Range War

There's trouble back at the ranch: nesters and sheepherders have moved in, and the lush pony car country that Mustang first discovered in '64 and ruled until this year now resembles a sprawling subdivision. But there are new foals in the Ford corral, with Maserati-inspired styling and a remuda of engines — the 302, 351 HO, and 429 CP. / By Chuck Kock

PHOTOGRAPHY: FRED ENKE

Mustang – America's best selling sporty compact car – is even more sports and luxury oriented for 1971. The most changed Mustang since the original, it is built to a design reminiscent of the most expensive personal sports cars. The long-hood, short-deck styling is continued, but with more flair and more look of performance than it ever had before.

This is how Ford describes the 1971 Mustang. If it were true, they would have the hottest selling car since, well, since 1964, when the first Mustang was introduced. Unfortunately it is only half true. Yes, the car does have the luxury and performance flair and it does look good. It is changed–in some places even for the good–but sporty, compact and personal? Somehow these terms don't ring true with the Mustang. After all, a car which sells in the hundreds of thousands can hardly be called "personal." That's about as personal as junk mail advertising sent to "occupant." And, can a car with a 109-inch wheelbase, 189.5-inch length, 50.5-inch height and a 39.8-foot turning diameter be "sporty and compact"? With measurements like those, it would be better off singing lead soprano in a Wagnerian opera.

But then all personal, compact, sporty cars have gone the same route, so you can't really criticize the Mustang too much. Besides, there are some developments which deserve note. Among them is the availability of the Boss 351 Mustang with the "Cleveland" 351-4v HO (for High Output) engine. It is strictly a performance car and as such, does its job quite well.

The engine is a derivative of the former 302-4v HO powerplant and has been designed for growth in displacement size. The cylinder block decks are one inch taller than those in the 302 and, to match the increased stroke of the 351, the cylinders have been lengthened by .46-inch. To insure low oil consumption and good ring seating for crankcase emission control, the piston rings are kept square with the 4.00-inch bore by grinding the ring surface to a vertical configuration rather than to the normal convex design. Since the engine is a high performance option, the cylinder heads have larger oval ports to increase the flow of the air/fuel mixture, thereby providing greater power output. The pistons used in the HO version of the 351 are extruded aluminum–for the increased strength needed in a high performance engine. A further development taken from the 302 is a canted valve train arrangement which allows a smoother port design and optimum flow characteristics, while the sil-chrome and stainless steel valves, driven by a mechanical cam, are spaced far apart in the chamber and alternated to provide more efficient cooling.

Fuel is supplied to the engine through a four-venturi spread-bore carburetor which gives excellent throttle response. The carburetor has a maximum breathing capacity of 750 cfm, small, 1.56-inch, primary bores to insure a good fuel/air mixture when the throttle is first engaged and 1.96-inch secondaries which take over when extra power is needed for passing and quick acceleration.

All of this creates an engine which produces 330 hp at 5,400 rpm and 370 lbs-ft. of torque at 4,000 rpm. Naturally, with this setup you can't expect good economy and our test Boss 351 registered fuel consumption figures averaging 9.2 mpg. However, equipped with a 4-speed transmission and Hurst shift linkage, the standard 3.91:1 rear axle ratio and a non-stock header system, straight line performance excelled with a quarter-mile time of 13.8 seconds and 104.0 mph.

With a flat SportsRoof, Mustang's Mach I has the flair of Europe's great road cars, but the style and price of an American automobile.

And performance is the Boss 351's strong point. Unfortunately, the Hurst shifter is good only for drag racing application since it is darn near impossible to down shift with any speed. Nevertheless, the car does handle well in the corners. Ford has seen to this by developing a competition-type suspension. It is composed of an independent frontal arrangement of coil springs and hydraulic shock absorbers and a live axle in the rear with leaf springs and staggered shocks to reduce wheelhop. Front and rear stabilizer bars have been added to keep body roll to a minimum, and lateral stability has been improved by increasing the wheel track to 61.5 inches up front and 61 in back. This gives the car basic understeer characteristics, but it can be induced into a controllable oversteering attitude at will.

One negative note on handling is an undue amount of wheelhop, despite the staggered shocks, encountered when exiting a corner and applying the throttle. This smooths itself out once the car is pointed straight and does not really affect the established line through a corner. It is, however, a somewhat unsettling sensation to experience.

Braking is accomplished through a power front disc/rear drum arrangement with the discs having a rotor diameter of 11.29 inches and the drums measuring 10 inches. With the standard F60 x 15 tires, the brakes took firm hold upon application and brought the car to a swift halt, 116.5 feet from 60 mph. But, the automobile also had a tendency to swing right at angles up to 45 degrees in panic stops.

Since the Boss 351 is a performance machine, there is no point in belaboring the sad lack of trunk space and room for rear seat passengers. People who purchase a car such as this do not really care about those things. However, driver comfort is extremely important in an automobile like the Boss 351 and Ford could definitely stand to make some improvements here. Front seat room just is not adequate since FoMoCo, like all domestic auto makers, is still stuck in the average-driver-is-5 feet 10 inches-tall rut and refuses to allow enough seat travel for those of us who might be taller. This could be partially solved by at least offering tilting seats to allow more arm room, but as it is you must sit in an almost upright position with elbows tucked in close to the body for what is becoming a Detroit gothic: hands draped over the steering wheel like a dog begging at the supper table. The position is made even more uncomfortable by over elevated foot pedals which decrease the amount of leg support afforded by the seat cushions. And, if you have long lower extremities, you often discover that the turn signal can be activated by the knee cap while operating the clutch. Also, improper spacing of the brake and throttle controls make heel-and-toe driving next to impossible, another detraction from the car's cornering capabilities.

Considering the nature of the Boss 351, interior noise level was low. With the non-stock headers, engine noise did fill the riding compartment but it sounded so good that you could not really complain. However, engine and road vibrations were transmitted through the steering column to the driver and after a while this did become rather discomforting.

This brings us to the next step in our three-car test, the Mach I with a 429-4v CJ engine. Although also a high performance machine, the Mach I does incorporate some luxury items such as air conditioning (with 3.25:1 rear end only) and an automatic transmission. It is a decent mixture for those who want good performance and some comfort,

Mustang's hardtop, while not having the drama of the SportsRoof, retains the long-hood, short-deck style which made pony cars popular.

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but it still remains a little unwieldly for city traffic.

The heart of the Mustang Mach I is the 429 CJ engine with the ram-air option and NASA-type hood, also used on the Boss 351. The engine is an offshoot of the 429-4v motor which powers the Thunderbird and produces 370 hp at 5,400 rpm. It has a cast iron block and cylinder heads, while the crankshaft is nodular cast iron alloy. Pistons are tin plated cast aluminum alloy with steel struts. The connecting rods are forged steel with pressed-in wrist pins and the bore/stroke is 4.362 x 3.59 inches.

Unlike the Super Cobra Jet version, the test Mach I had standard hydraulic lifters with the camshaft made of special alloy cast iron. As in the Boss 351, the sil-chrome and steel valves are canted and head diameters measure 2.248 inches for the intakes and 1.728 for the exhaust. Fuel is fed to the engine through a 4-barrel carburetor which has a maximum breathing capacity of 700 cfm with 1.38-inch primaries and 2.25-inch secondaries. Designed to run on premium gasoline, the 429 CJ has an 11.3:1 compression ratio and delivers 450 lbs-ft. of torque at 3,400 rpm. While straight line performance, 14.61 in the quarter at 96.8 mph, was off from the Boss 351's marks, fuel economy improved to 10.6 mpg.

Handling characteristics are much the same as with the Boss 351, as they should be, since the Mach I is outfitted with the identical suspension system. Marked differences were the absence of wheelhop under full throttle acceleration, perhaps due to differing road surfaces over which the cars were driven, a slower steering response from the power unit with a 17.5:1 ratio in the recirculating ball system, and a slight increase in body roll. Downshifting for corners was also easier in the Mach I due to an extremely smooth-acting automatic transmission which slipped into gear when the driver moved the lever, not after the normal hesitation period. Movement of the lever, however, was somewhat restricted by an overly high mounted center console glove box, which served equally as an armrest and obstacle.

Also shared with the Boss 351 is the front power disc/rear drum braking system and here wheelhop reared its ugly skid mark, although the car still halted in a good 135.7 feet from 60 mph. In addition to the wheelhop, a full right lock on the steering wheel was needed to keep the swing out angle to a respectable 25 degrees.

Interior comfort was a little more in evidence with the Mach I, although it too featured the same cramped driving position. Its dashboard design is a duplicate of the Boss 351's with two huge dials placed in front of the driver—a tachometer (without a redline, an obvious oversight) and speedometer. Above the console are gauges for battery charge, oil pressure and engine temperature. The air conditioner worked quietly and efficiently and with the windows rolled up there was little evidence of engine or road noise, leaving the passengers free to enjoy the excellent AM/FM stereo radio. Generally, the Mach I is a pleasant, although maybe not relaxing car to drive.

For the "let's go to the market" car there is the Mustang hardtop powered by a 302-2v V8 engine. It is a sensible machine with enough power to get the kids to school and sufficient economy to have something left over for food at

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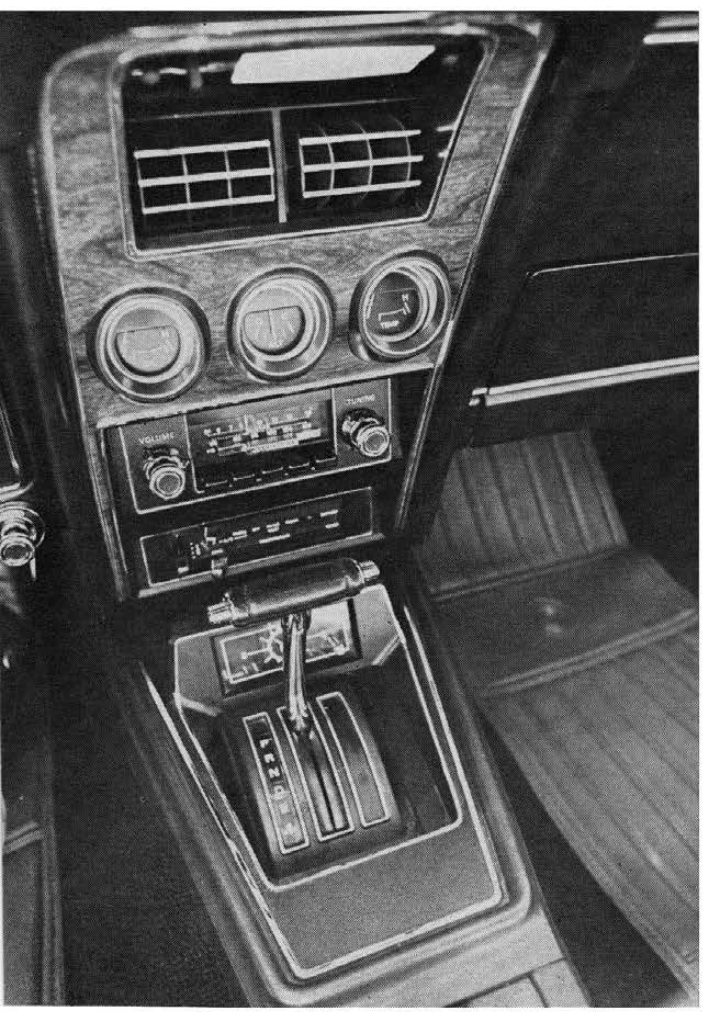
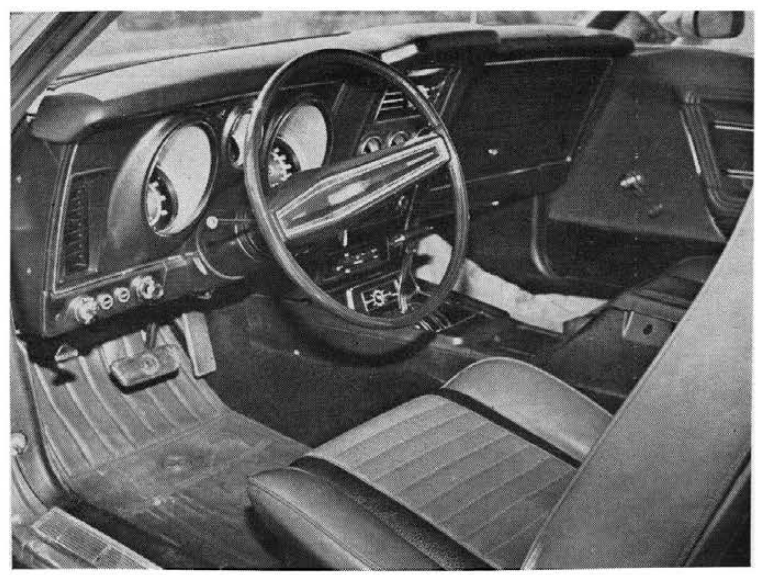
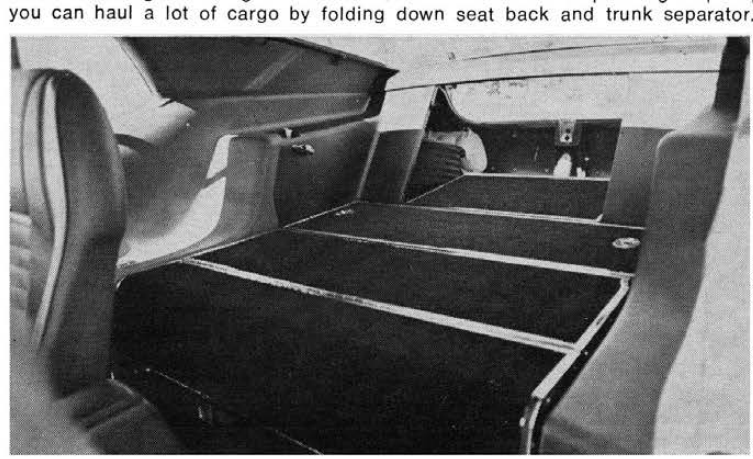
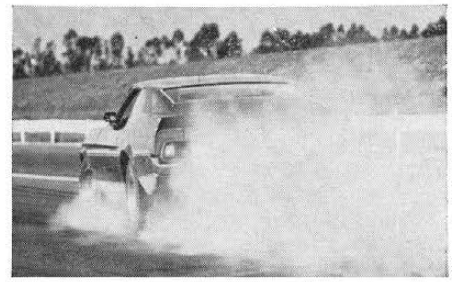


Above: The center console of the Mach I and Boss 351 models contains a full range of gauges, a detail which the hardtop lacks. Only the electric clock, partially covered by shift lever, is hard to read without removing gaze from the road.



Above: The only interior failing involved a lack of proper driver's leg and arm room. This could be easily solved by using a telescopic steering column. Below: Although Mustangs are known for a lack of rear seat passenger space, you can haul a lot of cargo by folding down seat back and trunk separator.





MOTOR TREND SPECIFICATION DATA

SPECIFICATIONS	MUSTANG BOSS 351	MUSTANG MACH I	MUSTANG HARDTOP
Engine:	90° V-8 OHV	90° V-8 OHV	90° V-8 OHV
Bore & Stroke — ins.	4.00 x 3.50 in.	4.36 x 3.69 in.	4.00 x 3.00 in.
Displacement — cu. in.	351	429	302
HP @ RPM	330 @ 5400	370 @ 5400	220 @ 4600
Torque: lbs.-ft. @ rpm	370 @ 4000	450 @ 3400	300 @ 2600
Compression Ratio	11.0:1	11.3:1	9.0:1
Carburetion	1 4-bbl.	1 4-bbl.	1 2-bbl.
Transmission	4-speed	automatic	automatic
Final Drive Ratio	3.91:1	3.25:1	2.79:1
Steering Type	recirculating ball	recirculating ball	recirculating ball
Steering Ratio	16:1	17.5:1	17.5:1
Turning Diameter (Curb to-curb-ft.)	39.8 ft.	39.8 ft.	39.8 ft.
Wheel Turns (lock-to-lock)	3.40	3.4	3.4
Tire size	F60 x 15	F60 x 15	F70 x 14
Brakes	disc/drum	disc/drum	disc/drum
Front Suspension	Independent, coil springs, shocks, stabilizer bar	Independent, coil springs, shocks, stabilizer bar,	Independent, coil springs, hydraulic shocks
Rear Suspension	Live axle, leaf springs, stabilizer bar, shocks	Live axle, semi-elliptic leaf springs, stocks	Live axle, semi-elliptic leaf springs, shocks
Body/Frame Construction	Unitized	Unitized	Unitized
Wheelbase — ins.	109.0	109.0	109.0
Overall Length — ins.	189.5	189.5	189.5
Width — ins.	74.1	74.1	74.1
Height — ins.	50.1	50.1	50.7
Front Track — ins.	61.5	61.5	61.5
Rear Track — ins.	61.0	61.0	61.0
Curb Weight — lbs.	3452	3805	3349
Fuel Capacity — gals.	20.0	20.0	20.0
Oil Capacity — qts.	4.0	6.0	4.0

MOTOR TREND PERFORMANCE DATA

PERFORMANCE	MUSTANG BOSS 351	MUSTANG MACH I	MUSTANG HARDTOP
Acceleration			
0-30 mph	2.6 secs.	3.02 secs.	3.50 secs.
0-45 mph	4.00	4.68	6.25
0-60 mph	5.80	6.50	9.90
0-75 mph	8.60	9.25	14.78
Standing Start			
¼-mile Mph	104.00 mph	96.80 mph	78.25 mph
Elapsed time	13.80 secs.	14.61 secs.	17.50 secs.
Passing speeds			
40-60 mph	2.7 secs.	3.3 secs.	5.27 secs.
50 70 mph	3.1 secs.	3.5 secs.	6.45 secs.
Speeds in gears*			
1st . . . . mph @ rpm	37 mph @ 6000 rpm	47 mph @ 5400 rpm	48 mph @ 4600
2nd . . . . mph @ rpm	54 mph @ 6000 rpm	78.5 mph @ 5400 rpm	79.5 mph @ 4600
3rd . . . . mph @ rpm	74 mph @ 6000 rpm	113.5 mph @ 5400 rpm	86 mph @ 3500 rpm
4th . . . . mph @ rpm	100 mph @ 6000 rpm		
Mph per 1000 rpm (in top gear)	14.4 mph	21.0 mph	24.6 mph
Stopping distances			
From 30 mph	26.3 ft.	28.2 ft.	32.2 ft.
From 60 mph	116.5 ft.	139.7 ft.	135.2 ft.
Gas mileage range	8.9-9.6 mpg	10.1-11.3 mpg	15.2-17.1 mpg
Speedometer error			
Electric speedometer	30 45 50 60 70 80	30 45 50 60 70 80	30 45 50 60 70 80
Car speedometer	30 45 49 58.5 69 70	33 49 54 65 75 85	30 45 50 60 70 80

MUSTANG MACH I

Mfg. suggested retail price	$3,474.00
High back bucket seats	Std.
Spoiler bumper	Std.
Honeycomb grille	Std.
Dual exhausts	Std.
Sport lamps	Std.
Dual racing mirrors	Std.
Cigarette lighter	Std.
3.25:1 rear axle ratio	Std.
429-4v CJR engine	436.00
Mach I sports interior	130.00
Cruise-O-Matic	238.00
BSW/raised white letters	15.00
Convenience group	51.00
Power steering	110.00
Tilt steering wheel	45.00
Sport deck rear seat	97.00
Power front disc brakes	70.00
Air conditioning	407.00
AM/FM stereo radio	214.00
Center console	60.00
Intermittent windshield wipers	26.00
Deluxe seat belts/ warning light	17.00
Instrumentation group	54.00
Invoice	$5,490.00

MUSTANG HARDTOP

Mfg. suggested retail price	$2,983.00
302-2v engine	Std.
Concealed windshield wipers	Std.
Recessed door handles	Std.
Armrests	Std.
Loop-piled carpets	Std.
Cigarette lighter	Std.
All-vinyl interior	Std.
High back bucket seats	Std.
Locking steering column	Std.
2.79:1 rear axle ratio	Std.
Cruise-O-Matic	217.00
Air conditioning	407.00
Center console	60.00
AM/FM stereo radio	214.00
Convenience group	51.00
Tinted glass	40.00
Power front disc brakes	70.00
Power steering	110.00
Deluxe steering wheel	39.00
WSW tires	39.00
Invoice	$4,230.00

MUSTANG BOSS 351

Mfg. suggested retail price	$4,101.00
351-4v HO engine	Std.
4-spd. transmission w/Hurst shifter	Std.
Power front disc brakes	Std.
NASA hood	Std.
Competition suspension	Std.
3.91:1 rear axle ratio	Std.
Heavy duty radiator	Std.
Instrumentation group	Std.
Dual racing mirrors	Std.
Front spoiler	Std.
AM/FM stereo radio	214.00
Center console	76.00
Power steering	110.00
Sport deck rear seat	97.00
Tilt steering wheel	45.00
Rear window electric defroster	48.00
Convenience group	51.00
Intermittent windshield wipers	26.00
Deluxe seat belts/warning light	17.00
Tinted glass	41.00
Boss 351 sports interior	88.00
Invoice	$4,914.00

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the end of the month. True, it does not have the dramatic styling flair of the Boss 351 or Mach I with their SportsRoofs, spoilers, hood scoops and racing paint jobs, but the hardtop does have the same long-hood, short-deck look which popularized the Mustang in the first place, plus the added advantage of good visibility.

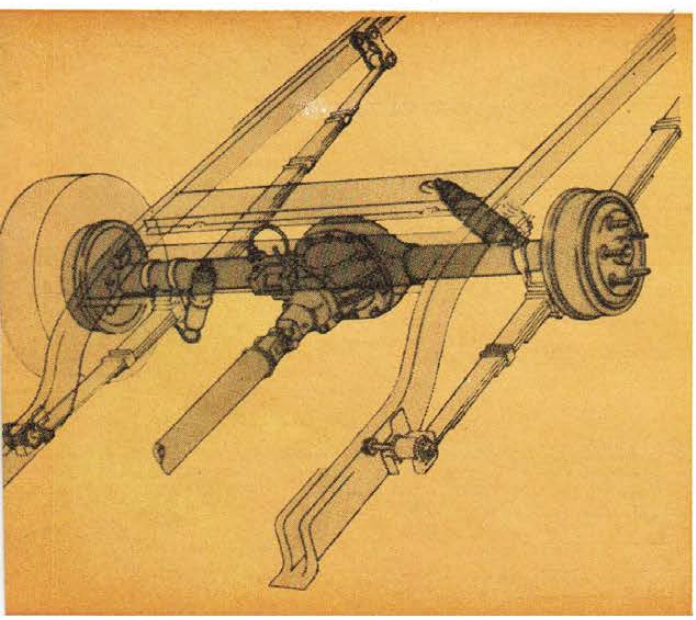
To have a sensible car, you must first have a sensible engine, and the 302-2v powerplant is just that. It is straightforward with no tricked-up parts. A cast iron block and cylinder heads enclose aluminum alloy pistons and a nodular cast iron alloy crankshaft. The camshaft is located in the block above the crank and drives a hydraulic valve train. The valves are steel with aluminized heads and measure 1.788 inches in diameter for the intakes and 1.457 inches on the exhaust side. The carburetor is a two-venturi setup with a throttle bore of 1.564 inches. Overall, the engine has 220 hp at 4,600 rpm and 300 lbs.-ft. of torque at 2,600 rpm. Bore/stroke measurements are 4.00 x 3.00 inches and with a compression ratio of 9.0:1, the engine will deliver up to 17 mpg fuel economy on regular gas. Performance, of course, was not neck-snapping but it was quite surprising, 17.5 seconds in the quarter-mile at 78.25 mph.

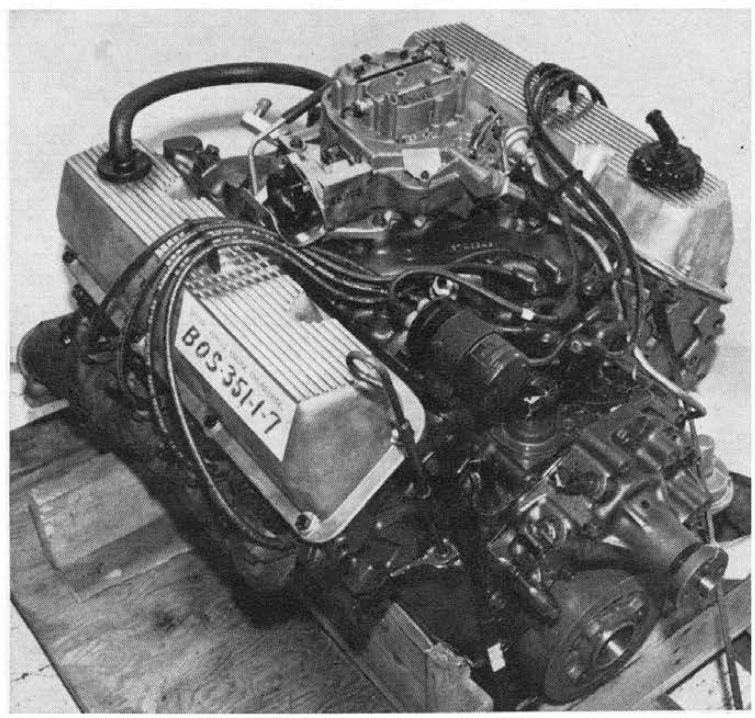
When we took the car on the handling course, we had visions of excess body roll and understeer. They were in evidence but in amazingly small quantities, considering the stock suspension system. This comprises an independent front through A arm, drag strut, coil springs and hydraulic shocks mounted over the upper A arms, and a live axle in the rear with semi-elliptical leaf springs and hydraulic shocks. Understeer was the predominant characteristic of cornering and it took violent steering wheel movements and much speed before the car would assume an oversteer attitude. Unfortunately, when it did oversteer, there was no transition from the former understeer attitude; one moment the car would be plowing, then suddenly, the limit would be reached and go into oversteer. Despite the lack of stabilizer bars, body roll was not uncomfortable and while it did take a certain amount of body English to get around a corner, there was no sensation of falling off the curve.

The brake test followed much the same pattern set by the Boss 351 and Mach I: wheel hop and full right steering wheel lock needed to keep the car fairly straight and within its traffic lane. Distance was good, 135.2 feet from 60 mph.

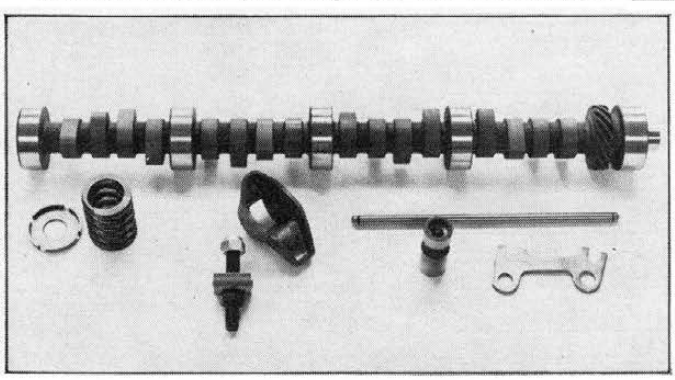
Creature-comfort-wise, the hardtop excelled in everything except the driver's position, something which Ford should strive to correct in future Mustangs; it would be as simple as offering a telescopic steering column, lowering the foot pedals and allowing for more seat travel. The seats were leatherette and exuded in air of luxury. The air conditioner worked perfectly and efficiently. With the small V8 engine, sound was no problem and even with the windows rolled down, wind noise has been kept to a tolerable level. The dashboard is not as flashy as that in the Boss 351 or Mach I but it serves its purpose well. One could only wish that gauges would replace the standard idiot lights. Again, the transmission lever is somewhat obstructed by the high center console and the console-mounted clock position does require removing your gaze from the road to read the dial. With its relatively soft suspension, the car rides well.

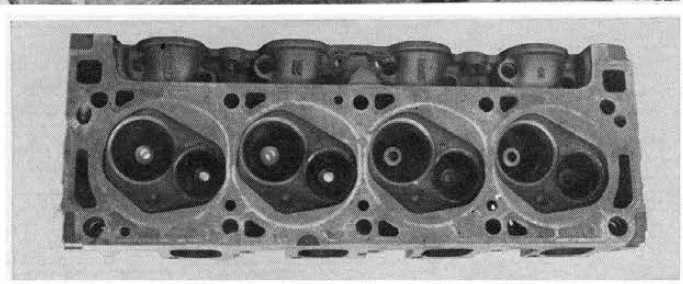
When considering the price and relativity of these three cars you have to admit that, as much fun as the performance Mustangs are to drive, the plain hardtop with its 302-2v engine is the best buy. It exemplifies what Ford started out to do in 1964 with the first Mustang: build an inexpensive car that is still stylish and pleasing to drive. /MT





Above: Rear suspension in the Boss 351 (opposite page) uses staggered shocks to reduce wheelhop. Below: The 351's cast iron camshaft runs a canted valve train arrangement permitting smoother port design and flow characteristics.





Top: The 351 c.i. block is a derivative of the smaller 302 engine and is designed for a growth in displacement. Above: To create a greater power output the cylinder heads have larger, more efficient oval ports to increase the air/fuel mixture flow. The compression ratio is 11:1.