number of Shelby Mustangs and Panteras. He drag raced Boss 302s for six years, and currently owns a 1963 Galaxie convertible with a 427 and a four-speed.

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Top: Shaker hood scoop was a stock item on Cobra Jet engines. Above: driveReport car's trim tag confirms its originality and correctness. Below: Spare tire takes up a goodly amount of the limited trunk space.





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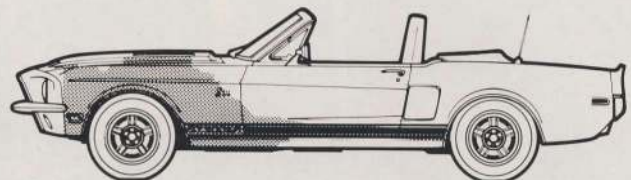
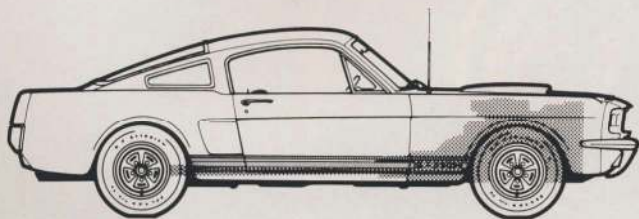
Rick's Mustang was originally sold through C&C Motors in Horsham, Pennsylvania. The date on the invoice reads September 9, 1969 — only six days after the '70 models debuted. Somehow, the car made its way to Florida — a conspicuously unsuitable environment for a black-on-black automobile with no air conditioning — where a neighbor of Rick's bought it in 1977 for \$700. Rick's neighbor towed the Mustang home to Columbus, where a worn-out lifter lured him into replacing the original engine. The car didn't run after that; as Rick put it, "mechanically inclined he wasn't.... Luckily, he kept 99 percent of all the parts for this car. This car still has the original exhaust system on it.... It still has the original Ford shock absorbers on it. It's just incredible how original it really is." With no rust to remove, and virtually no missing parts to hunt down, Rick was able to reassemble the car in just six months. He did have it repainted its original Raven Black with matte black stripes.

Ford unveiled an all-new and significantly larger Mustang for 1971 — large enough, in fact, for a wedge-head edition of Ford's newest seven-liter power-

Above: High-back buckets offer plenty of style but little grip during ambitious cornering. Right: Fold-down back seat is great for little kids, not so hot for full-sized folks.



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plant, the gargantuan 429. (Ford had shoehorned a hemi-head 429 into a limited number of '69-70 "Boss 429" Mustangs only by extensively customizing the engine bay and front suspension.) The now-obsolete 428 disappeared as a Mustang option — as would the 429 after only one model year. Within three years, Ford had transferred the noble Mustang name to a rebodied Pinto with V-6 power.

The time for doing crazy things was over. □

Acknowledgements and Bibliography

John A. Gunnel (editor), Standard Catalog of American Cars 1946-1975; Richard M. Langworth and Graham Robson, Complete Book of Collectible Cars 1940-1980; Peter Sessler, Mustang Red Book: Early 1965-90; A.B. Shuman, "All the King's Horses," Motor Trend, April 1970; Gary L. Witzenburg, Mustang: The Complete History of America's Pioneer Ponycar; "428 Mustang Mach I," Car and Driver, November 1968.

Thanks to Bill Barr, Gale Halderman, Linda Lee, and Paul Preuss of the Ford Motor Company; Kim M. Miller of the AACA Library and Research Center; Henry Stegle; Larry Shinoda; Ken Spencer; and of course our special thanks to Rick Parker.



Above: The only external clue to the engine's potential is this script on each side of the hood scoop. **Left:** Fold-down seat compensates for skimpy trunk space. **Below:** With Cobra Jet equipment, the Mach I was far more Mustang than the average commuter needed.

