

**FORD PERFORMANCE!**

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# CAR CRAFT

CAR CRAFT

THE COMPLETE PERFORMANCE MAGAZINE

**10-SECOND!**

**PRO STREET  
TEXAS T-BIRD**

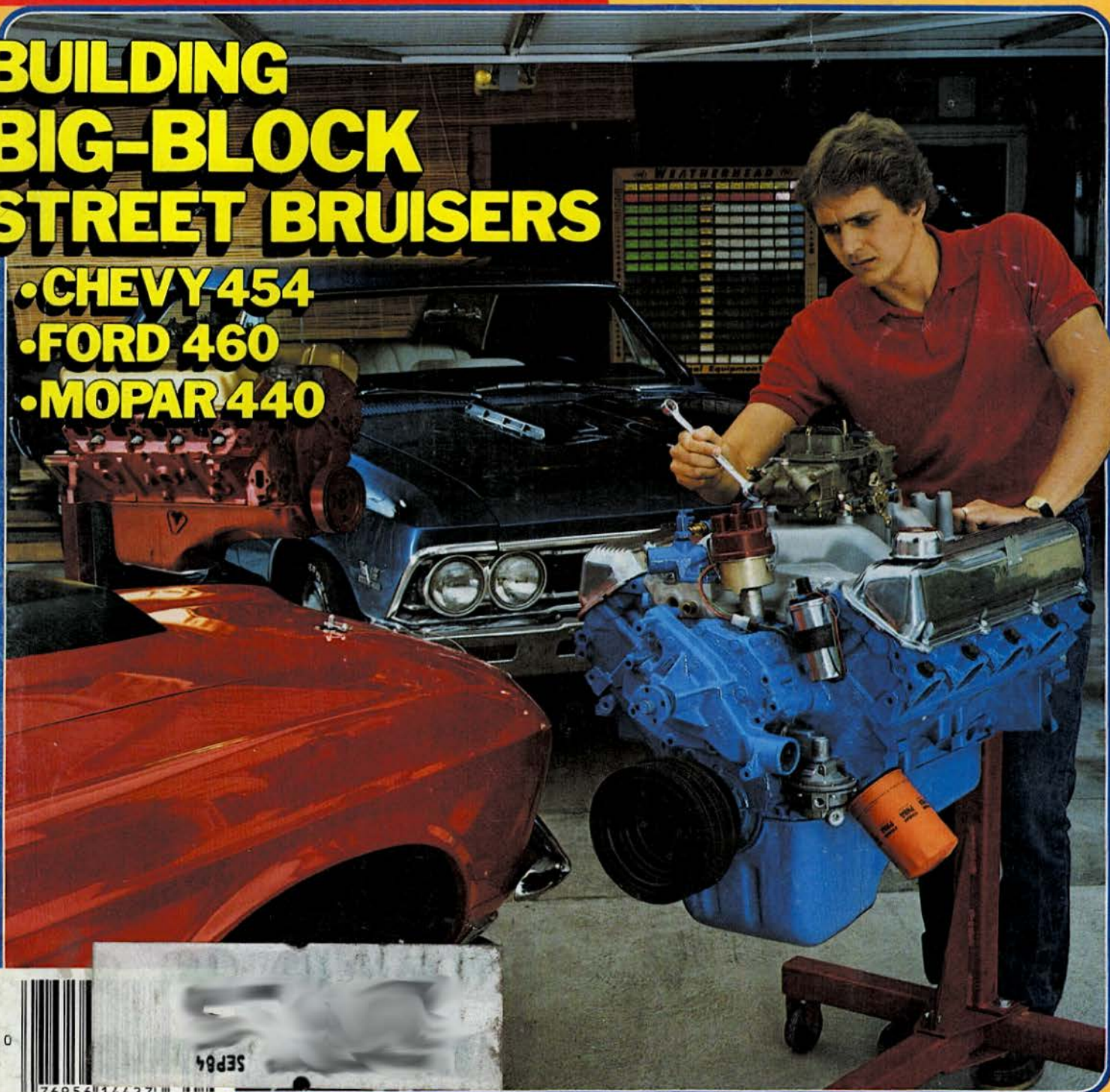


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- FORD 460
- MOPAR 440



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Share the spirit.  
Share the refreshment.

Warning: The Surgeon General Has Determined That Cigarette Smoking Is Dangerous to Your Health.

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September 1984 Volume 32 Number 9

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There was a fairground full of horsepower at this year's Street Machine Nationals WEST, as evidenced by this pair of supercharged street heroes. For one weekend in May, the Cal Expo fairgrounds was host to Horsepower on Parade.



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The Hershey company was so impressed by our Street Big-Block Special Section that they came up with their own version of the big-block to help us celebrate. While their big blocks were sweet, our trio of torquers is nothing short of awesome.

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When PPC Photographer Paul Martinez wanted softer lighting, CC spared no expense by having Omar the Tentmaker whip up a cover to compensate for the relationship between heaven and earth. Roger Teno supplied the '69 big-block Mustang and Larry Gjeldum took time out from his busy schedule to be our cover subject.



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# POINT OF VIEW

## THE CASE OF THE ABSENT EDITOR

It had been a tough night. The Lakers' NBA Championship loss to the Boston Celtics just cost me a C-note. I was recovering from the shock in my private investigator's office when the phone rang. The night was about to get worse. It was Smitty from CAR CRAFT. He had a favor to ask.

"Marlowe, the staff has to get out of town fast. D'you think you could keep an eye on the place while we're gone?"  
 "Sure," I said.

"Oh, and one more thing. Could you write my September editorial, too?" Before I could file a complaint, the line went dead. I decided to investigate.

A few minutes later a messenger arrived at my office with a key. After firing up the Camaro I cruised down Sunset Boulevard to CAR CRAFT's 5th-floor office. It was obvious the staff had left in a big hurry. There were half-finished stories in a couple of typewriters, and on Smitty's desk was a cryptic note about "Mopars." The note caught my attention. I didn't know who or what a "Mopar" was, but I got the feeling that my pal was in trouble.

After rifling his desk and avoiding a leftover ham and cheese (no pickle) sandwich in the upper right-hand drawer, I found a couple more letters from readers complaining about a lack of Mopars. Then I found what I was looking for. A quickly scribbled travel plan revealed that Smitty and his crew were going to be in five towns in less than two weeks. They were obviously running from something or somebody. First, they were going to Detroit. There's a lot of muscle in the Motor City; maybe they were looking for protection. Then I remembered Smitty talking about Chrysler products one day, and he called them "Mopars." That was it! Those Chrysler owners were going to rub out the staff.



PHOTO BY STELLA

And all my instincts told me it was going to happen at the staff's third stop—the Street Machine Nationals.

I made a quick call and woke Stella up to make a plane reservation for me to Springfield. "Dollface, it's a matter of life and death," I said. After a high-speed run to Los Angeles International, I was getting ready to board my plane when I heard my name paged over the intercom. It was Stella. She'd talked to one of the CAR CRAFT secretaries and found out the staff was in no danger.

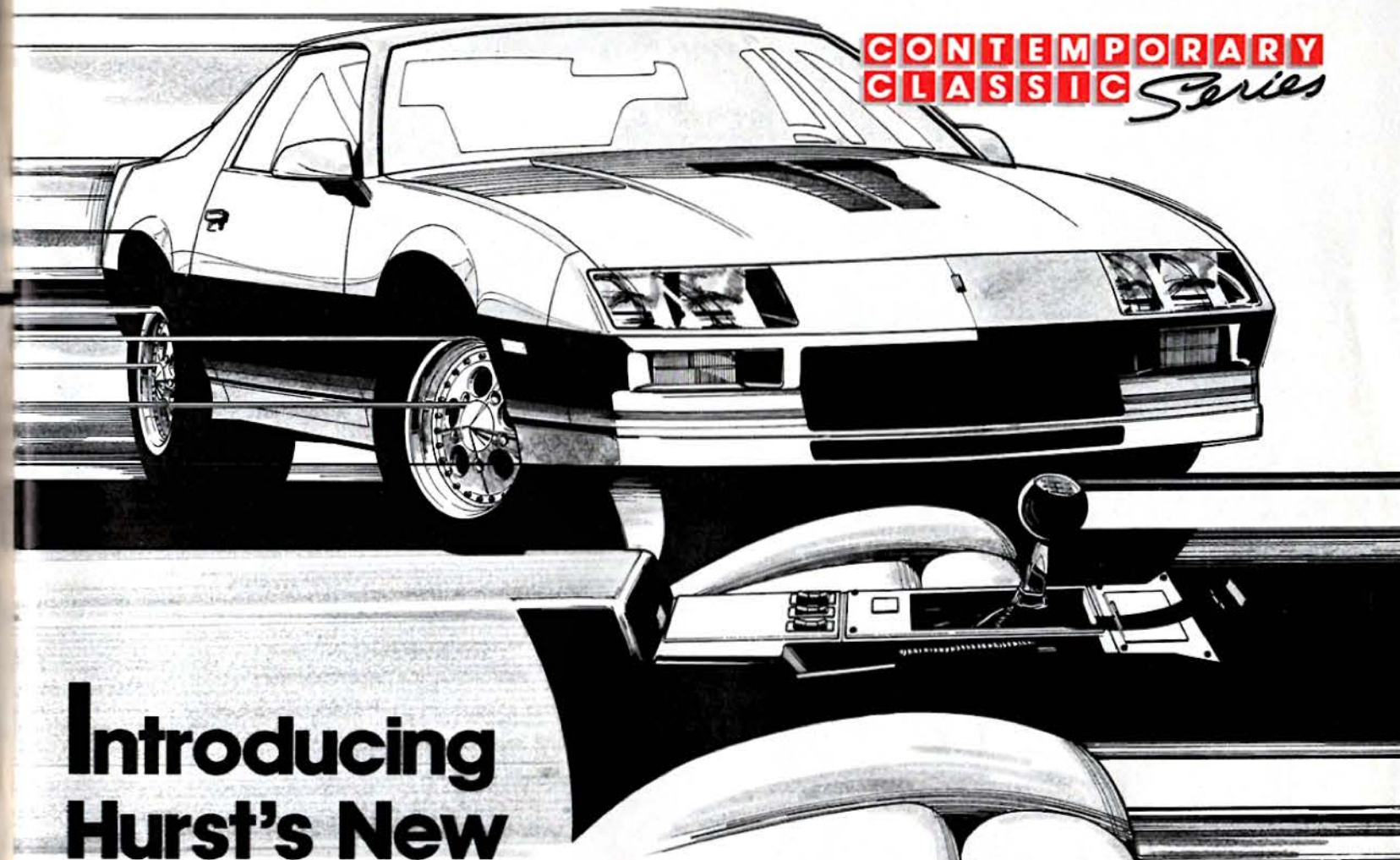
"You're barking up the wrong tree again, Marlowe," she said. "Go home before you get into some real trouble."

I went back to my office, still not convinced that Smitty wasn't in danger. I was knocking back a cold one when the phone rang. It was Smitty.

"Marlowe, how's it going?" It was obvious he was oblivious to the danger he and his staff were in. But I didn't say anything. I was too tired.

"By the way," he added. "Did you write my editorial yet?"  
 "Sure," I said.

Just wait 'till he sees my bill.  
 —Rick Marlowe

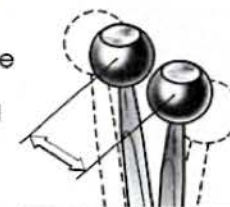


CONTEMPORARY CLASSIC Series

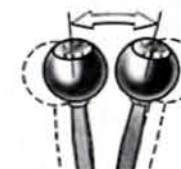
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Thunderbird/Cougar	'83-84	391 0031



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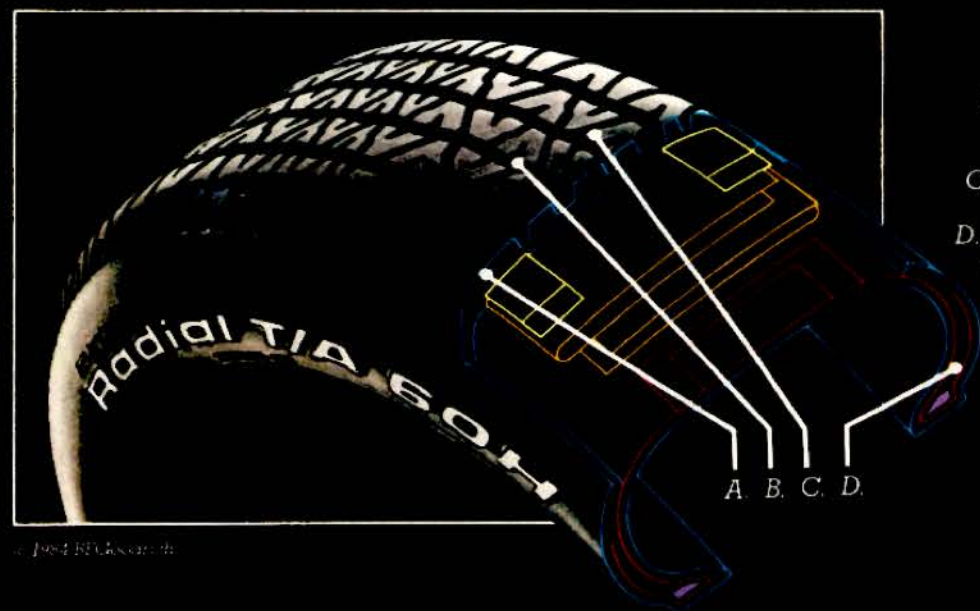
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Check your yellow pages under Auto Racing and Sports Car Equipment for the authorized performance outlet nearest you.



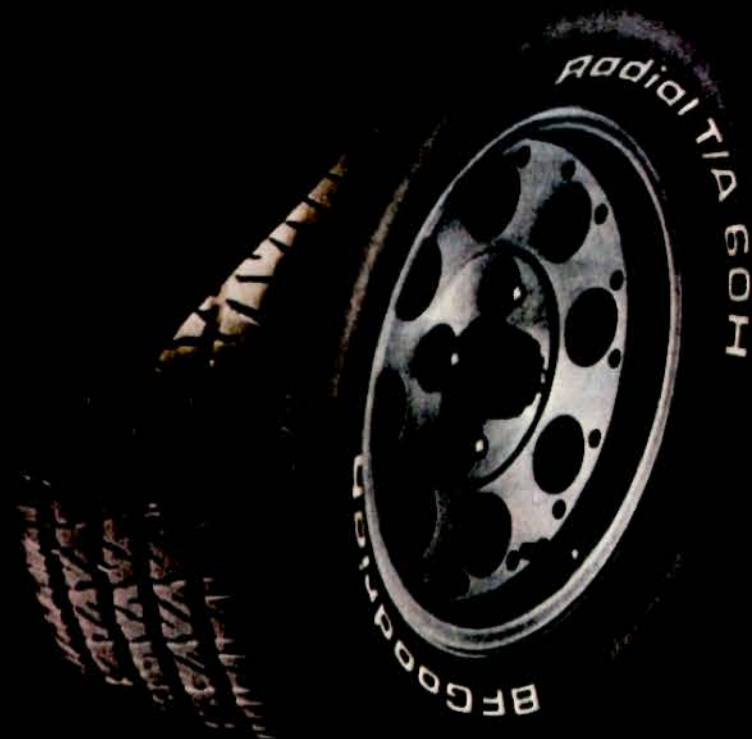
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# BACKFIRE

## HIGH-SPEED WOBBLER

I believe you mistitled the project Fiero series which began in the December '83 issue. *P-Duzzled* would have better fit a vehicle with an engine built for high rpm combined with the stock, high-g geared differential. I thought you wanted this car to be streetable. Maybe the street you envisioned was the Autobahn!

If you ask me, the Pontiac H.O. division is about 15 years behind the times. Datsun (Bob Sharpe and B.R.E.) was producing 150+ hp four-cylinders when Pontiac brought out hood tachs as the trick innovation.

Dave  
No Address Given

*Hate to disappoint you Dave, but our Fiero is completely streetable. True, the peak horsepower is around 5 grand, but it makes great power from 2500 on up. Besides, four-bangers make power as a function of rpm, right? As for Pontiac, they can't make up the past. Applaud them for what they're doing now. Better late than never.—Ed.*

## SNOW JOB IN MAY

Alright guys, I fell for it! At first when I read Archie A. Achitany's letter in the "Backfire" section of the May issue, I was quite disturbed. Then I realized that you just stuck it in there to have a little fun with us. Well, I must say that it worked for awhile.

I figured this out when I asked myself if there could possibly be a person crazy enough to write for America's premiere car magazine and put down American hot rods. I answered my own question with an "of course not, no one is that stupid!"

I mean really. Any self-respecting street machiner knows that it only takes a stock GTO, LS-6 Chevelle, GTX, GSX, 442, or Cobra Jet-powered Mustang to totally blow the doors off a 911. You could have at least made it believable. Seriously, don't you think we're smart enough to know that \$10,000 added to a stock musclecar would make a machine that dreams are made of.

Another point that came to mind as I read this farce is the fact that American cars can't handle. The only thing I have to ask here is have you ever test-driven a Z/28, Trans Am, Fiero, Shelby, or maybe

even the 1984 Corvette? You just can't get better than that!

I myself like foreign cars in addition to the homebuilt stuff, but one must realize that you can't compare apples with oranges. Each has its advantages and disadvantages. Since we don't have roads that compare to the Autobahn, we have no need for 200-mph cars. As a result, we make mega-horsepower machines that will just about rip a launch pad out of the ground as we try to get down the quarter-mile before the other guy. We Americans may not be the fastest people on the face of the Earth, but we sure are the quickest.

The last item to convince me that this letter was a joke was knowing that the people at CAR CRAFT would never seriously try to pull this one over on us. Keep up the good work and better luck next time.

Kirk Bowers  
Puyallup, WA

*It seems you can't fool all of the people all of the time.—Ed.*

## DOLLARS AND SENSE

I have a problem which perhaps can be solved by CAR CRAFT Magazine. I am planning a move to Florida this year from my home state of New York and am unsure whether to take my '72 Nova Super Sport. I've had generous offers for it here, but fear I will live to regret selling it. The question is, if I ever decide to sell my Nova in Florida, will it hold its value? My main concern is the larger number of mint performance cars found in the parts of the country which enjoy a milder climate. Am I correct in assuming that this results in lower dollar values for musclecars in the warmer states?

Danny Boote  
Binghamton, NY

*Like any other investment, building a car is a business venture. With the economy the way it is today, it doesn't make sense to pour good money into a worthless project. To answer your questions, Danny, if that Nova of yours exhibits rust of any kind, leave it in New York. You will be financially better off buying another vehicle in Florida. As for your second question, a well maintained machine will generally hold the same dollar value no matter in which state you live. The laws of supply and demand also figure in there somewhere.—Ed.*

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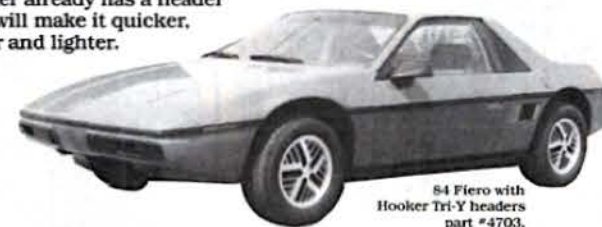
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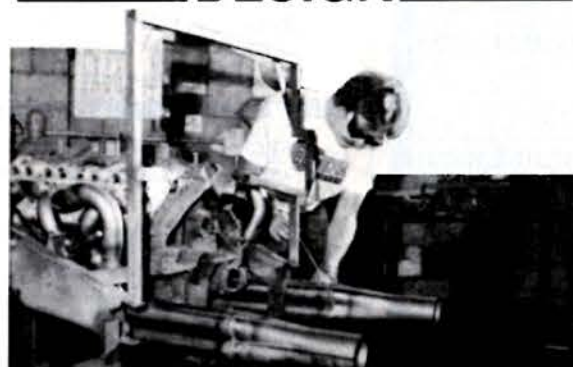
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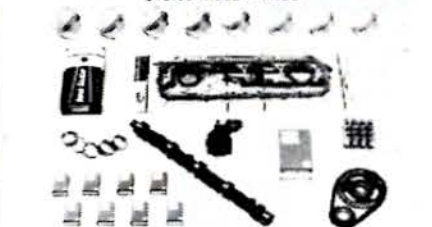
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## BACKFIRE

### MY LITTLE 229

In the October '82 issue of CAR CRAFT you published an article by Jeff Smith concerning the 90-degree, 229cid, V-6 Chevy. I read the article at the time and had planned to build that same engine in the near future.

Well, the future has arrived! I was wondering, though, were there any information updates since the October 1982 issue that I should know about before ordering the parts?

Todd Yoskikawa  
Honolulu, HI

*Yes and no. The only article covering anything else we did with the engine is one in which we installed the mill in a '74 Vega. No performance testing was done at that time, however. A couple of things we did discover from playing around is that a Rochester Quadrajet works well with the rest of the engine components we've discussed. Also, we found that the engine responded well to advancing the intake centerline of the Chevy cam to between 102 and 104 degrees.—Ed.*

### MISTAKEN IDENTITY NO. 101

I think you made an error in the feature entitled "Racing with the Moon" (CC July '84). Not to put down the well-written article nor Tony Waggoner's beautiful Camaro, but that F-body is of 1969 vintage, not '68 as the copy stated.

Being the owner of a first-generation Camaro, I thought I would bring to your attention a few easy methods for distinguishing a '68 from a '69. First off, the '69 has squarish shaped rear wheelwells; '68 wheelwells are more rounded. The '69 also features non-functional louvers in front of the rear wheelwells, while the '68 doesn't. And finally, the turn signals found a permanent residence beneath the front bumper on all models in '69, in addition to being changed from rectangular to circular in shape.

Now I know the editors of CAR CRAFT can probably distinguish between the two cars without my help, and no doubt the mistake was just a typo. But just in case it wasn't...

Robert Delgadillo  
Crescent City, CA

*The world may never know.—Ed.*

### PONYS IN CAPTIVITY

I'm writing this letter in hopes you can lead me to a source of high-flow replacement heads for my Ford Windsor engine. Even the best ('69-'70) heads aren't nearly as free-flowing as what is available from the "other guys" in Detroit. I've already contacted the people at Ford's SVO operations and they feel that there isn't enough of a market to warrant developing and

marketing a high-performance Windsor head. By rights, the Ford enthusiasts should at least have a head that would flow as good as Chevy's Bow Tie or Mopar's W-2.

John Hargerink  
W. Chicago, IL

*John, the best way to prove a need for a good set of Windsor heads is to write Ford directly. Send your letter to Mr. John Vermeersch, Technical Assistance, Ford Motor Co. SVO, 17000 Southfield Road, Allen Park, MI 48101. This goes for everybody. If you don't write, it won't happen.—Ed.*

### FULL STEAM AHEAD

I would like to say thanks! I'm a sailor currently serving on board a ship off the coast of Lebanon. Not having the time to do much out here, I look forward to getting my monthly copy of CAR CRAFT (when we do get the mail). I've been an avid fan of the magazine for a long time. I love all the articles and the updates on new parts and ideas. Please don't change a thing; your magazine is tops. I have a Pro Street '69 Camaro project waiting for me when I get home. I've already installed a 6-71 blown 454 big-block for motivation. With the help of the articles in your magazine, it will move right along.

Chris Murray  
USS Ticonderoga

### CREDIT WHERE DUE

As a long-time street machiner I would like to take a moment to give credit to the people who make it possible for the car crafter to finish his car. I'm talking about the family and friends and brothers and sisters who have helped us out by supporting our street machining efforts.

I am 26 years old, and since the time I was granted a driver's license I've always had a muscled in the process of being hopped up. From those first two big-block Chevilles to my newly acquired '70 AMX 390, and everything else in between, I probably wouldn't have enjoyed all the good times that I've had without the support of my wife, family, and friends.

Specifically, I'm referring to the brothers and sisters who had no idea what a tunnel ram was, but loaned you the money anyhow without batting an eye. And what about the Moms and Dads out there who parked their car outside so your pride and joy could stay warm inside. And don't forget your friends who loaned you all of those tools and helped whenever you needed it. And last and most importantly, I'd like to give credit to our wives, who don't quite understand our affection towards mechanical objects, but nevertheless elect to put up with our obsession.

To these people, I would like to say thanks for all your help.

Joe Smith  
Norristown, PA

*Amen.—Ed.*

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## MULDOWNEY HURT IN CANADIAN RACING ACCIDENT

Three-time NHRA Top Fuel World Champion Shirley Muldowney was seriously injured when her pink dragster crashed at the NHRA Molson Grandnationals in Montreal, Canada. Muldowney had just tripped the lights at 247 mph when she swerved hard to the left, hit a drainage ditch, and was pitched 20 feet into the air. The car disintegrated upon contact with the ground, splitting the rollcage apart. Shirley suffered several broken bones and lacerations, but was never in critical condition. Officials believe a blown tire may be responsible for the car's erratic move past the lights. This is the second serious accident for the famed driver, the first being a fiery Funny Car crash in 1972.

Now that Mike Grey has taken over the helm of the American Hot Rod Association, don't expect the status to remain quo. Grey's first battle will be in finding locations for his 1985 events, as Orville Moe, a major AHRA track operator, has broken away to form his own group, the American Drag Racing Association. Moe didn't walk away empty handed, either, as he's taken just about all of this year's AHRA Grand American sites with him, including Dragway 42 in Cleveland, and other tracks in Tucson, Kansas City, and Tulsa. Also joining the ADRA fold are Boise, Idaho; Prince George, British Columbia; Los Angeles County Raceway; and Salt Lake City (at the conclusion of their current NHRA contract). Negotiations are continuing with both St. Louis International



## CROSSING TRACKS

# STRAIGHT SCOOP

## 2.2 Liter ship

Good things come in small packages these days, it seems. Scott Harvey, manager of the Chrysler Shelby Performance Center, set a new land speed record in the F-Production class at El Mirage recently in a much modified Shelby Charger. The pass of 142.850 mph

bested the old record set by a Citroen/Maserati by over three miles per hour. F-Production rules require engine displacements between two and three liters, as well as a production body. Harvey's Shelby was motivated by a 2.2-liter engine which featured a pair of side-draft Weber carbs among other underhood modifications.



and U.S. 30 in Gary, Indiana, but a World Finals date for this year has already been set: the former AHRA dates at Spokane in August. As a result, AHRA will hold its own World Finals on the last weekend of September at Acadiana International Raceway Park in Louisiana, which is about 75 miles west of Baton Rouge.

Right now AHRA's plans seem very much up in the air, but AHRA PR man Phil Elliott assures us the association will be running full bore in '85, and Top Fuel will remain a regular part of their program. Elliott also says that it's likely AHRA will drop all of the guarantees for its Pro cars next year and increase their open competition purses to keep the cars and drivers coming out. Coming out where remains a mystery at this point, however. We'll keep you posted.



JULIE PACE

## POLICING THE POLICE

Evidently no one is exempt from the watchful eye of the EPA. Several communities in the Cleveland, Ohio, area were recently hit with potentially heavy fines levied by the Environmental Protection Agency (EPA) after they were discovered to have disabled catalytic converters and had been adding leaded gas to "unleaded fuel only" police cars. The city of Parma, Ohio, is facing a \$17,000 fine for similar indiscretions. While the local municipalities may be able to avoid the fines by rectifying the modified vehicles, it does point out that the EPA is serious about enforcing emission legislation.

## TERROR IN FOUR CYLINDERS

The relationship between racing and street cars became blurred in the Seventies. It seems that automakers paid more attention to the figures emanating from Washington than those being generated on the track or in the dyno room. But in the performance-crazed Eighties, the one-to-one relationship between track performance and street cars has been snapped clearly into focus. A perfect example is a rumored GTP-based twin cam, turbocharged 2.3-liter SVO Mustang which is reported to put out 280 hp in street driven form.

Details are quite sketchy. Apparently the 16-valve GTP cylinder head has been mildly redesigned for street use, the block strengthened, and the port-injected induction sys-

tem turbocharged. No one will get down to specifics, nor will they confirm or deny the car's existence, but rumor has it that the car will do zero to sixty in 5.7 seconds! For those of you who have trouble relating to zero-to-sixty times, that's flat fast for any car, four-cylinder, V-6, or V-8. And the best part is that this rumored dream machine may be produced in limited numbers (probably not rated at 280 hp) as part of a 16-valve SVO package.



## RETURN OF THE BOYCOTT

Well, the Funny Car drivers have done it again. The latest word we have is that the sport's premier drivers have banded together and selected former driver Ray Alley as their spokesperson in what many expect to be protracted negotiations with the National Hot Rod Association. The object? The tripling of the current purse structure, among other issues. At stake are such esoteric items as where the national events should take place and what tracks they should take place on.

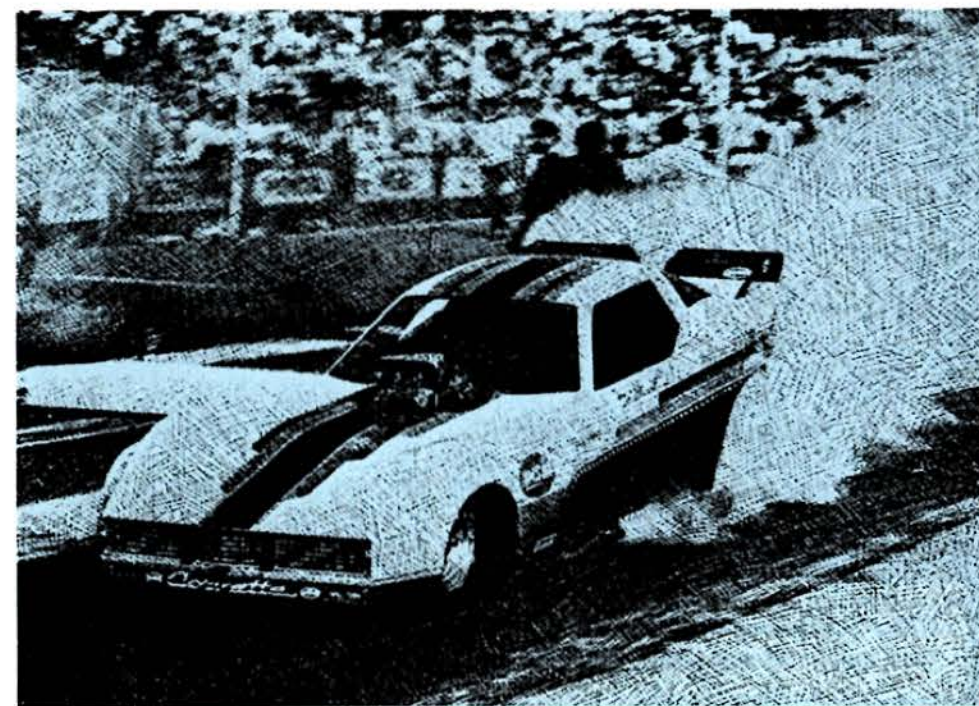
The cause of the whole mess seems to be IHRA president Larry Carrier's threat to cut his own purses down if the drivers continue to race at other venues for less money. One can't blame Carrier for making such a threat. After all, simple business sense would seem to dictate that it isn't necessary to pay a driver \$30,000 to win the Spring Nationals at Bristol when that same driver is running for about half that much at the NHRA Springnationals at Columbus.

One interesting point allegedly

made by a couple of the heavily backed car owners is their embarrassment in front of their sponsors when told that the firm's NASCAR driver earned \$7500 for dropping out on an early lap of a big race, when they had just earned about

the same amount for winning one of the biggest drag races of the year.

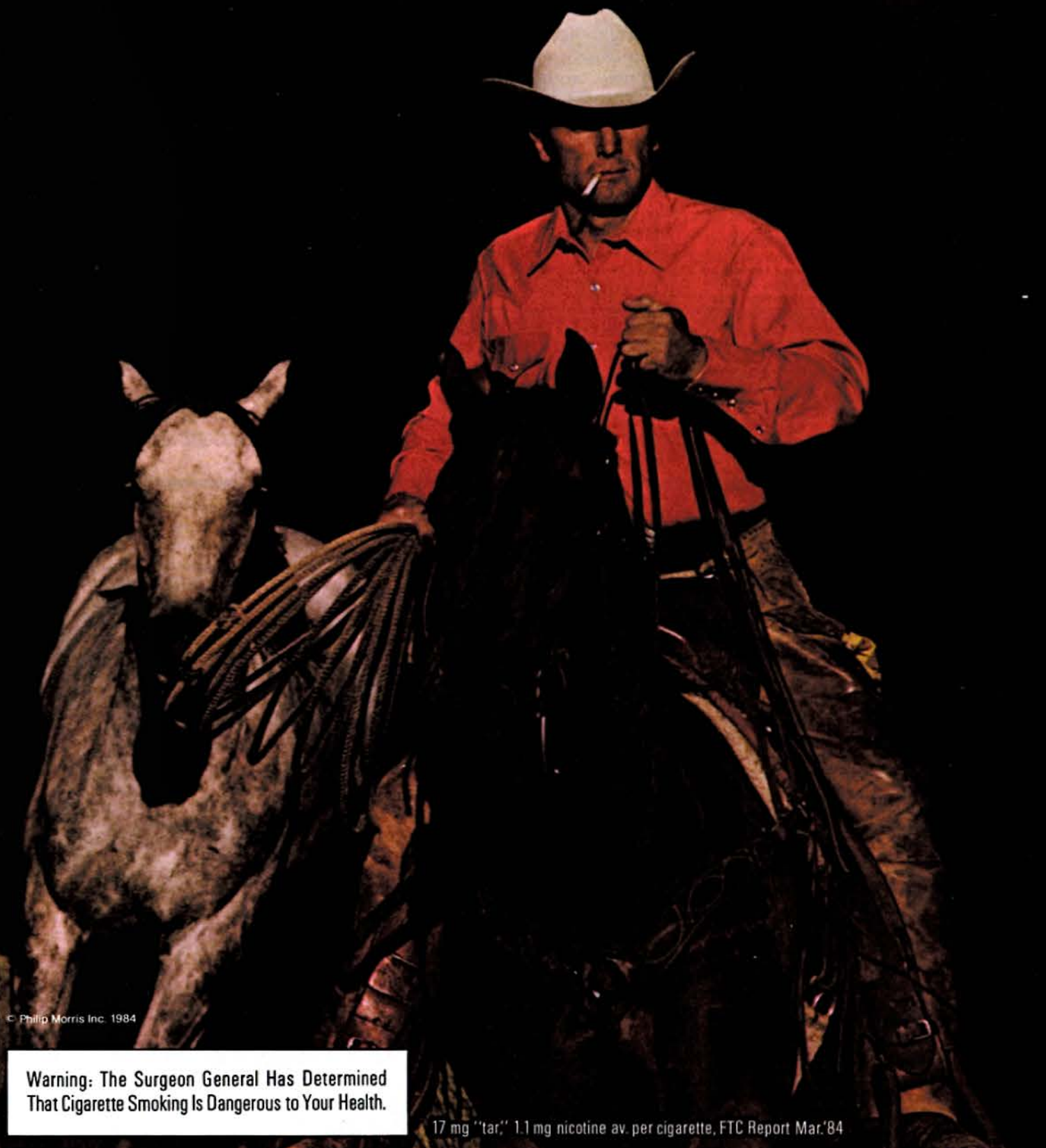
At this point the National Hot Rod Association is gearing up to face the situation, with no real moves being planned by either side prior to the start of the 1985 season.







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## TECH TALK

Inside Technical Information By Jim McFarland Illustrations By Pete Millar  
Readers' inquiries are invited for this column. Unfortunately, no personal replies can be made to letters. CAR CRAFT will publish as many letters, with McFarland's responses, as space permits. Mail letters to TECH TALK, CAR CRAFT Magazine, 8490 Sunset Blvd., Los Angeles, CA 90069.

Dear Jim,

I have a 1980 Triumph TR-8 with a 3.5-liter (215cid) Buick V-8. The factory intake system consists of two Zenith carburetors that don't really seem to be the best for this particular engine.

I have asked numerous people if they know of a suitable substitute for this induction system, but haven't found any answers. Can you offer some help?

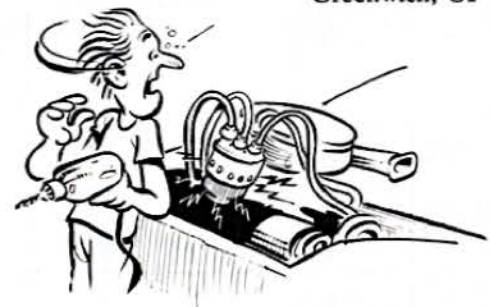
Mark Owens  
Brownfield, TX

Try contacting Huffaker Engineering at: 1290 Holm Road, Petaluma, CA 94952. Joe Huffaker has been racing these little engines for a number of years and offers a single-plane, 4V manifold that seems to be an improvement over the stock Zenith system. Many of the engines Joe has modified are used for road racing, so you should be able to get some pretty good help for a high-performance street situation.

Dear Jim,

I have a '79 Dodge Omni and every once in a while the distributor cap gets moisture in it and cracks. I have tried using a sealer around the cap where it meets the distributor housing, but it didn't work. I can't find an answer, and I've gone through more than my share of caps.

Chris Pratico  
Greenwich, CT



At the risk of oversimplification, the problem can stem from the temperature (and dew point or humidity) between the heated engine compartment and inside the distributor cap. Condensation forms inside the cap, and since such water is electrically conductive, spark can travel with random patterns over its inner surface. This could

be the problem you face.

One way of combating the situation is to drill a series of circumferential holes in the cap (of about 1/8-inch i.d.) just below the inner terminals corresponding to each of the engine's cylinders. The air-turbulent effect of the spinning rotor and equalization of the temperatures inside and outside the cap should solve the condensation problem.

Dear Jim,

I have a '73 Duster. The problem is that the oil light comes on when I apply the brakes and the engine is warm.

Lee Buckner  
Midlothian, VA



Simple as it sounds, you may not be using sufficient oil. Under braking, especially when the oil is hot (not very viscous), the pump pickup is uncovered, air enters the system (more compressible than oil), and the line pressure drops to the point of causing the indicator light to illuminate. In fact, this light only comes on when the line pressure is very low.

You might consider installing a direct-read pressure gauge to find out what is really going on. Oil pressure lights may be convenient, but they also are about as effective as a fuel light that comes on when you've run out of gas!

Dear Jim,

I'm a faithful reader of CAR CRAFT and have built some serious street machines. I'm writing because there are some things that need to be said to the manufacturers of aftermarket parts.

As consumers, we need to know more about the details of the parts we are buying. For example, oil coolers should have the capacity stated. Exhaust headers

should be specified according to tubing size and length.

My friends say I'm a detail fanatic, but this stuff is important.

Preston Hettinger  
Richland, WA

The answer to your question is fairly simple, Preston. Any information not included in a particular parts manufacturer's specifications can generally be determined by calling the source in question. While not all parts builders can give you data of this sort, you'll normally find that they can—and are more than willing to do so.

Dear Jim,

I've heard that Pontiac has entered the racing community by providing a cylinder head for some of the engines being run at this year's Indy 500. Rumor has it that these same heads are being used in NASCAR Grand National stock car racing. If this is true, what makes these heads so special?

Jerry Thompson  
Culver City, CA



There has been some criticism that the aluminum cylinder head available from Chevrolet (for the Chevy V-8 engines) was having durability problems. In the interest of applying some political pressure, Pontiac pushed for the approval of Brodix heads in NASCAR racing.

The fact that the Gurney Indy 500 car is labeled "Pontiac" is a reflection of this change in cylinder heads—and a modification of the rules. What you might want to do is watch for some changes in the current Bow Tie Chevy cylinder head configuration. Perhaps contrary to the rumor you've heard, what's coming up may eclipse the "Pontiac" heads now being run. And that's not just a rumor. ☺







# HI-RISERS

## DOUG NORRDIN

With the telephone headset firmly in place, Doug Norrdin looks like he'd be more at home peering into an air traffic controller's radar screen than disassembling the control arm of a late-model Camaro inside his Montclair, California, suspension and chassis shop. Granted, the headset has absolutely nothing to do with such engrossing topics as suspension deflection, but the telephone unit's mobility and time-saving quality typify the Norrdin no-nonsense approach to all things mechanical. This approach is the prime factor behind the rapid rise of Global West Alignment Specialties in the competitive suspension aftermarket.

Both Global West and Doug Norrdin are names readily familiar to veteran CAR CRAFT readers. Doug has played a big part in the construction of many CC project cars over the past few years, from the awesome Pro Street Camaro to

the mean green 2.2-liter Turismo. In fact, the majority of his efforts are directed towards improving the handling deficiencies inherent in factory automobiles (again, attacked in concise, methodical fashion). As a result, Doug's business has grown from a minuscule alignment shop to a professionally run suspension business in the short span of three years. Recently, he has even begun to market his own suspension bushings, which should only serve to increase Doug's workload even further.

Despite Global West's austere A-frame beginnings, suspension modifications now comprise but a part of the work performed at Global. Norrdin calls upon an extensive road racing background when formulating his various systems. And while he no longer crews for an IMSA car nor competes as a driver on the Formula Ford circuit, he does remain active in motorsports by aiding several teams in the area of chassis geometry. Doug's also ef-



fect alterations on denizens of the quarter-mile, and his facility has begun specializing in custom-built roll-cages for oval track racing.

As you might expect, all of this tends to keep the 27-year-old undercarriage craftsman quite busy. His few idle moments are generally spent in the company of his wife, Deanna, his son, Eric, or his Kawasaki; Norrdin's an avowed motorcyclist. Then, too, you can't help but notice the glimmer in his eyes when they stray up to the rafters in his expansive shop, up to where the Formula Ford sits waiting for a key and a driver.

## BUBBA SEWELL

As a second-generation Top Alcohol dragster driver, this young man is literally following in his father's footsteps. Of course, you'd almost expect it from someone who grew up around the race track. According to his father Richard, "We never went to a race unless the whole family could come along." As a result, Bubba's interest in drag racing was piqued at quite an early age.

But what you wouldn't likely expect is the amount of success achieved by someone so young. At the tender age of 21, Bubba already has three full seasons of racing under his belt. The first two were primarily formative seasons, but with his natural ability, Bubba proved to be a quick learner. In 1983 he finished third in the Top Alcohol Dragster NHRA Winston World Championship points race.

On his way to garnering that distinction, Bubba had a winning streak of three national events, propelling himself to the winner's circle at the Gatornationals, Southern, and Cajun Nationals. He also saw final-round action at three other NHRA National events. This year he's starting things off with a pair of Division 3 wins and a runner-up effort at the Gatornationals, which once again put him in the running for the World Championship.

The family tradition continues off the track as well, and Bubba has taken an active interest in the family's flourishing electrical contracting business. Already he's become an accomplished electrician and undoubtedly will oversee the entire operation some day. With Sewell's electrifying performances both on and off the race track, the fact that he's one of CC's youngest Hi-Risers should come as no shock. ☐



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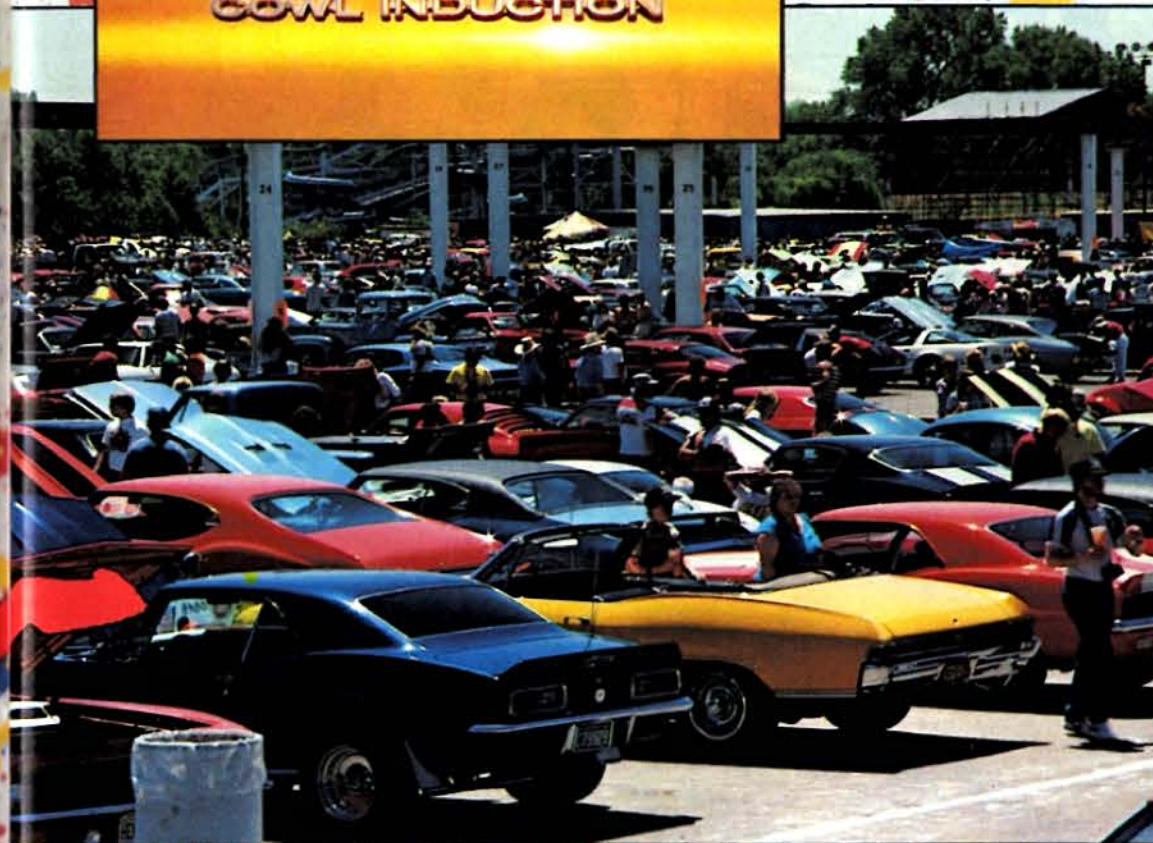
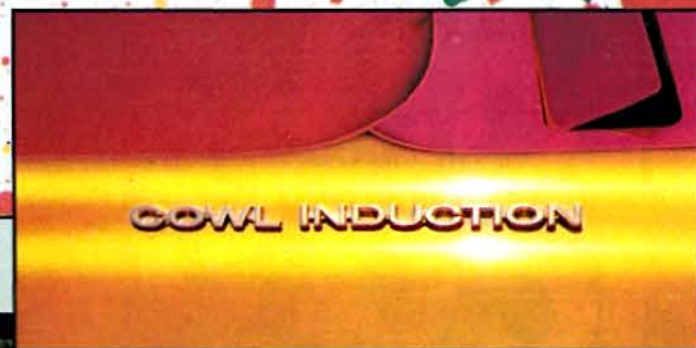
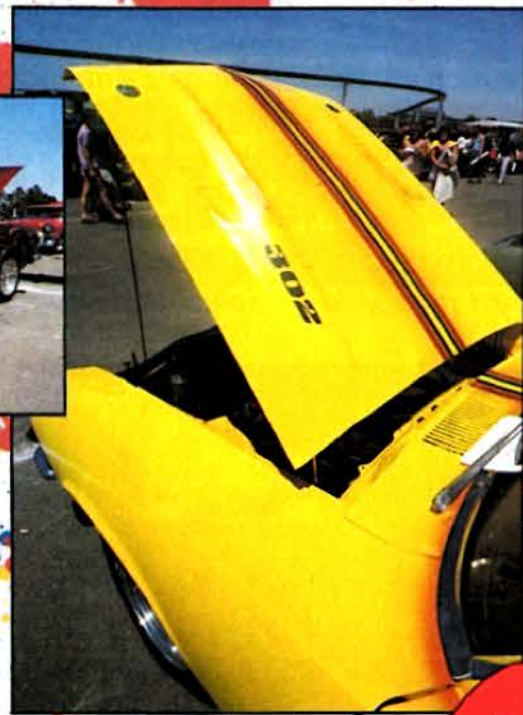
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# The 1984 Street Machine Nationals WEST



cause the WEST consistently delivers subtle, uniquely conceived machinery. Innovation reigns supreme, and the collective cool of the crowd belies a true radicalism. The cars of the WEST, by and large, are leading edge—blown alcohol Pro Streeters, megawatt triamp stereo systems, California-nurtured perfect restorations, road race Camaros, and even a Datsun or two. Three-hundred-sixty-five-days-a-year worth of cruising is a lot of time to get your act together. In the WEST, it better be together. There are no excuses.

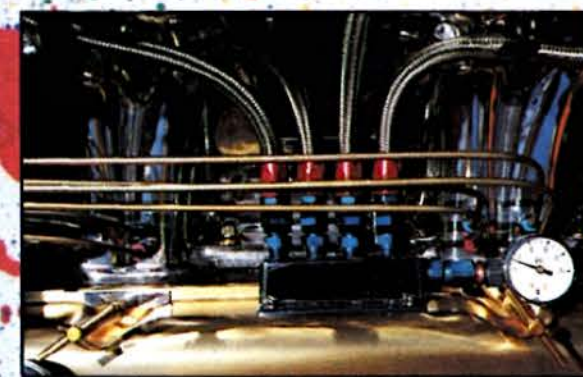
But there is another dimension to the WEST, and all the Street Machine Nationals, that rarely gets mentioned. The cars and the hardware tend to dominate the show, but it is the people who put these incredible creations together that elevate the Street Machine Nationals way above and beyond any car show. When someone asks why the Street Machine Nationals are so special, describing the cars and the hardware doesn't quite say it

# Rainbow

## COALITION

By David Ellis

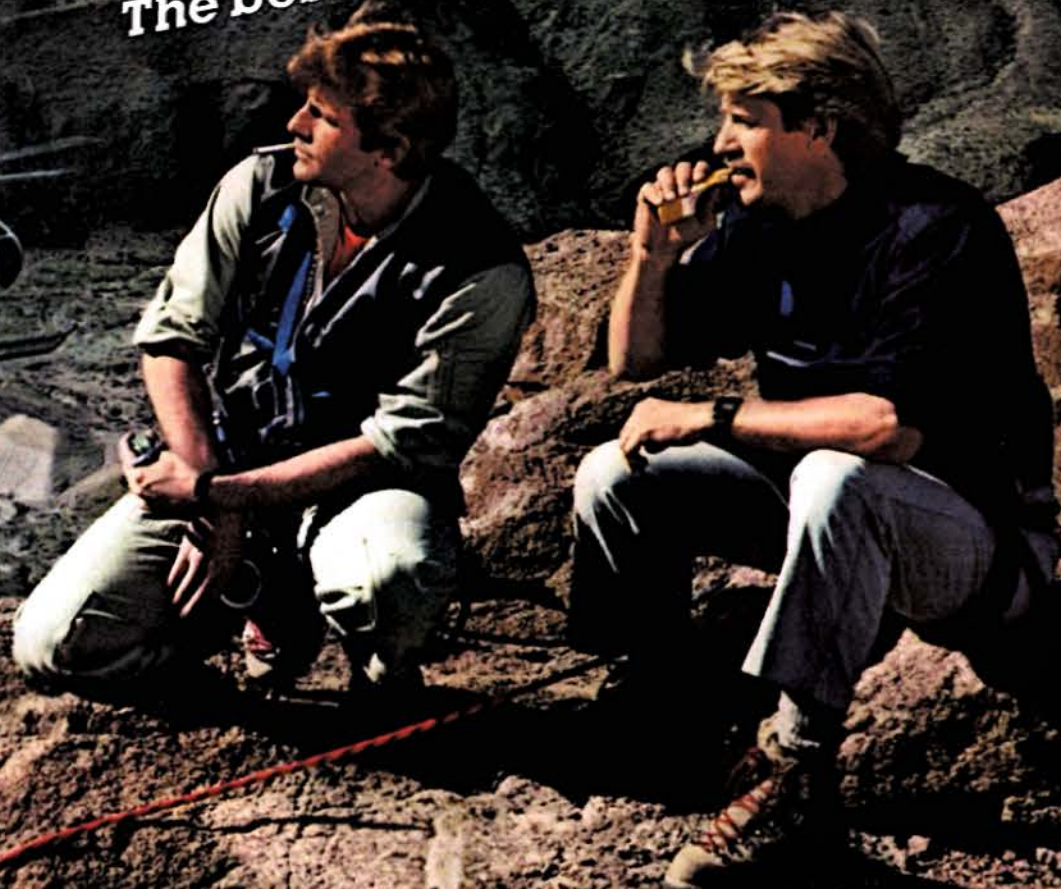
**N**inety-six degrees in the shade. It was hot, blistering six-pack hot at the Cal Expo Fairgrounds in Sacramento for the May weekend known as the Street Machine Nationals WEST. The spirit of the crowd, as usual, soared right along with the mercury to create three days of unmitigated high-octane fun and frolic. The WEST is always a little bit different than the two eastern Street Machine Nationals. Perhaps some of the creative craziness that spawns such California oddities as the Silicon Valley, Hollywood, and a for-real hot tub industry spills over into the Western street machine mentality, be-





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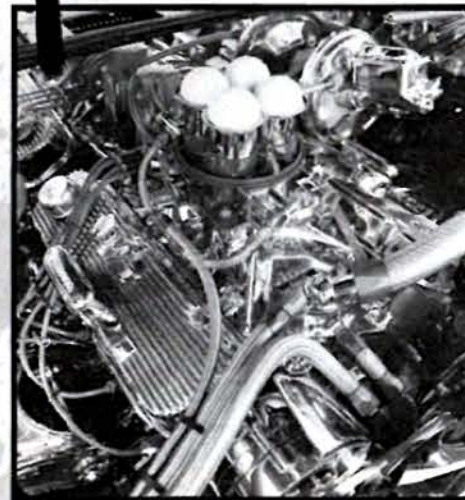
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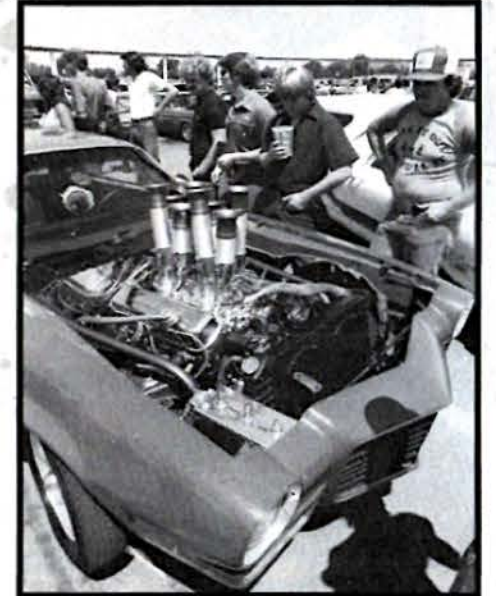
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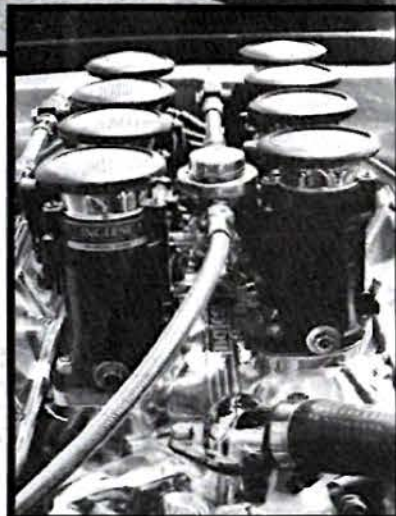
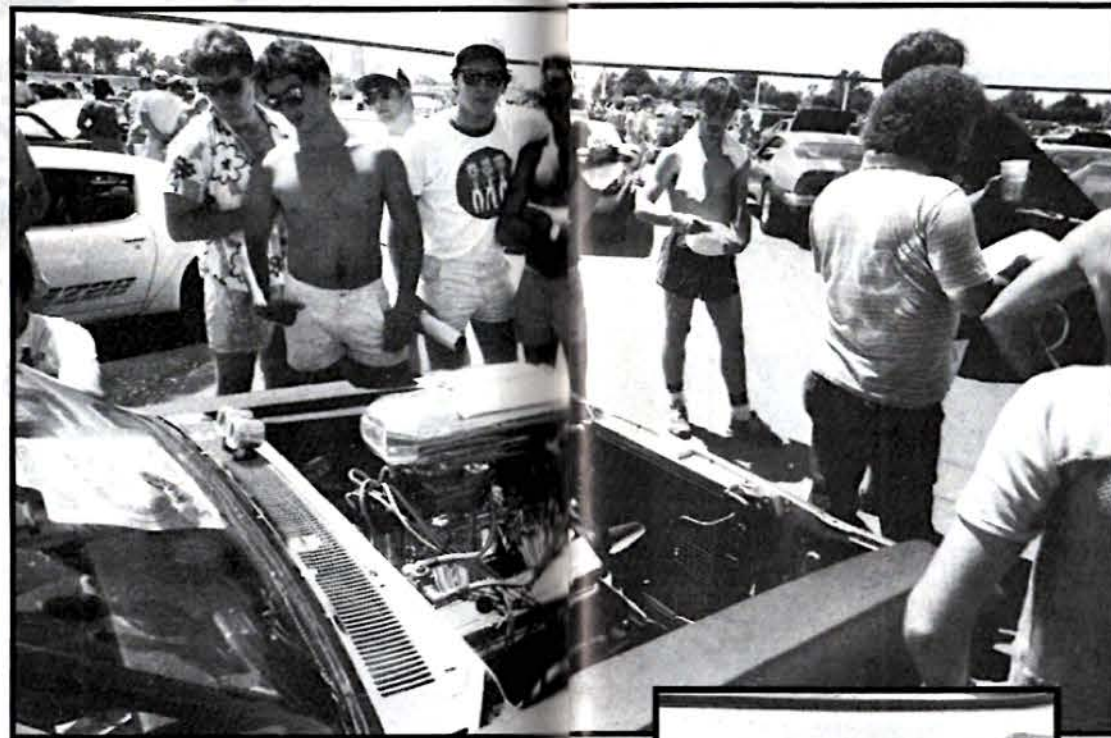
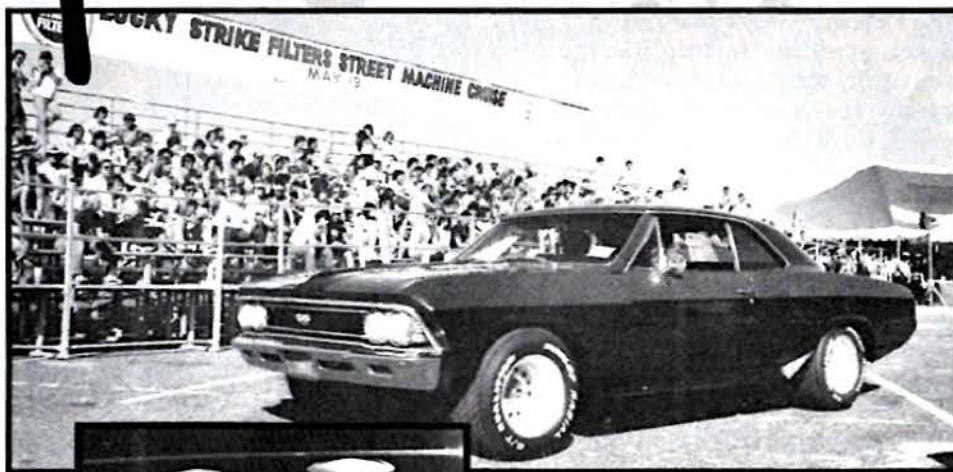
all. Talking about the *feeling* gets closer. And the feeling has nothing to do with the amount of money spent on a car, or how well a street machine is screwed together. It has to do with people, and we get the best in the WEST every year. We'd like to introduce a few of them to you, without whose presence the event wouldn't be the same. Some own cars which have won prizes and recognition, others just keep improving their machines, making them better year after year. Like everyone who attends the Street Nats WEST, they're all winners.



PHOTOS BY MICHAEL AUSTIN, DAVID ELLIS, CHUCK HANSON, LAURA HAYS, TODD HOWARD, TRACEY HURST, AND JEFF SMITH



# Rainbow COALITION



## THE PERILS OF PAULINE

If you've been to the WEST you probably know Pauline Hart. If not Pauline, certainly her homebuilt Mustang, which is usually inhabited by whacky stuffed creatures of all colors and descriptions. Pauline is not your ordinary street machiner. Being a woman has caused her more than her share of trouble—it's hard to be taken seriously in a rough and tumble pursuit like street machining. But she can hold her own with anyone in a tech discussion, rattle off Ford part numbers and specifications with the best of them, and she's got more grit and dedication than a dozen of her male peers.

The Mustang is in a constant state of evolution. Pauline and her boyfriend bought the car in thrashed condition—three colors of red primer, a fuzzy brown cloth interior, four bald tires (14-inch on the right side, 15-inch on the

left), and a tired 145,000-mile 351W underhood. She and her friend were going to build the car together. But as fate would have it the relationship ended prematurely, and her boyfriend took the car. He sold it to a mutual friend who, in turn, traded Pauline straight across for an Econoline Van she owned. He thought he got the best deal. He should see the Mustang now. A 351



Cleveland with all the trimmings replaced the tired Windsor, along with new paint (two new paint jobs to be precise), a black interior, new wheels, and radial tires. In addition, Pauline recently installed a one-of-a-kind BDS/Magnuson Low-Blo supercharger with a pair of opposing Weber side-drafts. Anyone who doesn't take Pauline seriously at this point is in for a rude awakening.

Aside from her dedication to the car, Pauline represents a kind of unselfishness that is unique to the Nationals' participants. A good case in point: She was parked next to a CC cover car, the Pro Street Pinto of Dennis Elias (May '82) at her hotel in Pomona when, prior to the cover shoot, someone had key-stripped the side of the Pinto. Her car was covered at the time, but she went up to Dennis, who was angry and heart-sick, and consoled him, telling him that she wished it had happened to her car. Her car wasn't going to be used for the cover, and she'd have preferred it to have happened to the Mustang. Not many people would feel the same way.

## OLD PRO

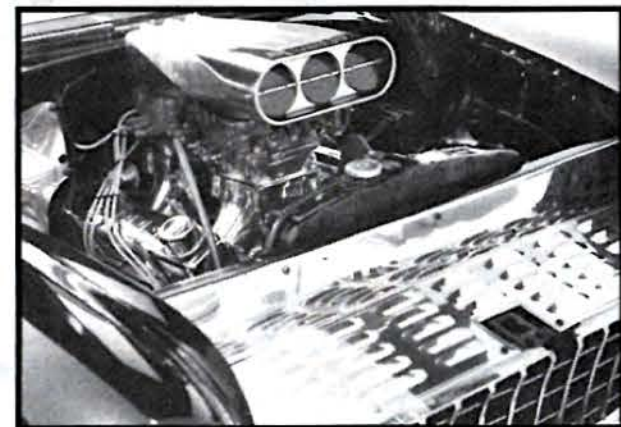
Tony Rivas is kind of a legend at the Street Machine Nationals WEST. His Camaro was one of the first in the West to really drive home (no pun intended) the drag race image for the street. Tony's '72 Camaro was the CC July '80 cover car—and is the penultimate nasty ride. Tunnel ram, dual quads, deep candy-lacquer paint, and narrowed rearend, Tony's automotive alter ego still wows them at the WEST and looks every bit as fresh and relevant today as it did five years ago.

Obviously, Tony likes them hot and nasty. And he's noticed quite a change in the cars at the WEST over the years. "In '79 I was just about the only guy with a narrowed rearend and McCreary's. Guys were running up to me asking where they could get those tires. The next year, everyone had them. Now the cars are plenty serious. They're twenty cars out there in the Pro Street competition that could win it all. Last year there were ten."

Tony should know. He's been to every Street Machine Nationals WEST since the event began, and even took a trip to Indy in '81. He liked Indy but felt there were too many "Mom and Pop" cars. "It seems the guys back there will enter anything just to get in," he says. "Here the cars are really nice."

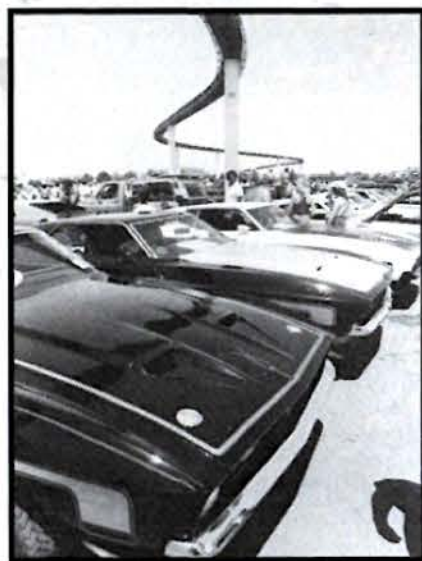


Still Tony and partner Pat King enjoy the Street Machine Nationals' feeling. You can always spot Tony and Pat by the crowd around Tony's killer Camaro and Pat's flawless chopped and louvered GMC truck. Tony's car has been a real winner, taking top honors in the Best Car category at the '82 WEST. That year Tony walked away with an engine stand at the WEST and a set of BF Goodrich radial T/A's at Norcal (all luck of the draw). All told, the Camaro has received six honors at the Street Machine Nationals WEST in various categories. Not a bad record for one car. Tony isn't sure what the next step is for the Camaro, but he has a new creation coming together which might debut next year. Knowing Tony, it will be bad, radical, and hard to beat—just the way he likes it.





# Rainbow COALITION



## INDIAN SUMMER

They claim they get no respect. Every year there is a growing contingent of fanatical GTO owners who virtually dominate the middle of the Cal Expo aisles. Judges of all hues, Goats of every description, all perfectly maintained and manicured. Don and Linda Davis of San Mateo, California, have been consistent winners in the Best Original/Restored

Musclecar category (in '82 Norcal, '82 WEST, and '83 WEST) with their silver '70 Judge, and this year, with their new '67 blue and white Royal Pontiac GTO convertible. Gary Marshall took the honors at the '81 WEST with his flawless green '70 Judge. Ray and Darcie Hart have an ultra-rare '71 Judge. Who says these guys don't get any respect?

Actually the GTO contingent is extremely close-knit, based on relationships cultivated by common interest in GTO's as well as the show car circuit and the Street Machine Nationals. They meet frequently at shows, though all are scattered throughout California, and they keep in contact all year long. "The phone bills are horrendous," laments Linda Davis. They keep each other informed on their particular projects, look out for rare parts they might be able to use, and in general, keep the Pontiac spirit alive and well.

There is something to Pontiac pride which can't be readily explained. Sandy Morgan and her husband John tell of the time when Sandy had some trouble on the highway with her '64 GTO, and

another GTO owner came to her rescue. Seizing the opportunity for some Ponce chauvinism, John quipped, "If it had been a guy in a Camaro she'd still be out there." All of the GTO aficionados agree that the biggest attraction for them is the early musclecars. Lou Hart, owner of a '67 GTO, was very impressed with the selection of Mopars at the fairground, and loves the chance of seeing the old cars in their original condition. As he says, "Kids these days are too young to know about GTO's and the old supercars. They're into the flash and not the substance. Do you know what it takes to put one of these things together, factory stock? These cars used to be a couple of hundred dollars. Now you're lucky if you can find a straight one. And a Judge? Forget it."

Still, the pleasure of getting together at the Street Machine Nationals is celebrating the importance of cars and reviving long-term friendships. The Pontiac contingent may only see each other once or twice a year, but the intensity of their commitment to their cars, as well as to each other, burns brightly every year.

## EAST MEETS WEST

Just to the left of the GTO contingent was a rather strange vehicle. It sort of looked like a Judge, but it had a 455ci motor and no stripes or decals. The idea of a modified Judge street machine didn't go over too well with the Pontiac contingent—purists to the end. If they had known it was Michael Turk's Pontiac creation (a much modified '70 Le Mans) they'd have felt better. Michael and his friend Pete Stephenson are from Illinois (Alton and East Alton respectively), and you couldn't have asked for a nicer pair of wild and crazy guys.

Both Michael and Pete have moved to

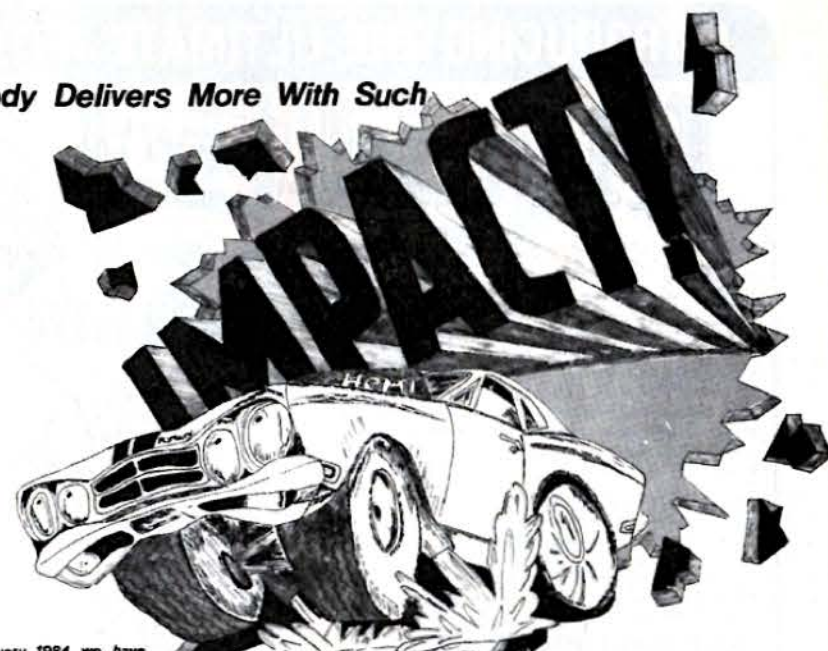


Sacramento recently, and for Michael, this was his first Street Machine Nationals WEST. He is no stranger to the Street Machine Nationals concept, having attended them all back in Indy and Springfield since 1979. He was quite candid about the differences between the two. "This is an event, Springfield is an experience," he said, but readily admitted that the quality of the cars was every bit as good here, if not better, than they were at the "Big One." If anything, Michael felt that Californians are far more serious about their cars than are the people back East, "a lot more hard-core. Back at Springfield, everyone is really open and friendly. Out here they're kind of laid back." One Midwesterner's first contact with the renowned California cool.

Michael has been hooked on the Street Machine Nationals since first attending in 1979, and wondered why there wasn't more publicity, more of a ruckus about the WEST. "Back there, you turn on the radio, and all you hear about is the CAR CRAFT Street Machine Nationals. Here it's just another weekend attraction." Michael plans to get to Springfield this year via Houston, where he will join a friend for the trek up north this summer. "I still think the 'Big One' is the one to go to, but the WEST is a lot of fun. It almost feels like the real thing." ☐

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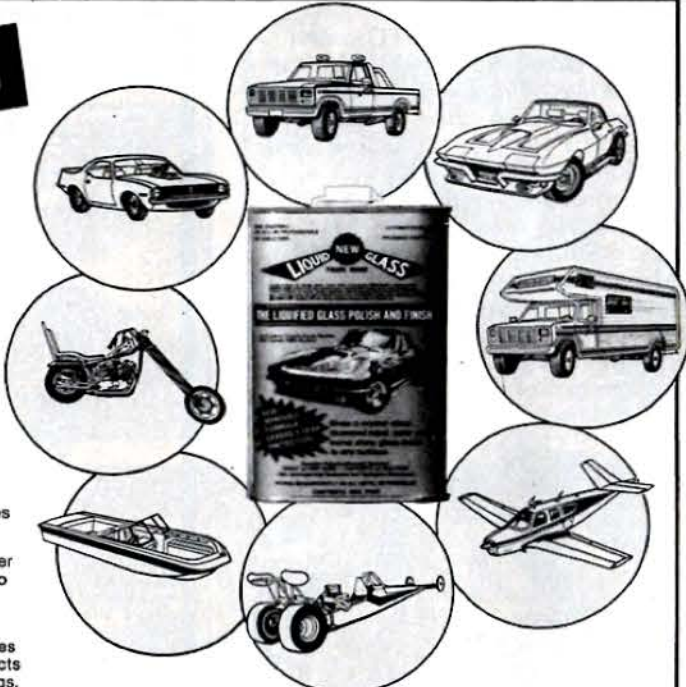
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By Chuck Hanson

**B**ack when Thunderbirds sat only two and had windblown Y-blocks under the hood, they were real performance machines. But as time went on, so did a few extra pounds, until the once potent early 'Bird was closer to a plucked chicken than a for-real thunder-mobile. For the Eighties, however, the Thunderbird is making a performance comeback with its high-tech powerplants and supple suspension. Even so, it still doesn't sate the performance appetites of some.

One look at this low-flyin' Ford and you *know* its owner has something serious on his mind. According to its constructor, Dan Crocker of Midland, Texas, the 'Bird was built for an anonymous oil tycoon who apparently wanted to ensure that his wells would have a bottomless repository for their products.

Crocker, who took the project into his shop (Auto Tech, 3314 Bankhead Highway, Midland, TX 79701) on a cost-is-no-object agreement with the mystery oil magnate, claims the total expenditure so far has amounted to over \$65,000. Of course, a certain amount of that bill paid for Dan's involvement with the project. Nevertheless,

**Texas BIRD**

you get what you pay for, and this Pro Street player is a class act—from its spotless undercarriage and race-inspired ladder bar suspension to the Alston roll-caged-interior and 510-cubic-inch fat-block Chevy found nesting under the hood.

Did someone say Chevy? We certainly did. But you'd be surprised to find out how many people actually think there's a

blue oval 429 or 460 hiding under the hood of this cross-bred 'Bird. According to Dan, "We had to mount the distributor up front because of the engine setback and firewall interference, but it's been extremely effective in fooling people into thinking that the engine is really a Ford." The ruse is carried even further. Dan painted all the non-aluminum components Ford blue, then topped it all off with a set of Ridgeway no-name valve covers. In most cases, even the staunchest Ford fanatic is hard pressed to recognize that one of their better ideas has been replaced by one from the Bow Tie brigade.

Not just *any* big-block player would fill the bill, however. Serious street running requires some serious horsepower, and to that end Dan laid the fat-block's foundation with a



**With a blue oval displayed prominently on the valve covers and a front-mounted distributor, most folks would think that this is a fat-block Ford. In reality, however, beneath the Ford script beats the heart of a big-block Chevy of mammoth proportions. Notice the repositioned wiper motor and its specially fabricated housing.**



*Flying the Coupe with a Big-Block Chevy*





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# Texas T-BIRD

Chevrolet marine block featuring a 4-inch arm, Carrillo rods, and Ross pistons. The high-tech approach may be the way of the Eighties, but intercooled turbochargers and computer-controlled fuel injection won't quite produce the punch like a 510-cubic-inch monster motor. Building it big allowed Dan to prevail with his street sense: "Too many guys over-cam, over-carb, and generally over-build their motors. Ours uses a moderate 10-to-1 squeeze factor and a Competition Cams 'stick with only 280 degrees duration.'" If you've already scrutinized the photos, chances are you've noticed the Holley Dominator carb sitting on the Edelbrock intake. While the Dominator doesn't exactly enjoy a reputation for being the hot setup on the street, with a little work Dan was able to make it function quite admirably. In fact, the only modifications he performed were to restrict the air bleeds, jet it down to more reasonable levels, and adjust the accelerator pump. Apparently he knew what he was doing. Dan claims the T-bird is capable of knocking down an incredible 12 miles to the gallon on the open road.

For heads, Dan chose aluminum D-port pieces that were treated to a mild street porting job before being fitted with Man-

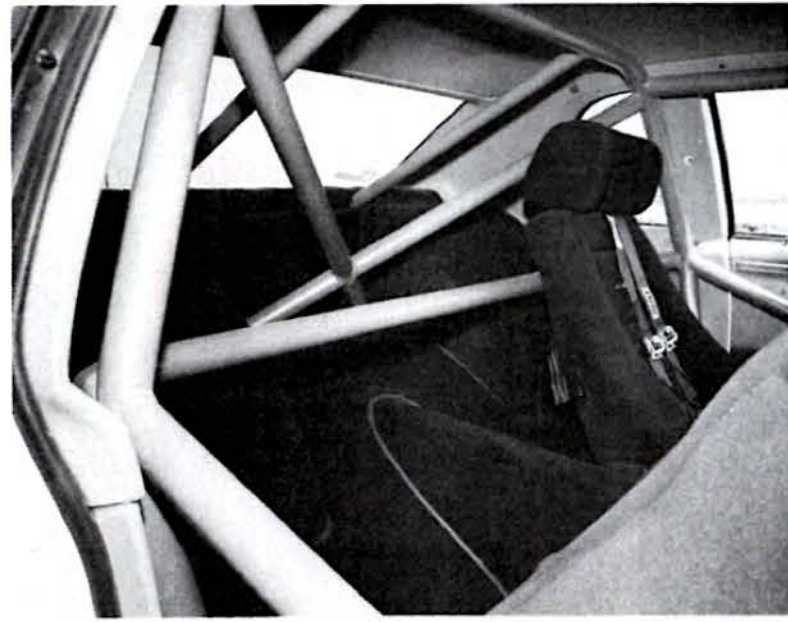


Not much room for luggage in here. Twin Delco batteries assure ease of starting, even with 510 cubic inches to spin over. The Harwood fuel cell features special internal baffling that allows accurate fuel gauge readings, while the engine's dry sump reservoir also includes a handy dipstick to check the oil level.

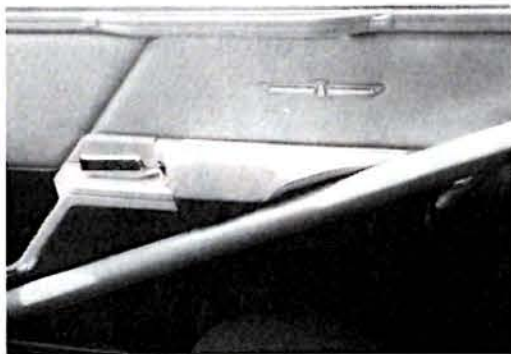
ley valves and Crane rockers. An MSD and Mallory ignition system works to get the Rat's fire lit, while Russell's braided-steel lines transport the vital fluids. Cooling the engine can be a problem in the desert heat of west Texas, but a Modine radiator and a trio of Kool Clutch electric fans keep the temperature gauge well below the boiling point.

The rest of the drivetrain is equally impressive. A McLeod clutch transmits the engine's torque to a Hurst-shifted Borg-Warner Super T-10, while a 9-inch Ford rearend has been fitted with 4.57 gears and disc brakes from a Lincoln, adding go as well as whoa to the package. An Alston ladder bar setup locates the rearend properly, with Koni coil-overs supporting the cause at all four corners. Rolling stock consists of Streaker wheels (15x3-inch fronts and 15x14-inch rears), with Michelin radial rubber up front and DOT-approved Mickey Thompson 33/19.5x15-inch steam rollers out back. Dan also stretched the wheelbase another two inches by relocating the front wheels farther forward, a trick that certainly enhances the car's high-speed handling.

Just how serious is this Texas terror? A quick trip to the local strip—Penwell Raceway—proved the effectiveness of Croc-



A late-model Mustang dash fit the 'Bird perfectly, and now houses a full complement of Stewart-Warner gauges and a killer Pioneer stereo. Recaro seats and Deist racing belts keep the driver and passenger firmly ensconced, while the Alston rollcage increases passenger protection and adds rigidity to the T-Bird's substructure. Detail is the name of Crocker's game—right down to the notches in the arm rests for rollcage clearance.



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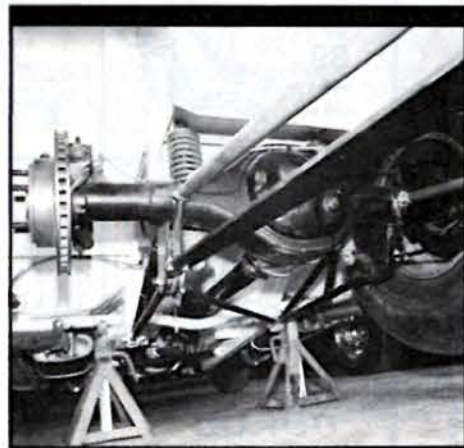
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<p><b>CRAGAR</b></p> <p>SS Chrome SS/T</p> <p>SAME PRICE</p> <p>14X6--48.00 14X8--58.00 15X7--58.00 15X8--64.00 15X10--74.00</p> <p>CRAGAR KNOCKOFF 995 EACH</p>	<p><b>Cam Dynamics ENERGIZER</b></p> <p>260H / 266H 272H / 284H HIGH ENERGY TYPE</p> <p>CAM ONLY \$54.00</p> <p>CAM &amp; LIFTERS \$99.00</p>	<p><b>Cam Dynamics ROLLER CAMS</b></p> <p>\$179.00</p> <p>ROLLER LIFTERS</p> <p>CHEVY S.B.-B.B. \$149.00</p>	<p>DUAL POINT DISTRIBUTORS</p> <p>MOST CARS MECH. 46.95</p> <p>ELECTRONIC UNILITE \$96.00</p>
<p>LOW AS \$174.00</p> <p><b>CENTERLINE CHAMP 500</b></p> <p>14X6--174.00 14X7--183.00 15X4--178.00 15X7.5--184.00 15X9--189.00 15X10--199.00 15X12--209.00</p> <p>BUY 4 WHEELS GET LUG NUTS FREE</p>	<p><b>TRU WIRE</b></p> <p>TRU WIRE Series is guaranteed Tubeless TRU WIRE never needs retreading or spoke adjustment</p> <p>REAL WIRE WHEELS</p> <p>14X6 EACH \$109.00 14X7 \$109.00 15X8 \$109.00 15X7 \$109.00</p> <p>15X8--\$124.00 15X10--\$144.00</p> <p>SPINNERS \$10.00 EACH</p>	<p><b>STEEL OR ALUMINUM REAR FENDERWELLS</b></p> <p>\$59.95</p> <p>STREET LADDER BAR \$82.00</p> <p>ADJUSTABLE LADDER LINK \$169.00</p> <p>ROLL BARS 4 PT. BOLT ON 8 PT. WELD ON \$115.00</p>	



# Texas BIRD

ker's combination. How about a 10.44-pass with a trap speed of 133 mph? All this at a track located 3000 feet above sea level and in air so hot that it baked our lungs just to breathe. The only concessions made to street-legal operation were open headers and a new set of shoes—the M/T's gave way to a pair of 15/33.5x15-inch Firestones. Adding further to the boulevard credibility of Crocker's engineering expertise is the fact that the car was driven to and from the dragstrip (37 miles each way), and the 'Bird never once faltered. Back at Midland we topped off the fuel cell, and after some quick calculations verified Crocker's claim of 12 mpg.

Right now you're probably thinking anyone can take an old race car and hang a set of plates on it. But that would be a hasty judgement. This car was purchased right out of the showroom, and the six-month construction period included the time necessary to ensure its street-legal operation. The engine setback wiped out the firewall and required the relocation of

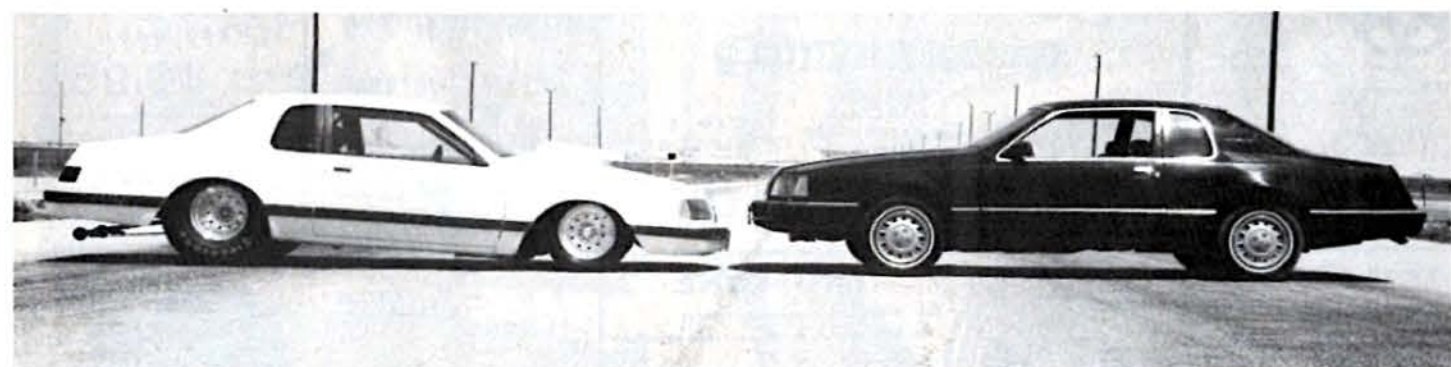


the windshield wiper motor and drive mechanism. After two days of fastidious fabrication, Dan had them working like they were supposed to. And with a removable front-end, things like horns, headlights, and turn signals can quickly become a street machiner's nightmare. Before the car could be licensed, however, they all had to be working, and the sticker in the lower driver's windshield bears the Texas DOT's stamp of approval.

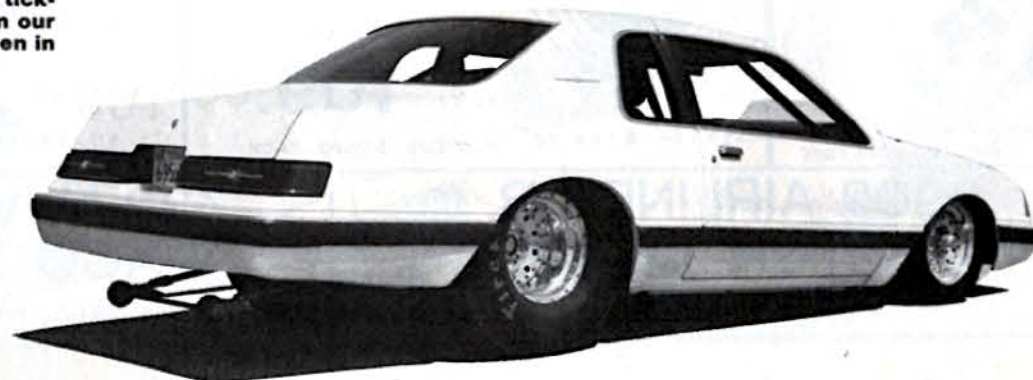
As children we all recall the stories of Pecos Bill and how everything in Texas was bigger, badder, and better than anything anywhere else. While the truth of those tales may have been stretched a bit to make the stories more interesting, you can believe us when we tell you that this is one Texas T-Bird that really flies! ☺

**Koni coil-overs and Alston ladder bars keep the 4.57-gear, 9-inch Ford rear-end in place during those banzai blast-offs. For stopping power on the other end, Crocker bolted on a set of rear disc brakes pirated from a Lincoln.**

**Weighing 3154 pounds with a full tank of gas, this low-flyin' Ford has 12 inches of engine setback and 52 percent of its weight over the rear wheels, with the right rear weighing 30 pounds more than the left. The result? A 10.44-blast at over 130 mph! And yes, the left front wheel is off the ground.**



**A stock Thunderbird may be the hot ticket for some, but there's no doubt in our minds which one we'd rather be seen in on cruise night.**



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Brand New No Seconds!

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SMALL CHEVY	\$129.95
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MOPAR 413 440	\$129.95
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FORD 351M & 400	\$139.95
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Maintains 40,000 volts spark at high RPM.  
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Big Chevy H-300-4	\$142.50

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4 Spread lock w/ full rat/het a-tron

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113861	Chevy V-8 (M)	310	310	500	500
133801	Chevy V-8 (H)	278	290	529	560
523801	Ford Boss 351, 351C, 351M, 400(H)	278	290	539	570
363801	Ford Mercury V-8	278	290	498	527
363841	Ford Mercury V-8	300	310	512	533
343801	Ford Mercury V-8	278	290	548	580
643801	Mopar V-8 (H)	278	290	467	494
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FORD 352-428-344341H 296° 516  
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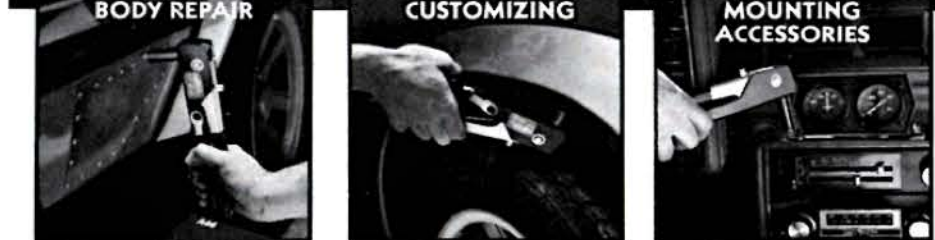
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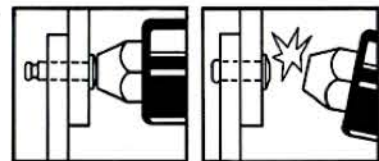
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As outdated and out of place as they may seem in the empty Eighties, the big-blocks of yesteryear still exhibit incredible popularity with those who aren't afraid to laugh in the face of adversity. Yes folks, it's true. There are still a few who believe that happiness can only be found behind the wheel of a big-block powered asphalt annihilator. These are the diehards willing to shirk the social responsibilities of higher mpg and lower mph for the nefarious thrill of tripping the light fantastic in 13 seconds or less.

Building a stout-hearted monster motor these days has taken on an entirely different twist, however. Poor gas precludes the 12 to 1 compression ratios that were prevalent during the performance era. To be sure, anything on the streets with much over a 10 to 1 squeeze is likely to encounter difficult times at the first fill up.

But take heart. Hope springs eternal for those still bent on using traditional performance-enhancing practices on their big-blocks. As proof, we offer three buildups, each within the parameters of contemporary street-engine sanity.

Mopar fans will be pleased to find that the venerable 440 RB engine is still capable of producing outstanding horsepower levels, while retaining the ability to be driven on a daily basis. Bill Bagshaw, indisputable advocate of Mopar performance and longtime drag racer, has assembled an astoundingly strong but simple .030-over 440 using readily available parts and standard assembly practices. With over 500 horsepower on tap, this is an RB combination that certainly bears some attention.

For you Ford fanatics out there, Rick Voegelin has discovered an unlikely candidate for your engine building affections. Largely overlooked as a performance platform, the 385-series Lima motors were available in two sizes: large and larger. However, both the 429- and 460-cubic-inch versions are quite capable of generating impressive power levels with only a bit of minor massaging. The real beauty of using one of these engines is their availability and low initial cost.

Believers in Bow Tie power weren't left out of our quest for power, either. With the 396 and 427 versions of Chevrolet's big-block becoming harder to find every day, we chose the more abundant 454 as the basis for constructing our rapid rodent. Again, the approach was to use easily obtainable parts and recognized power-producing procedures to construct an engine that could be easily duplicated—while remaining within the budget of most street engineers. The 2-bolt main block and standard oval-port heads proved entirely adequate for our Rat motor revitalization, proving that high-performance heads and 4-bolt mains aren't prerequisites for strong street running.

Interested? Then read on. We're sure you'll be amazed at the amount of power extracted from these incredibly straightforward combinations. Even though we may now be living in the empty Eighties, there's certainly nothing wrong with a little blast from the past.

Chevy, Ford, Mopar,

# FAT BLOCKS

Big-Inch Bruisers For the Eighties

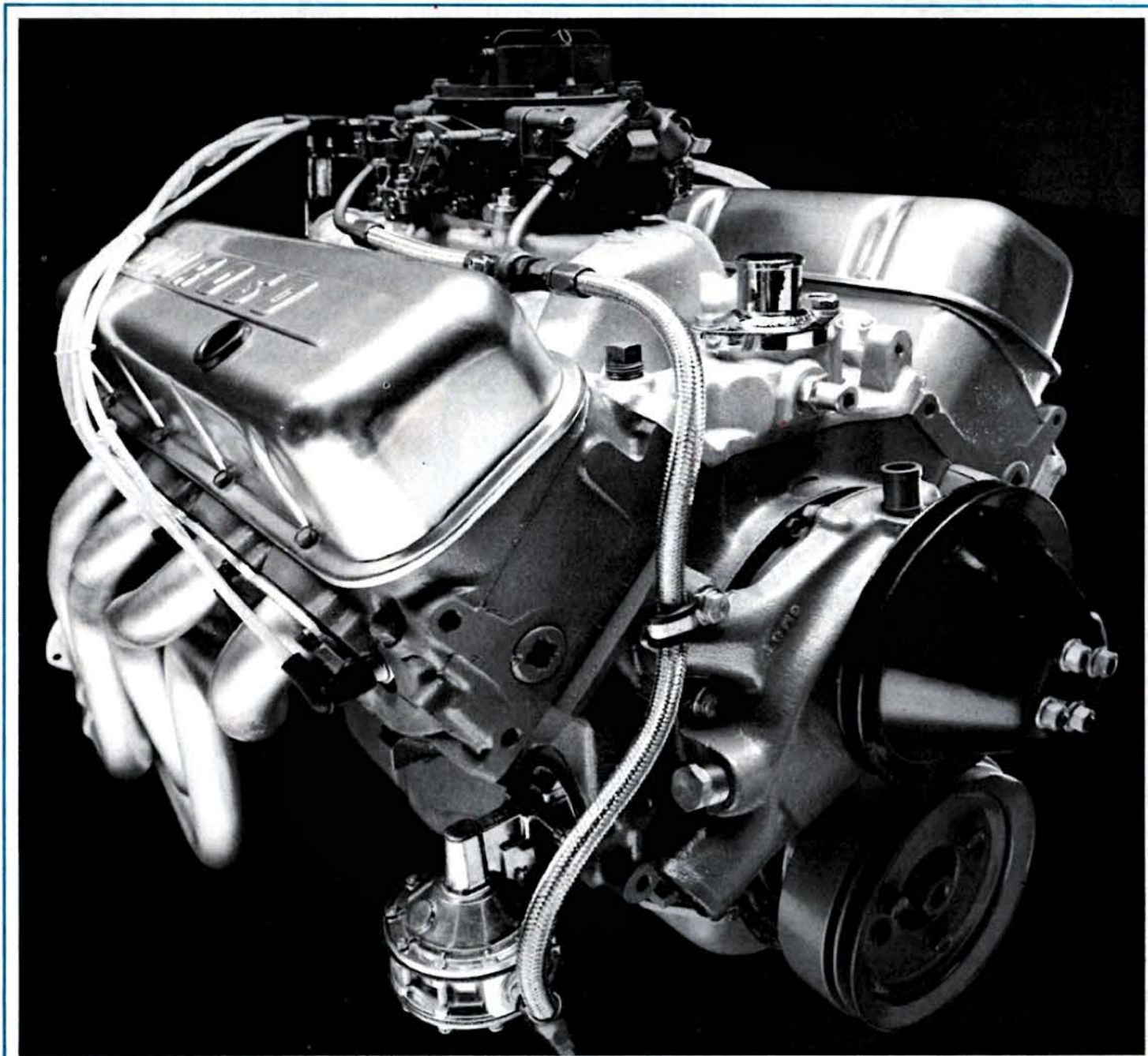


PHOTO BY PAUL MARTINEZ



ILLUSTRATIONS BY KEN CUFFE

# THE BIG-BLOCK THAT TIME FORGOT

From Out of the Past Rides a 500 Horsepower 460ci Ford

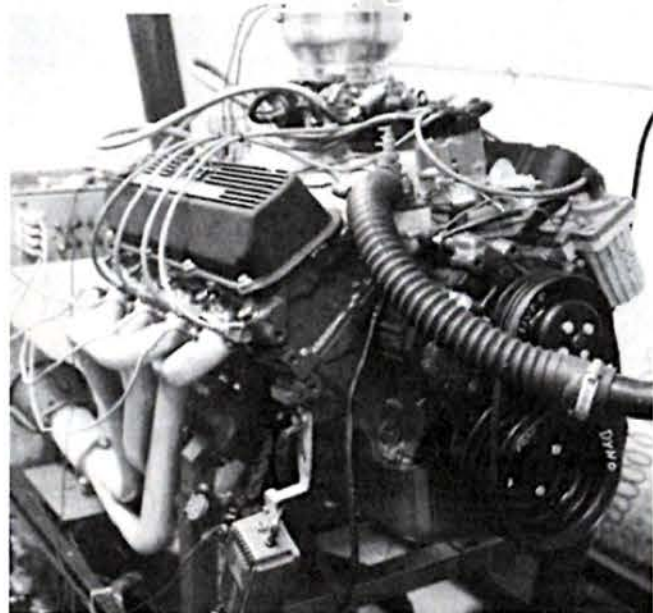
By Rick Voegelin

If ever a monument is erected to commemorate the horsepower wars that swept across the nation in the late Sixties, surely the 460ci Ford will be selected to occupy the Tomb of the Unknown Big-Block. Here was an engine that seemed to have all the right stuff: cubic inches, canted valves, cavernous ports, efficient combustion chambers, and lightweight castings. Yet despite all these armaments, the 429/460 is the forgotten Ford performance engine. Even after 15 years in the field the 460 Ford is usually regarded as an engine better suited to vans than serious street-assault machinery. Few performance enthusiasts can even recognize a 460 Ford. All the better. The secret of successful guerrilla warfare is the element of surprise. And who would ever suspect you of harboring 500 horsepower in your street 460 Ford?

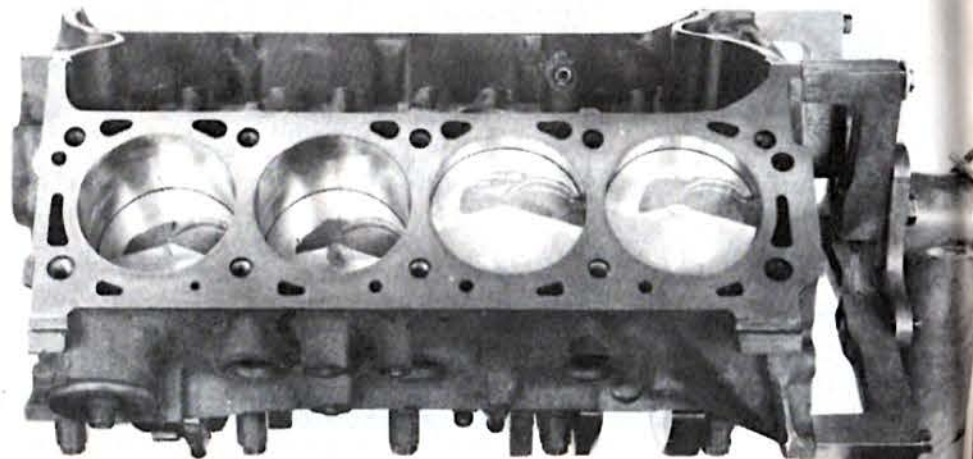
Even though the big-block Chevy has received more medals in the service of

The 429 and 460ci Fords share the same blocks and heads; stroke changes account for the difference in displacement. Ford's big-block debuted in 1968; it shows a strong family resemblance to Cleveland small-blocks with thin-wall castings, four head bolts per cylinder, and similar oiling systems.

high performance, the 460 Ford is not an old soldier that's ready to fade away. There are legions of big-block 429 and 460-cubic-inch Fords in the junkyards ready to recruit for your attack plan. While many salvage yards have been picked clean of Rat motors, Cleveland Fords, and Cobra Jets, the 429's and 460's have stayed under cover. They



Ford's 460 cubic-inch big-block is an unknown soldier in the great horsepower wars—but with over 500 horsepower in reserve it can be a formidable foe.



are lurking in the engine bays of pickup trucks, hiding under the hoods of station wagons, and entrenched in lines of old police cars and luxury cruisers.

One man who knows how to turn a raw 460 Ford recruit into a tough urban guerrilla is Bill Hendren (Hendren's Auto Machine, 1570 Soquel Drive, Santa Cruz, CA). Hendren's basic training program for big-block Fords produced a motor that twisted the needle on his SuperFlow dyno all the way 'round to 507 corrected horsepower, yet can still survive daily duty on the street. Even at these lofty power levels the big Ford is churning out scarcely over one horsepower per cubic inch, so the engine is hardly overstressed. And with a single 4-barrel carburetor, hydraulic cam, and flat-top pistons, there is nothing even faintly exotic about the combination.

Hendren uses a garden-variety 460 block with 2-bolt main bearing caps, standard connecting rods, and a cast-iron crankshaft (the only finished crank available for a 460). Even so, engine durability is not a concern among this particular family of Fords. The important differences among 429/460 Fords lie in the cylinder heads. There are three basic castings, which can be distinguished by the size and shape of the combustion chambers: a small

72cc model, a relatively rare 77cc version, and a 92cc "open chamber" casting with a recessed quench area. Hendren's resident head porter Don Bradley selected a set of vintage Seventies small chamber heads bearing "DOVE-C" casting marks above the center exhaust ports. These heads originally had small valves (if 2.08/1.66-inch valves can be called "small") and the desirable stud-mounted rocker arms. This particular setup will accommodate big-block Chevy rocker studs and

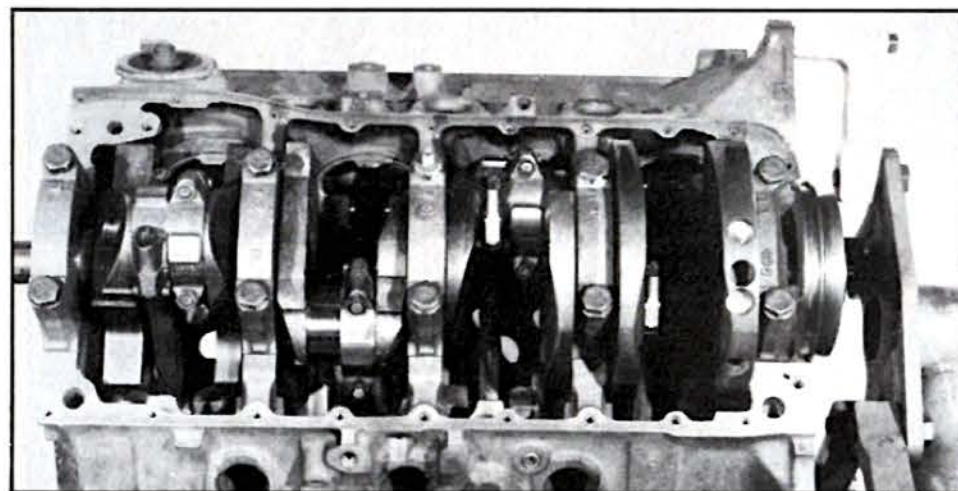
early 429 rocker arms used from 1968 through 1971 (TRW Part No. 44073K). This arrangement is a considerable improvement over the slotted pedestals common on later heads, which will accept only non-adjustable Ford rockers.

Like the cylinder heads on so many Ford engines, the 429/460 castings have split personalities. The intake ports are wonders—smooth, sweeping curves that move more air than any ten Sikorsky helicopters. The exhaust ports, in contrast, are

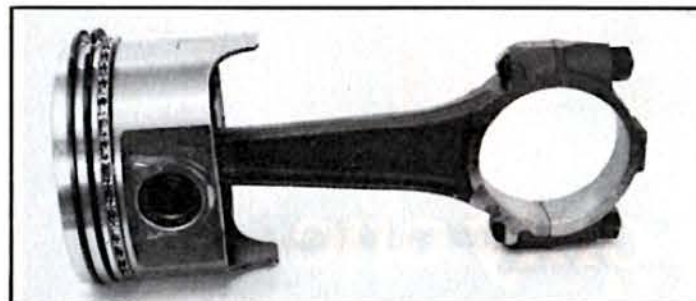
a disaster. The exhaust exit is very low, compelling the hot gases to make most of a "U" turn on their way out. To make the journey more arduous, there is a bump in the middle of the port roof which drastically decreases the cross-sectional area of the port. Don's trusty grinder was called on to remove the offending iron, as shown in the accompanying photos. Even with these efforts there is still an imbalance between the intake and exhaust flow. It's this poor exhaust port design that is the big-block Ford's greatest shortcoming.

Don also treated these heads to oversized valves before they departed his workbench. The intake side received 2.250-inch diameter Cobra Jet valves (TRW Part No. V2822X). Don modified these valves by regrinding their original 30-degree faces to the familiar 45-degree angle found on intakes used in standard 429/460 heads. The 1.750-inch diameter exhausts he selected (TRW Part No. S2821) are the biggest in the book; these valves already have conventional 45-degree faces, so Don relieved the underside of the valve heads with a 30-degree back angle to pick up some flow.

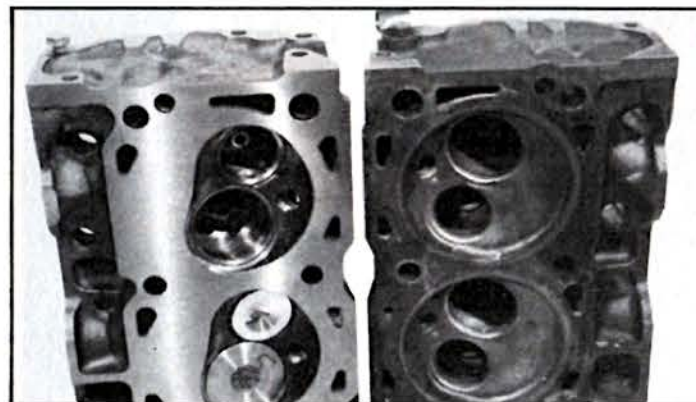
Piston choices for the big-block Ford are somewhat limited. There's a flat-top forged piston for the 429 (TRW Part No. L2366F), a *dished* 460 piston (L2404F), and a *domed* piston for the 460 (L2443F). Among these alternatives there is *no*



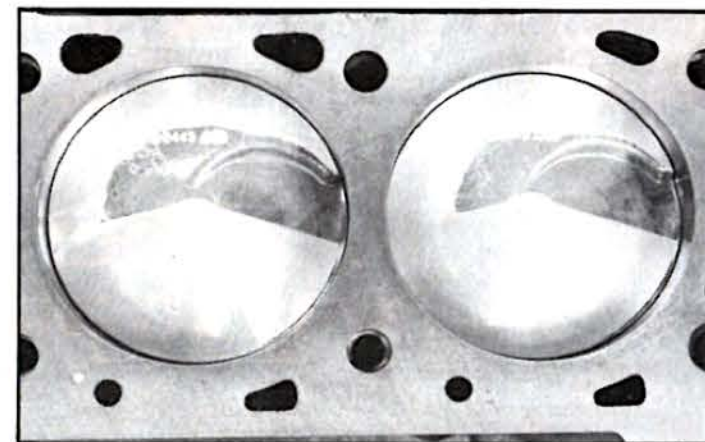
Although some 429 Cobra Jets featured 4-bolt main bearing caps and upgraded rods, 460ci Fords make do with 2-bolt caps and cast-iron cranks. Engine reliability is good—providing crank speeds are kept below 6000 rpm.



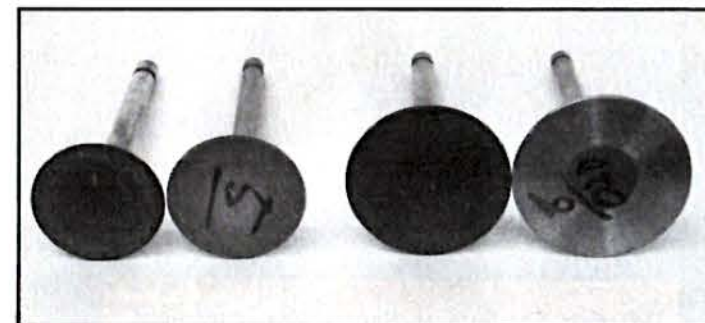
Engine builder Bill Hendren picked through three sets of rods before he found eight that pleased him. The 460 rods have notoriously thin caps and severe notches for rod bolts.



The 460 Ford cylinder heads have a canted valve layout with compact combustion chambers and symmetrical intake ports. Head porter Don Bradley selected early-70's cylinder heads with small combustion chambers (left) and "DOVE-C" casting mark. The late-model emissions head (right) has large 92cc chambers with recessed quench areas.



Hendren solved the 460's piston dilemma by cutting domes off TRW forgings to create these flat-top 460 pistons.



A comparison of intake and exhaust valves shows the increase in area available with installation of Cobra Jet pieces. Differences in stem height may require valvetrain shimming to produce correct geometry.



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## FAT BLOCKS

forged flat-top 460 piston, so Hendren made his own. Starting with a set of the high-compression 460 pistons, he chucked them in a lathe and removed the domes. The result was eight inexpensive forged flat-top pistons with single valve reliefs. The final compression ratio, based on 73cc combustion chambers and a .020-inch deck height, works out to a stout 10.4:1. A standard Speed-Pro moly ring package seals the cylinders.

Under most circumstances, that much compression in a street engine would demand a steady diet of octane booster or aviation gas. But Hendren had an out: the key to the big Ford's tolerance for pump gas (as well as its bruising horsepower and torque numbers) is its long duration camshaft. Bill selected a Competition Cams FF-292H-10 hydraulic grind. An engine with less displacement could not abide such a radical profile (244 degrees duration at .050-inch tappet lift and .556-inch valve lift), but the big-inch Ford isn't upset by the long cam timing.

The engine still makes enough vacuum to operate power accessories (although

just barely), while the low *effective* compression ratio created by this healthy cam allows the engine to survive on service station gas.

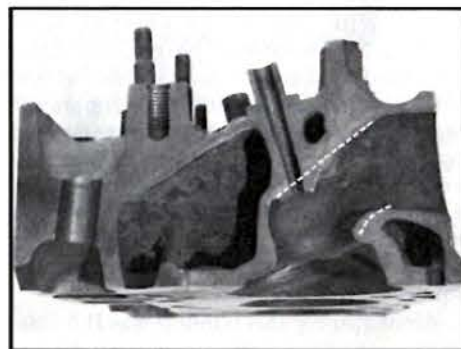
Any engine that is capable of producing 500 horsepower has to breathe, regardless of the name stamped on its valve covers. Hendren's plan for a 500 horsepower Ford included a free-flowing intake tract. For a high-output 460, the Offenhauser Port-O-Sonic single-plane manifold was the only sane choice at the time. Since then, however, Edelbrock has come out with a dual-plane Performer intake for the 429 and 460 in addition to their Torker manifold.

The importance of intake flow was underlined as soon as Hendren fired up the big Ford on the dyno to check his handiwork. Bill originally selected a 780 cfm 7010 Holley carburetor to provide good driveability and sharp throttle response. But after half a dozen pulls Bill was beginning to doubt his engine building skills, as the 460 struggled to a best reading of 456 corrected horsepower. A thorough examination of the motor's ignition, valvetrain,

and cylinder sealing provided no clues to its lackluster performance. Finally, Hendren exchanged the original 4-barrel for an 850 double-pumper model—and was rewarded with a 50-horsepower increase! The smaller carb simply choked the motor's ported heads, healthy camshaft, and enormous cylinder volume. Once this restriction was eliminated, the engine instantly responded with its best power and torque readings.

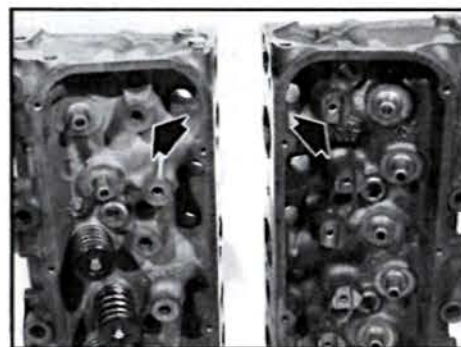
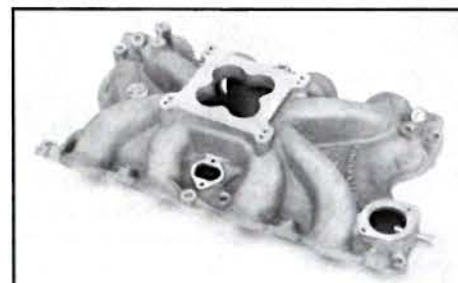
As the accompanying dyno chart illustrates, peak power occurs at a rather leisurely 5500 rpm, while maximum torque (all 530 lbs./ft. of it) arrives at 4500 rpm. In fact, a sharp Ford street fighter will zero in on the torque numbers, which don't vary more than 100 pounds throughout the engine's entire operating range, from 3200 to 6000 rpm!

That's the kind of irresistible force that can make the competition remember Ford's forgotten big-block. Backed up by a 10-inch convertor and enough rear rubber to harness the engine's astounding torque, this unknown big-block could march down any boulevard as a hero. ☐



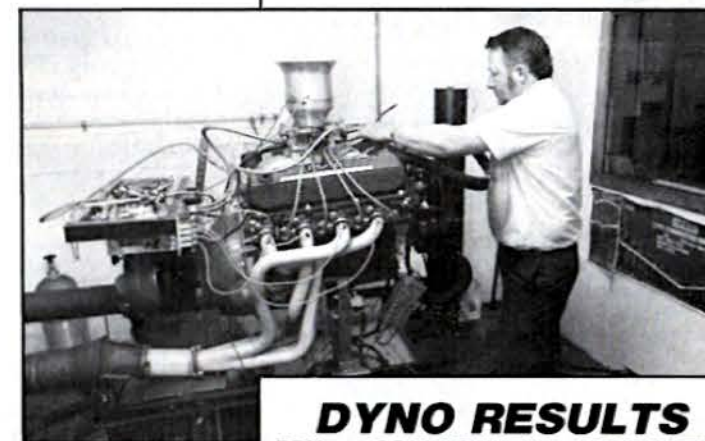
Sectioned cylinder head reveals a bump in the exhaust port that drastically restricts flow. This boss should be removed and the port recontoured, as shown.

Flow tests with an Offenhauser single-plane 4-barrel manifold revealed that intake flow dropped only 2 percent when the manifold was bolted to the head.



Desirable early-model cylinder heads have threaded bosses for rocker arm studs (left); later castings have notched pedestals (right). These heads can be converted by milling the pedestals, then drilling and tapping the holes for studs.

The original Ford rocker stud has shoulder on shank (arrow). Hendren substitutes a 7/16-inch big-block Chevy stud, and uses a posi-lock to retain valve adjustment with the early-model rocker arms.



Tests on Bill Hendren's SuperFlow dyno revealed that the big Ford needs to breathe if it is going to make serious power. With more than 500 horsepower and over 500 pounds of torque, Ford's big-block won't be overlooked for long.

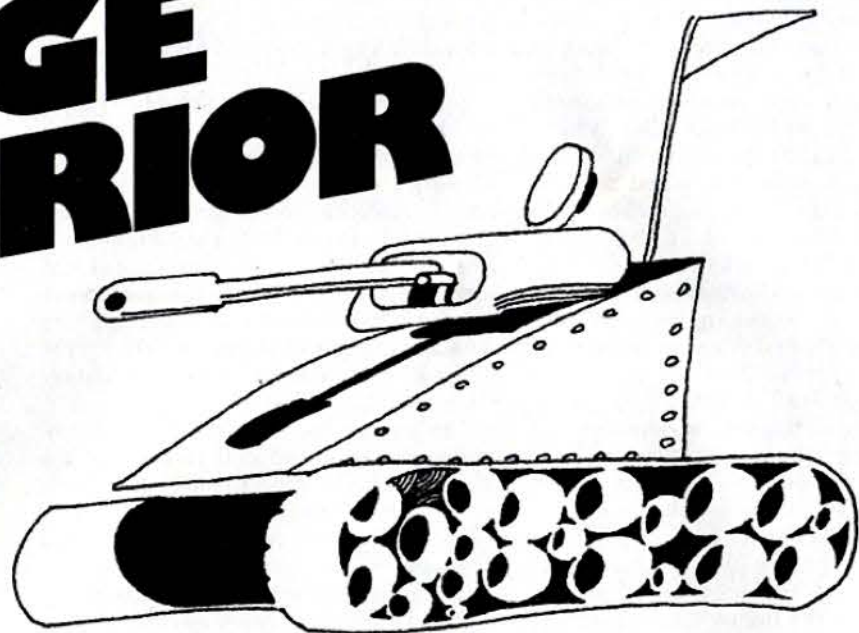
### DYNO RESULTS

RPM	CORRECTED HP	CORRECTED TORQUE
3250	291	470
3500	318	478
3750	340	475
4000	378	497
4250	423	523
4500	454	530
4750	475	525
5000	487	511
5250	503	503
5500	507	485
5750	503	459
6000	491	429

Tests conducted on SuperFlow dyno at a 300 rpm/second acceleration rate.



# WEDGE WARRIOR



Building Chrysler's Stump-pulling 440 Wedge

By Bruce Hampson

It's easy to overlook the 440 Chrysler motor. Buried deep in the bowels of motor homes, four-door land yachts, and police cruisers, the maligned Pentastar Wedge is neglected by many Mopar fanatics when contemplating performance in a serious vein. Despite the 440's inferiority complex, however, the Chrysler big-block can present the Mopar street runner with a rock-steady and powerful alternative to the traditional Ford and Chevrolet "glamour engines"—at substantially less expense.

It's been better than six years since the last factory-fresh 440 came down the pike; twice that since Chrysler offered the mighty Wedge in any semblance of true high-performance trim. Even so, nearly a million of the raised-deck "RB" motors

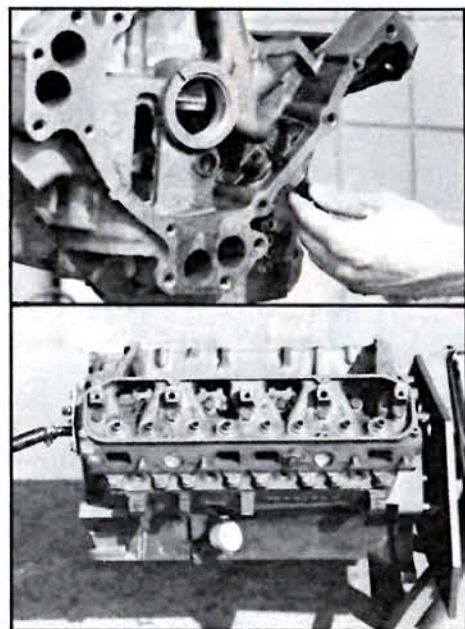
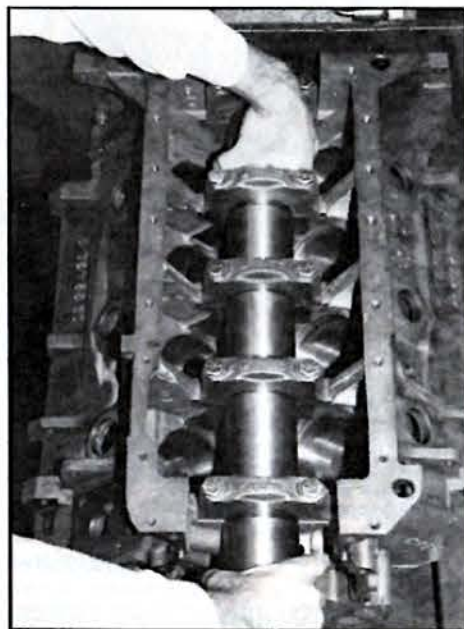
saw extensive street duty during its 13-year reign, and there remains an abundance of early Mopar muscle in every boneyard between Hollywood and Hoboken. There's never been any shortage of power-inducing componentry for the mill, either, compliments of Direct Connection (Chrysler's high-performance parts division). But all other qualifiers pale in comparison to the 440's ease of assembly. Relatively speaking, it's like bolting together a small-block Chevy—on a grander scale.

Since the 440 was available in a multitude of power ratings during its existence (all the way up to 390 stock ponies), we felt there wouldn't be much of a problem coaxing a few more from the bowels of the largest displacement engine in Chrysler history. Five hundred horsepower was

the target—but then again, so was the street. With 440 inches to work with, finding 500 hoof-stomping Clydesdales isn't hard; finding 500 that will be around next week is, especially when operating within the restrictive parameters imposed by today's impotent pump fuels. Chrysler employed 13½:1 compression in their killer street motors back in the Sixties; we were looking for even greater results while keeping a 9.5:1 ceiling on the squeeze.

Alchemist for this buildup was Bill Bagshaw, a name synonymous with Mopar performance throughout the early Seventies. The knowledge Bagshaw gained by throttling Pentastar big-blocks in the Pro Stock ranks has since been funnelled into Pro Parts, his Chrysler performance em-

The mill from the Imperial was obviously well cared for. While you never know what you're getting with a "rebuildable" non-running engine, ours showed extremely little wear. A check of the main bearing bore revealed surprisingly straight alignment, reinforced by the excellent condition of the forged crankshaft (cast cranks were not introduced in the 440 until 1974). The crank was magnafluxed and micro-polished.



Bagshaw's racing background is obvious in his fastidious approach to block preparation. The block and heads were subjected to an acid bath rather than a hot tank, then Bill scoured out every orifice with solvent and a wire brush. The motor was also pressure checked prior to the final rebuild.

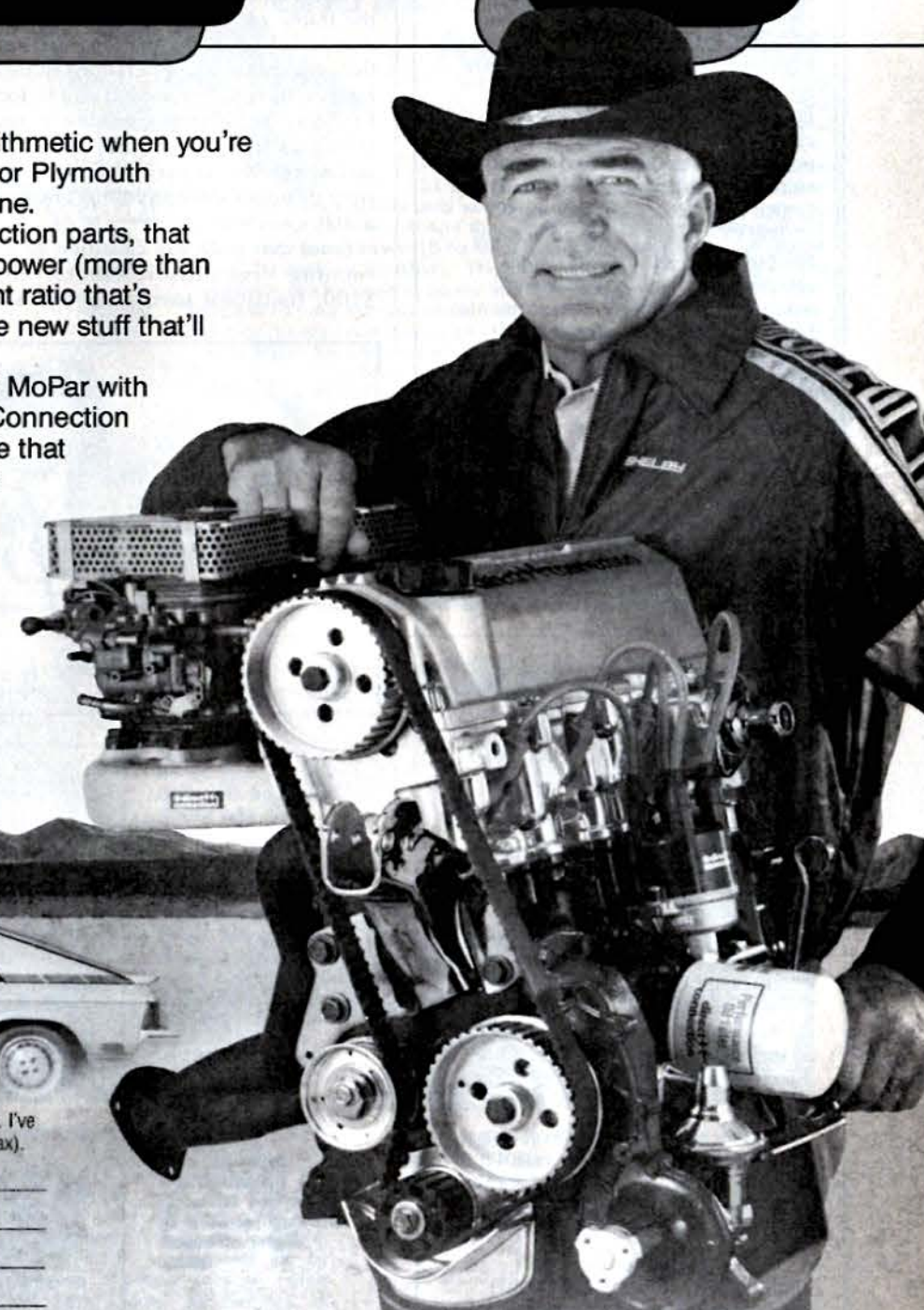
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All Smith & Wesson models 78G and 79G require retrofit. All Daisy models 780, 790 and 41 require retrofit. Smith & Wesson last produced the pistol in 1980 and Daisy last produced the pistol in 1983.

Daisy Manufacturing Company is handling all retrofitting for affected pistols whether they were manufactured by Daisy or Smith & Wesson. Owners of affected pistols are urged to return them to the Service Department, Daisy Manufacturing Company, 2111 South 8th Street, Rogers, Arkansas 72756, by United Parcel Service or Parcel Post. The normal UPS fee will be refunded.

Returned pistols should not contain a CO<sub>2</sub> cartridge since such mailings are not allowed under applicable regulations. The full name and street address of the sender should be included with the pistol since it cannot be returned to a post office box address.

Daisy will make the necessary retrofit and will return the pistol free of charge. Consumers should allow eight weeks for modifications to be completed and the pistol returned.

Consumers requiring additional information may call either Daisy Manufacturing Company (501/636-1200); or Smith & Wesson (413/781-8300, extension 221).

Further information can also be obtained by calling the Commission's toll free hotline at 800-638-CPSC.

## FAT BLOCKS

porium. Bill's intent with the 440 was to construct a durable powerplant capable of resisting the stress of a street-and-strip motor. Reliability, economy, and power were Bill's main goals—in that order. As a result, there's nothing trick to this mill, no frills, and nothing not totally in keeping with his requirements for continual operation on the street (with frequent side trips into the nether regions of performance).

The engine itself was scavenged from the frame of a '68 Imperial. The preponderance of big-blocks in Chrysler's luxury fleet makes salvage operations quite easy, but you have to know what you're looking for. Any performance engine is only as strong as its weakest link, and all 1976 and newer Wedges are of the thin-wall variety unsuitable for anything greater than a .020-overbore.

Since our 440 was classified as a non-running "rebuildable" motor (it cost \$100; functional used mills will set you

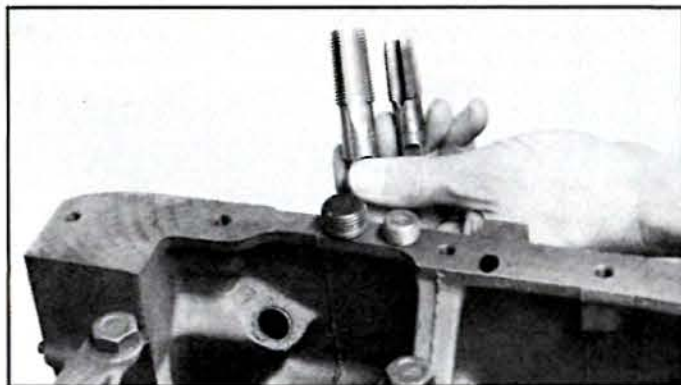
back \$250 and up), we had no idea what lay beneath the years of grease it wore like a shroud. After tearing the engine apart and subjecting the block and heads to an acid bath, however, we were quite surprised to discover minimal wear on all the major components. The block itself revealed cylinder bores needing just a .005-inch overbore to ensure proper piston travel. In keeping with the minimal over-size pistons available for the powerplant, though, the cylinders were bored an additional .030-inch. The block itself was decked slightly (.004-inch), and Bagshaw also checked for proper main bearing bore alignment.

The original crankshaft was in surprisingly good condition as well; after magnafluxing for stress cracks, the forged unit was polished prior to going back into the engine (cast cranks weren't introduced in the 440 until 1974—another reason for finding an early motor). The stock rods



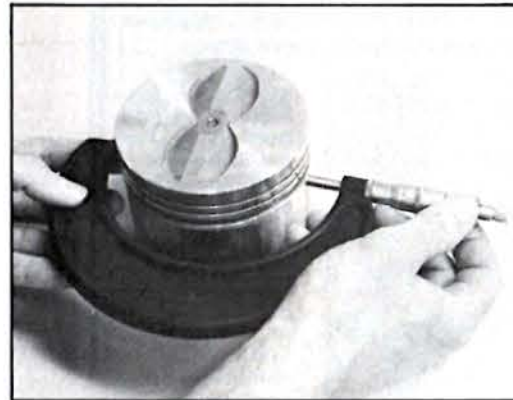
The stock connecting rod (right) is fine for most street/strip applications. The original rods were magnafluxed, polished, shot-peened, and re-sized. Since the connecting rod bolt is the weakest link in the bottom end, Bill opted for a set of high-strength DC 3/8-inch steel rod bolts and nuts (PN P4120068). The rod on left is a DC forged steel unit.

The biggest restriction to oil flow on the 440 is the stock 3/8-inch diameter pickup pipe. Chrysler recognized this deficiency by fitting the Hemi with a 1/2-inch tube; you can achieve the same results by drilling out the hole in the block where the pickup screws in, tapping it with 1/2-inch pipe threads, and employing a larger Milodon pickup (shown to right of stock unit).



were also magnafluxed, then shot-peened and re-sized. Bill opted for high-strength Direct Connection 3/8-inch steel rod bolts and nuts (PN P4120068). At the other end of the original heavy-duty rods, Bagshaw decided upon a set of flat-top .030-over TRW forged pistons and rings.

After submitting no less than five different cylinder head designs to extensive flow bench testing, Bill settled on a modified version of Chrysler's standard head common to '68-'70 big-blocks (casting no. 2843906). While the head features excellent flow characteristics, Bagshaw was able to improve upon the unit's performance tremendously by utilizing a DC porting template (PN P4120437) as a guide in opening up the bowl area between the valve seat and the radius on the port floor. Since oversize valves were also installed in the heads (2.18-inch intake, 1.81-inch exhaust), keep in mind that the template will have to be enlarged accord-



Nothing ever comes out perfect, so it's a good idea to mike all the pistons and over-bored cylinders, matching those closest in size. The pistons themselves, listed as replacements for '70-'72 440 Six-Pack engines, create 9.6:1 squeeze when used with the 86cc head and .018-inch gaskets.



Direct Connection's Performance Book is an invaluable aid to anyone attempting a Mopar buildup. In fact, Bagshaw checked the DC recommendations as he assembled the 440 and discovered only one exception, concerning valve springs. The spring recommended (seen center: PN P3690933) required machining the heads; instead, Bill used a spring actually advocated for the smaller "A" blocks (right: PN P3412068), with no machine work needed. The stock spring is to the left.

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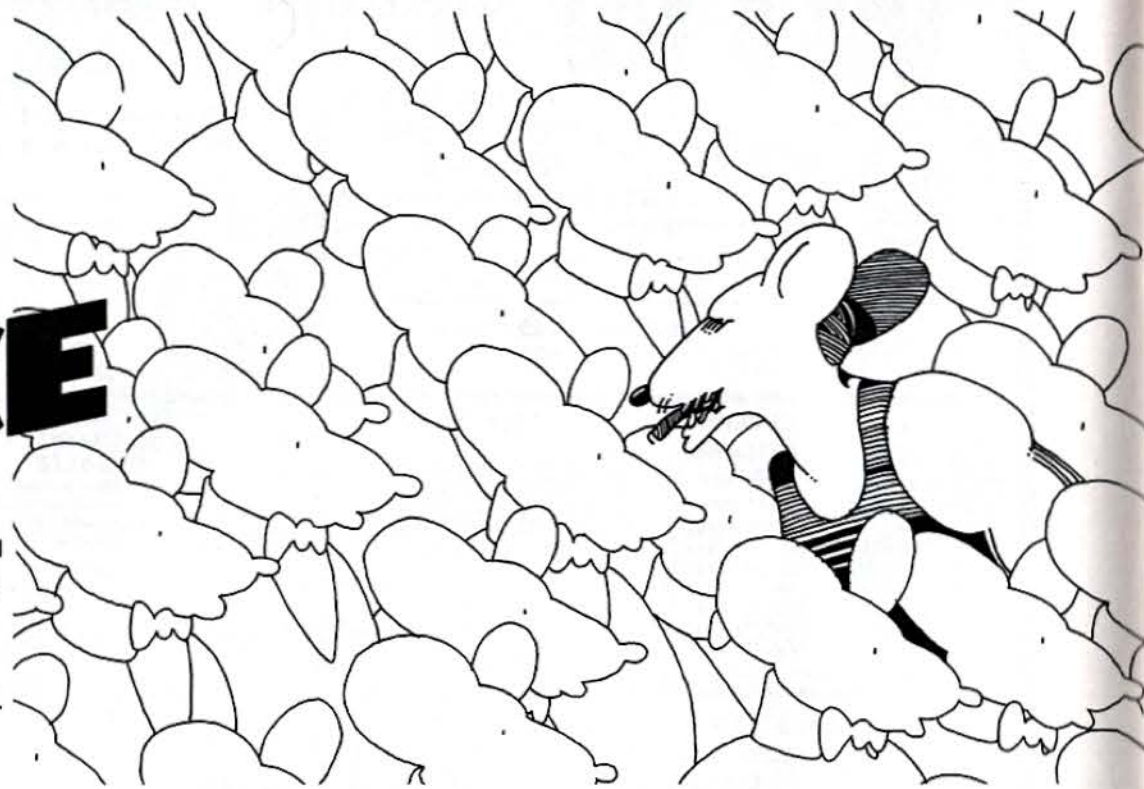
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# RAT RACE



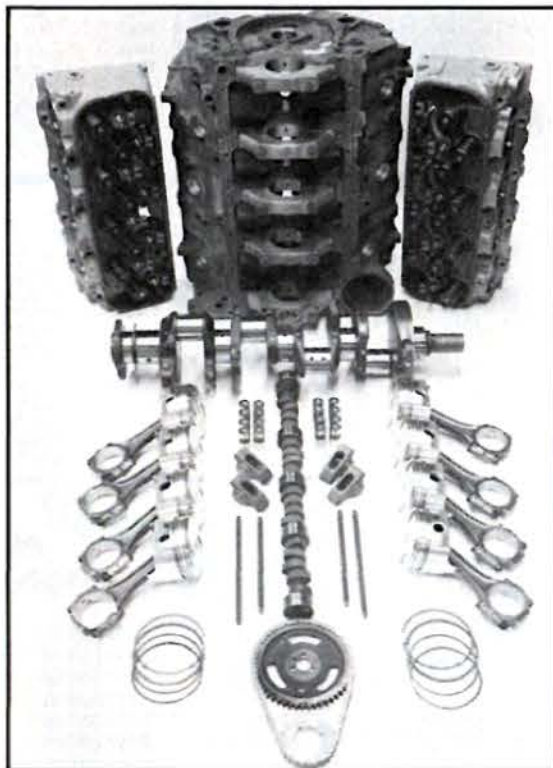
A New Species of Rapid Rodents

By Chuck Hanson

**F**or a time it appeared that all big-blocks were an endangered species, destined to disappear from the face of the earth. An insatiable thirst for fossil fuels, along with their ponderous size, teamed with ever-tightening smog laws and high insurance tariffs to drive them from the engine bays of performance cars and into a more mundane existence within the confines of RV's, trucks, and buses. But Darwin's theory of evolution seems to take precedence with these metallic monsters, for the strong have been able to survive.

Today's big-blocks have had to acclimate themselves to a totally new environment. Low-lead, low-octane fuels have brought about a new breed of Rat. Lowered compression ratios and increased volumetric and combustion efficiency are evolutionary changes keeping the Rat alive as a performance motor in the Eighties. With the parameters of our Rat motor revival thus defined, we set out to breathe some new life into a tired 454 that had been yanked from the grip of a half-ton Chevy pickup.

First on our list of priorities was to procure the proper components for our new breed of big-block. Since this street survivor would rarely see the high side of 5500 rpm, we decided that a building block of the 2-bolt main variety would meet our requirements nicely. The rest of the short-block is equally unimpressive. A stock steel crank and rods (outfitted with high-



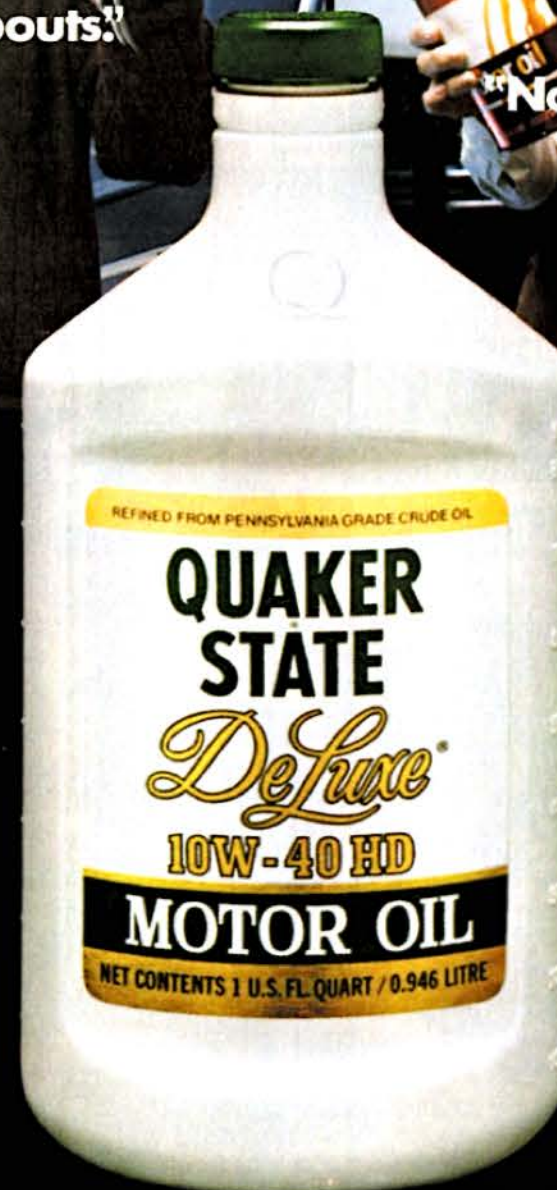
quality Specialty Fastener rod bolts) combine with TRW flat-top pistons for an affordable, yet reliable combination.

Many of the pieces required for our fat-block foray were provided by the folks at Speed-O-Motive, Inc. With several engine kits available, they met our needs perfectly—and should be able to help you out, too, whether you simply want to rebuild your grandmother's Rambler or construct a full-tilt, ground-pounding streeter. They also offer complete in-house machining



**With all the machine work accomplished, our 460ci big-block is ready for assembly. Speed-O-Motive can supply any combination of componentry you desire. We chose performance-proven TRW internals for their price and reliability, including pistons, main and rod bearings, rings, and oil pump. All rotating and reciprocating components were balanced prior to assembly, and as you can see, our block is of the common 2-bolt variety. The heads are oval-port, open chamber pieces from Racing Head Service.**

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services capable of producing short-block assemblies that you put together yourself, so we decided to take them up on their offer to perform our machine work. This consisted of standard high-performance rebuild practices; a .030-overbore, align honing the main journals, and squaring the deck surfaces prepared the block for assembly. While they were at it, the crank, rods, and pistons were also treated to a thorough balancing, assuring us of vibration-free operation once the engine was screwed back together.

Cam selection is one of the most critical aspects of engine building. Several variables enter into the picture, including the engine's intended use, cylinder head design, compression ratio, carb/intake combination, and so on. We chose an Isky piece with 286 degrees duration (224 degrees at .050-inch lift) and a .510-inch lift at the valve. Ground on 108-degree lobe

centers, this cam might look docile on paper, but is certainly hot enough to burn any stoplight bandit who may want to try us out. Complementing the Isky cam is a set of their Superlifter hydraulic tappets, 3/8-inch diameter chrome moly pushrods, and their extruded aluminum roller rockers. Although the rockers are a bit pricey, we elected to go with them in the interest of maintaining accurate cam timing while reducing valvetrain friction.

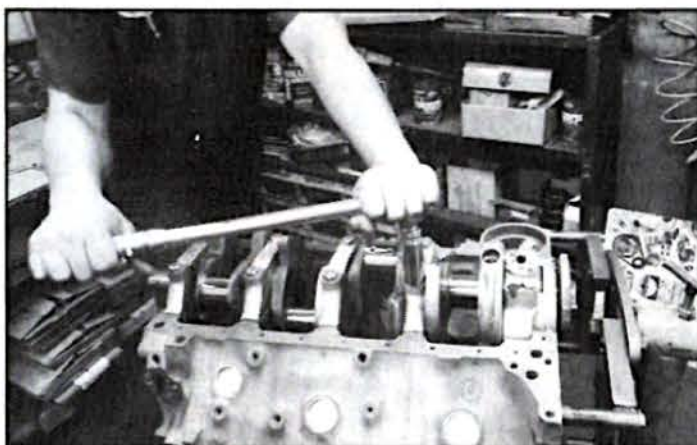
The wide variety of available cylinder heads for Chevy's Rat motor present another perplexing situation. Which ones should we use? They come in either oval or rectangular-port configurations, open or closed combustion chambers, and cast-iron or aluminum castings. Our first inclination was to opt for the high-performance, rectangular-port, open chamber pieces. Keeping in mind, however, that this is a *street* motor that would see daily

duty, sharp throttle response and a reasonable compression ratio were our prime concerns. The choice then became immediately apparent. We'd go with easily obtainable cast-iron, oval-port, open chambered heads (whew!). But rather than bolt on a set of totally stock heads, we'd first have to see if we could help their flow capacity a bit. After all, it takes a lot of air to properly feed a hungry Rat.

Of the many purveyors of ported and polished head ware, perhaps one of the most respected is Racing Head Service in Memphis, Tennessee. When called upon they agreed to perform some minor head surgery that would enhance the flow quality of our garden variety heads. The plan of attack was simple enough: port match the intakes to a set of Mr. Gasket sealers while increasing exhaust flow with some judicious pocket porting and radiusing of the runner. While the heads were apart,

RHS also enlarged the valve seats to accept TRW 2.19-inch intake and 1.84-inch exhaust valves; they then performed a multi-angle valve grind prior to their installation. Supporting the new valves are TRW springs and keepers. With these few minor modifications, our heads should certainly be up to some serious street service while not sacrificing driveability.

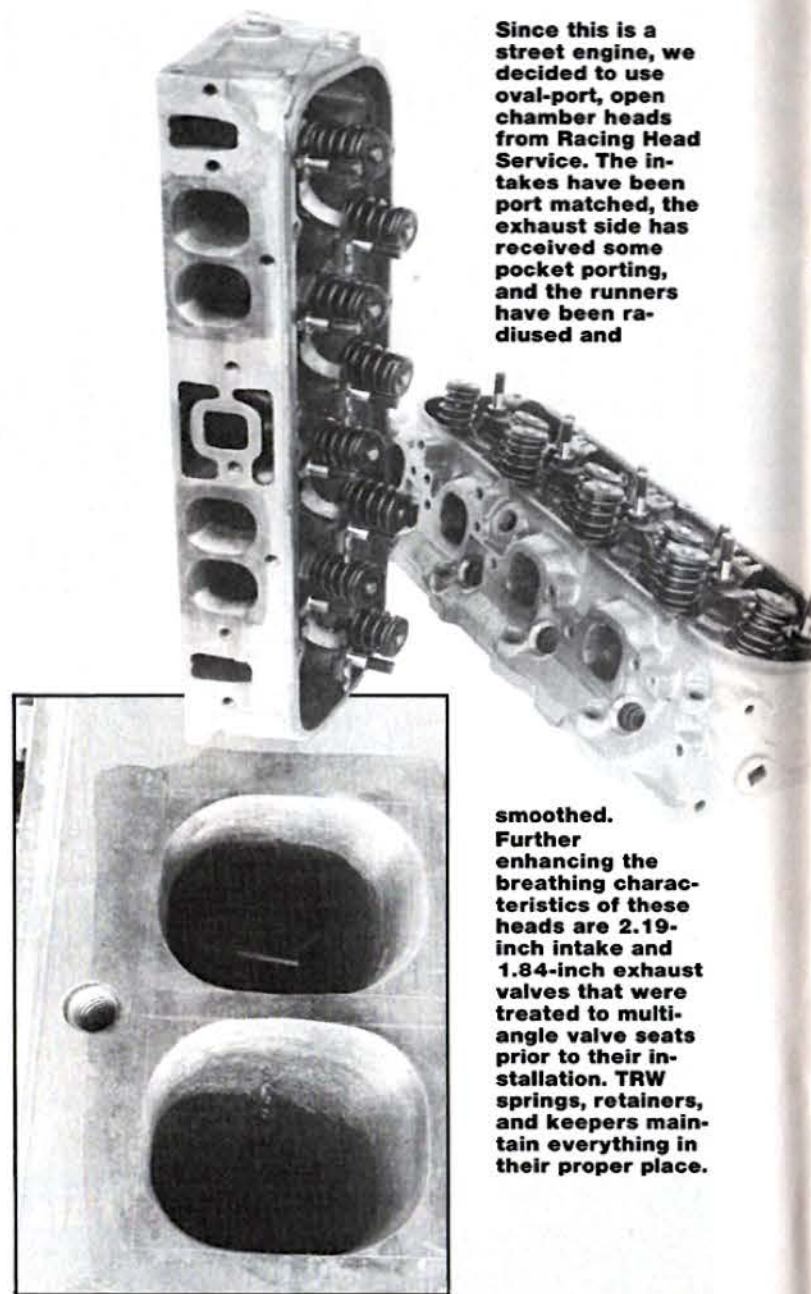
Survival on today's streets depends on an engine's ability to operate on fuels with octane levels only slightly higher than that of grape juice. For this reason we employed TRW flat-top slugs (TRW L2377F) with a single set of valve reliefs and an annular bevel around the circumference of the piston face. With the variables of deck height, head gasket thickness, and combustion chamber volume totaled up, our mechanical compression ratio calculates out at 8.2 to 1. While this may seem quite low, keep in mind that the



Although it didn't help us make any more power, a steel crank was used to support our bottom end. Specialty Fasteners supplied us with all new hardware, including their high-grade main cap bolt kit.

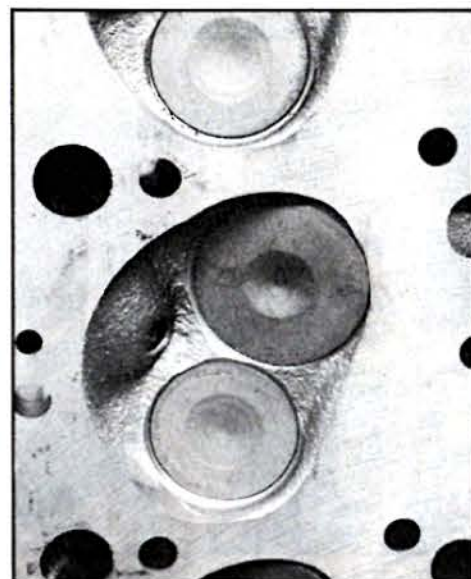


After finding TDC of the number one piston, we were ready to degree our cam. Our Isky piece features 286 degrees duration, .510-inch lift, and 108-degree lobe centers, and was installed straight up using a Cloyes three-position true roller timing chain set.



Since this is a street engine, we decided to use oval-port, open chamber heads from Racing Head Service. The intakes have been port matched, the exhaust side has received some pocket porting, and the runners have been radiused and

smoothed. Further enhancing the breathing characteristics of these heads are 2.19-inch intake and 1.84-inch exhaust valves that were treated to multi-angle valve seats prior to their installation. TRW springs, retainers, and keepers maintain everything in their proper place.



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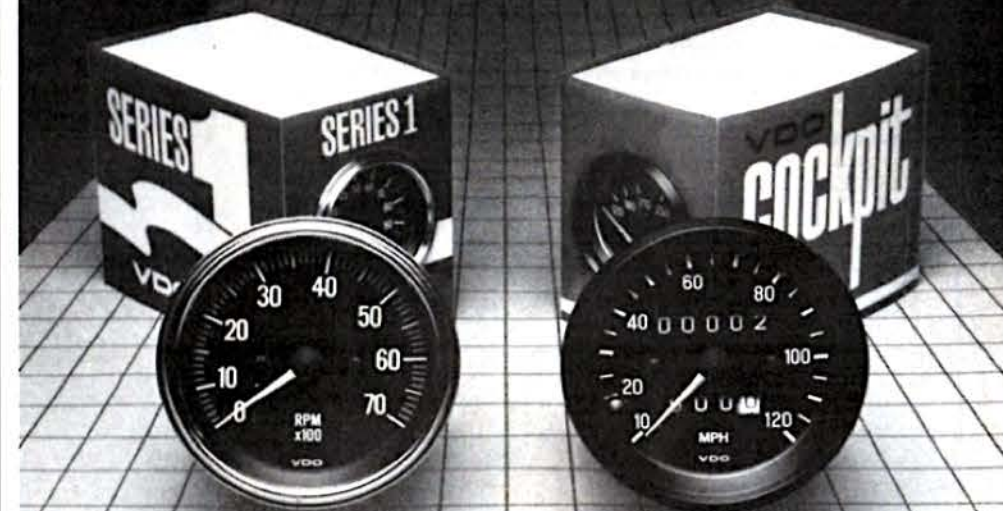
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larger the piston diameter, the more prone the engine is to detonation. More compression would have undoubtedly produced more power, but we gladly traded a few ponies for a little more peace of mind. If you want a little more squeeze, TRW also makes a piston with a .095-inch dome (TRW L2399F) that yields an 8.75 to 1 compression ratio when used with a combination similar to ours. These should work nicely if more power is the plan, and you're not averse to running premium fuels with a little octane booster thrown in. For rings, we chose TRW's ceramic offerings (TRW 9120-5) because of their superior resistance to the side effects of detonation. They do require a special "plateau" bore finish, however, so you may want to consult your machinist before ordering them. To further enhance our combustion efficiency we chose an MSD ignition, including their new Extra Duty

distributor with integrated spark module. Backing up their high-tech sparker is a Blaster 2 coil and a set of Heli-Core plug wires.

We understood from the beginning that adequate air flow was crucial to the proper care and feeding of our revitalized Rat. There are any number of intake/carburetor combinations that avail themselves to the big-block Chevy builder, some obviously better suited to street use than others. We chose to test a pair of Edelbrock intakes designed for oval-port applications: the Torker 2-0 (PN 2740) and the Performer 2-0 (PN 2161). For carburetion, we elected to use one of Holley's reintroduced OEM-style performance pieces, List 3418. With a rating of 850 cfm, vacuum secondaries, and center-pivot fuel bowls, it should easily meet all our fuel metering requirements.

Although the Torker and Performer

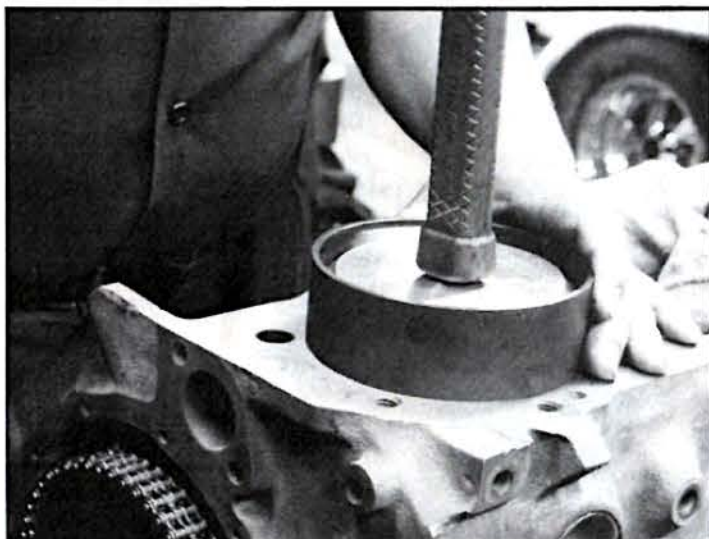
manifolds are of two completely different designs (single plane vs. dual plane, respectively), that difference is all but lost in the horsepower numbers. The design characteristics become most obvious, however, with the additional 45 lbs./ft. of torque that are available from 2250 rpm and up (see accompanying chart), and by the extremely flat torque curve exhibited

DYNO RESULTS					
Engine RPM	PERFORMER Intake		TORKER Intake		HP
	Torque	HP	Torque	HP	
2250	469	214	423	191	
2750	492	265	474	256	
3250	506*	319	483	303	
3750	501	363	486	346	
4250	499	407	497*	406	
4750	467	429*	483	433*	
5250	448	416	432	421	

\* Indicates peak output.



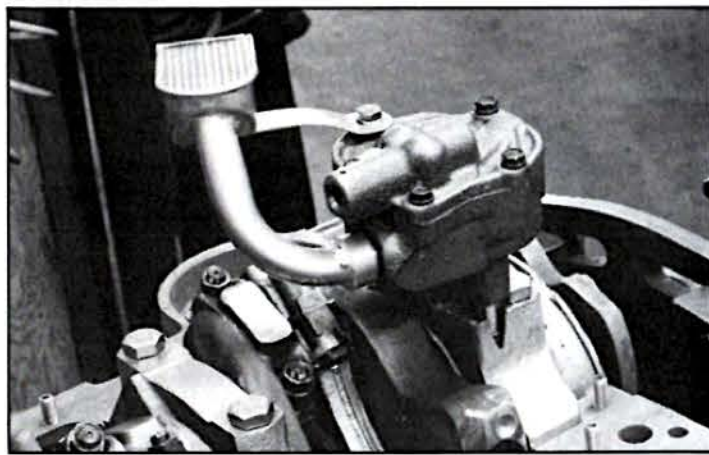
Combustion chamber volume checked out at 117 cc's. This yields a streetable 8.2 to 1 compression ratio when used with TRW flat-top pistons and Mr. Gasket composition-type head gaskets.



Installing the TRW piston/ring combination was made considerably easier by using one of B&B's slick, tapered ring compressors.



TRW .030-over pistons (TRW L2377F) were fitted with TRW ceramic-coated rings because of their resistance to the side effects of detonation. Stock 454 rods were fitted with Specialty Fasteners' high-strength rod bolts, but only after the rods were checked for straightness and resized on both ends.



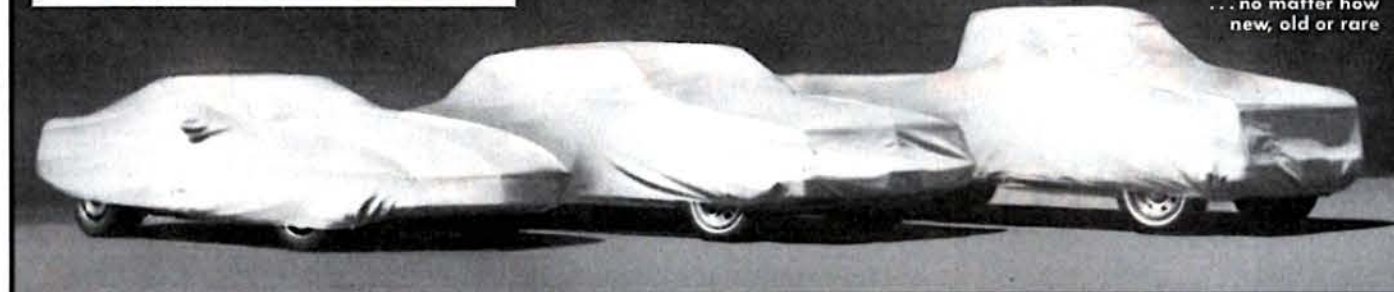
Our high-volume TRW oil pump was the recipient of a Milodon pickup and one of their high-strength pump shafts. The pickup features fully welded construction and additional support bracing.

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# FAT BLOCKS

by the Performer manifold. If you'll notice, the torque numbers generated with the Performer intake in place vary by only 50 lbs./ft. throughout the entire rpm range monitored by the Super Flow 901 dyno. Any street-smart player will quickly recognize that torque is what it takes to move a mass, and with the right gearing and adequate traction, this will be one hard Rat to trap! As you can see from our little exercise, Chevy's big-block is far from becoming extinct. It has just evolved into a rapid rodent that can live in the Eighties. ☺

## SOURCES

**Chevrolet Engineering**  
30030 Van Dyke Avenue  
Warren, MI 48090

**Edelbrock Corporation**  
411 Coral Circle  
El Segundo, CA 90245  
213/322-7310

**Holley Replacement Parts Division**  
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313/497-4000

**Ed Iskenderian Racing Cams**  
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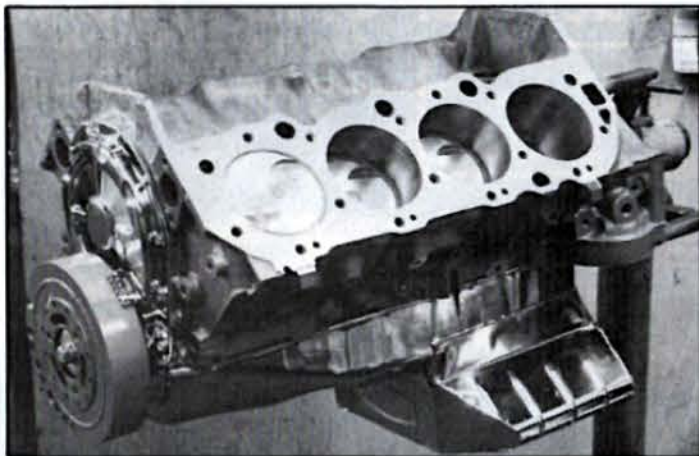
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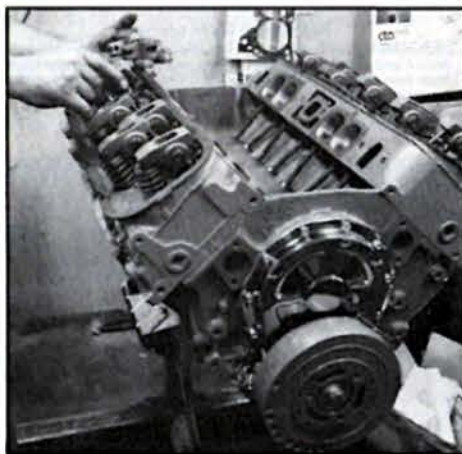
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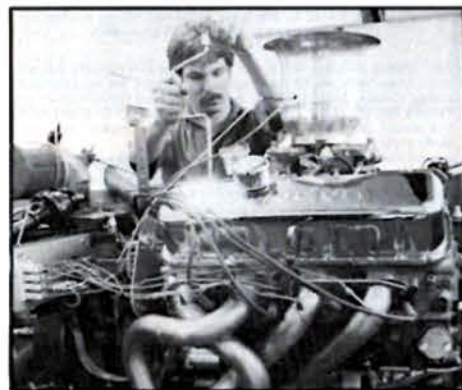
**TRW Replacement Parts Division**  
8001 E. Pleasant Valley Road  
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216/447-8164



Our short-block was buttoned up using a Milodon timing chain cover and 9-quart oil pan. Since our Rat motor will be going into a street car, adequate ground clearance is essential. "Kicked out" side rails give us the additional capacity we desired while maintaining the stock oil pan depth. A Trans-Dapt engine stand made our assembly procedure a snap.



With the heads secured in place, we installed the Isky chrome moly pushrods and roller rockers. The roller rockers help eliminate unwanted valvetrain deflection while assuring accurate valve timing.



Edelbrock graciously provided us with the use of their dyno facility for our Rat motor runup. Here, dyno room technician Louie Hammel pre-lubes the engine prior to initial fire-up. We tested two Edelbrock intakes—the Performer and the Torker—both of which worked surprisingly well with Holley's OEM-style 850 cfm performance carb.



Who says vice presidents don't like to get their hands dirty? Here, Edelbrock's Jim McFarland port-matches our Performer intake manifold. The production intake ports of the manifold are extremely small to match late-model head ports; they had to be opened up considerably to match our RHS-prepped heads.



For carburetion, we chose one of Holley's recently reintroduced OEM-style performance carbs; List 3418. Shown here mounted on an Edelbrock Torker, the 850 cfm, vacuum secondary carb easily moved enough fuel to feed our hungry Rat.

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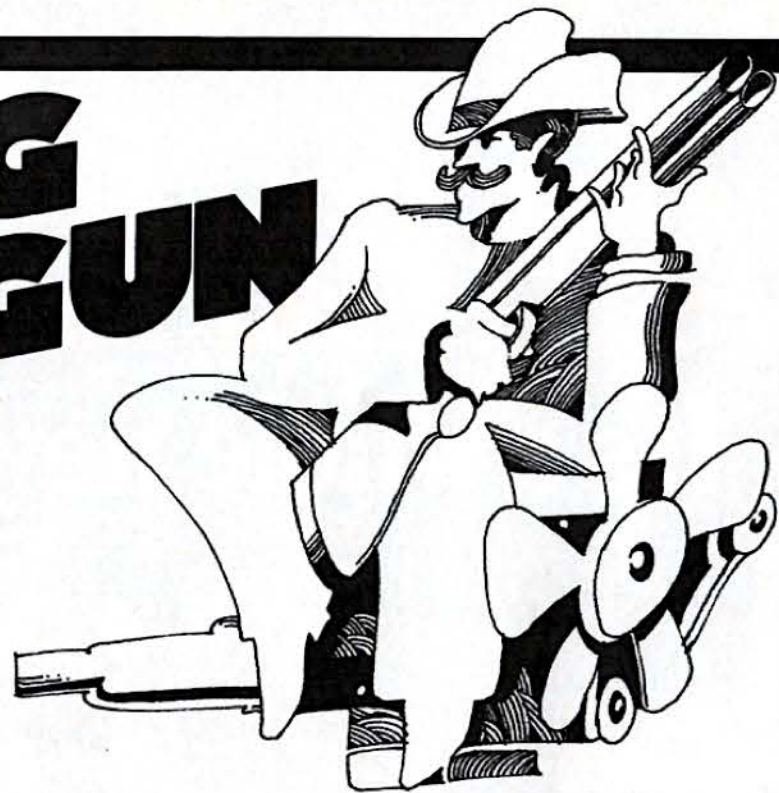
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# RIDING SHOTGUN

With a Jon Kaase 672-inch Ford, it's a Blast

By Dave Emanuel



*"Now lookee here pabdner, I'm from the great state of Texas and I'm here to tell ya we do things bigger 'n' better'n anybody. Don't tell me about big engines 'cause if it ain't from Texas, it ain't very big."*

*"Well son, y'all just come on over to Georgia and I reckon you'll get yourself a big surprise. We got us a good ol' boy by the name of 'Sheriff' Jon Kaase and he puts together some mean shotgun motors. BIG shotgun motors. Like 672 inches worth!"*

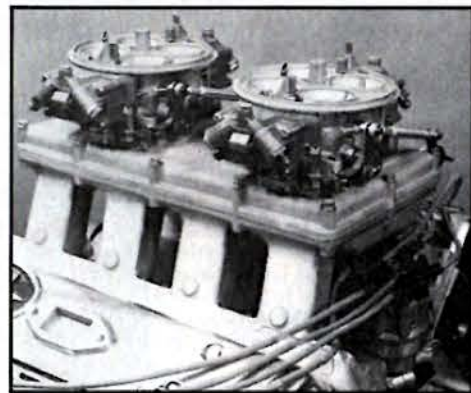
No, that wasn't a misprint. Jon Kaase (pronounced Kah-zee) has indeed built not one, but two Ford "Shotgun" engines, each of which displace an outrageous 672 cubic inches. The recipients of "Sheriff Jon's" handiwork were two Pro Stock racers who compete under the IHRA banner where engine size is unrestricted. Obviously these folks believe there's no substitute for cubic inches.

The centerpiece in Kaase's mountain motor scheme is the recently released A/R (Arias/Root) Incorporated aluminum block, which is an extensively revamped version of Ford's Boss 429. These blocks are designed to house oversized pistons and long-arm crankshafts, but Kaase still has to do some massaging before a 5-inch stroke and 4 1/8-inch bore can be accommodated.

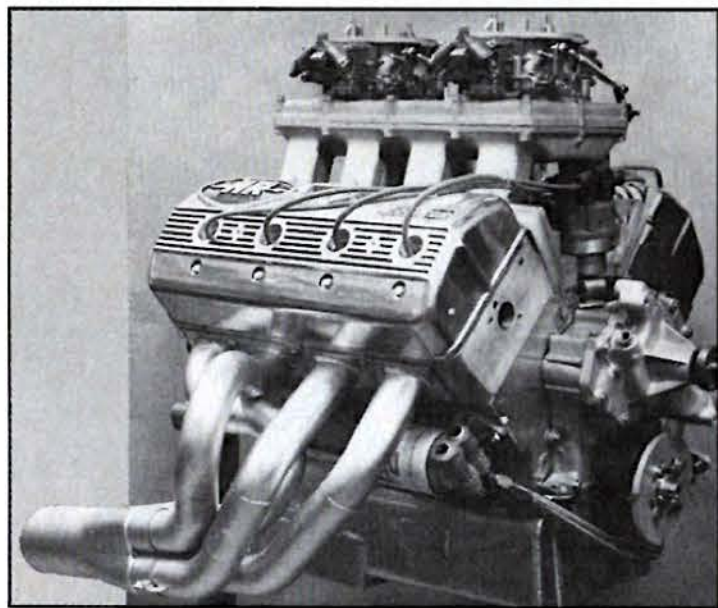
According to Jon there's considerably more to building a 672ci Shotgun than meets the eye. "In a way, it's easy to build one of these engines because you can buy just about everything you need. A/R makes the block, cylinder heads, rocker arms, valve covers, intake manifold, and head gaskets. You can get the other parts from a number of companies. But I use

Bill Miller rods, Arias pistons, a BRC or Moldex crank, Manley valves, Clevite main and rod bearings, Speed-Pro rings, and Crane cam and valvetrain. All you have to do is machine the pieces properly and put them together. You don't have to do any trick welding or anything like that. On the other hand, you have to realize that you're not dealing with a Chevrolet small-block. A big motor requires a different approach to things." As an example, most race engines have their piston-to-cylinder wall clearances set at .008- to .012-inch. But given the expansion characteristics of a 4 1/8-inch piston, Kaase specifies a whopping .016- to .023-inch clearance!

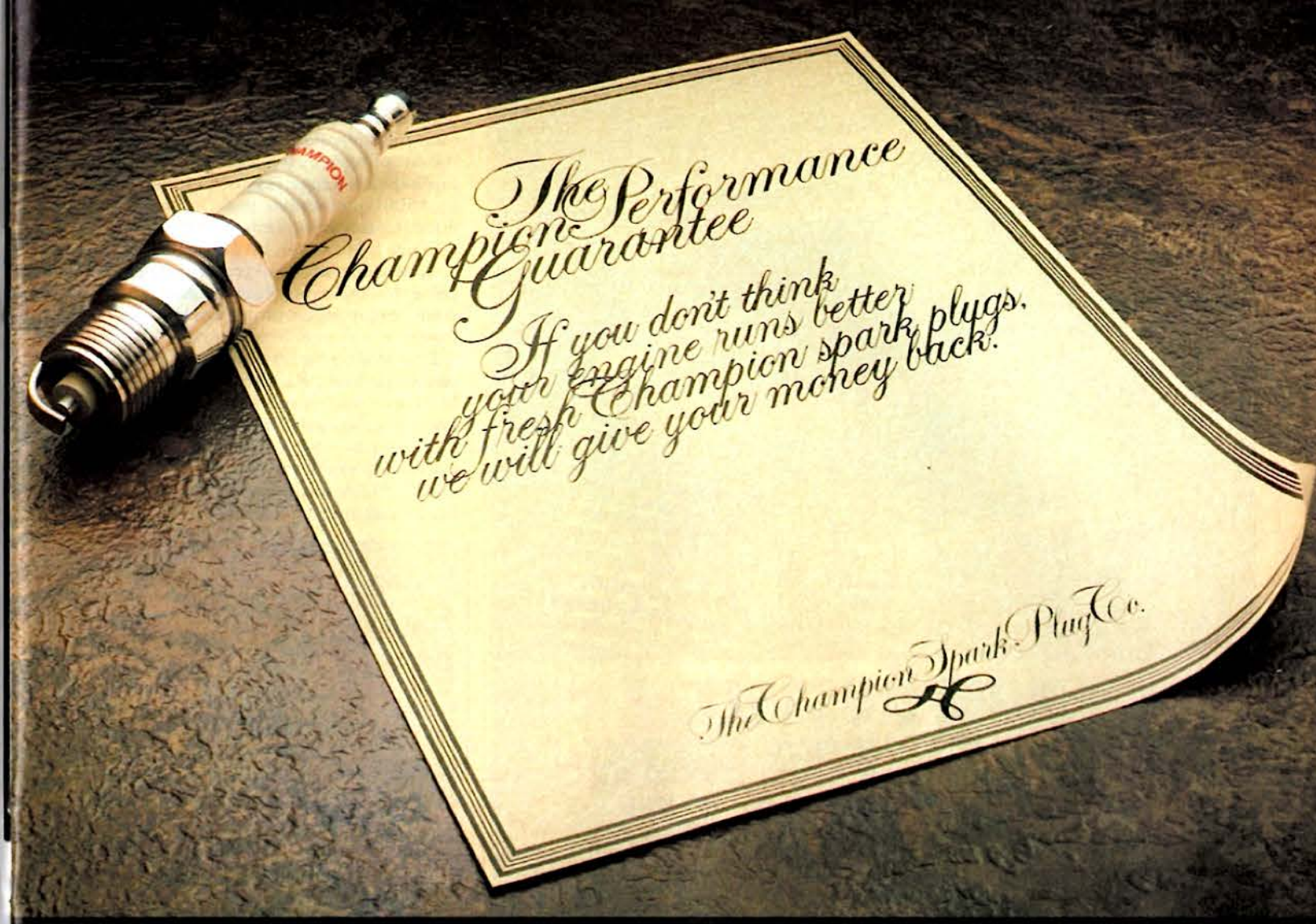
Another special circumstance associated with this automotive Clydesdale is that most dynos aren't built to handle such monsters. Kaase's SuperFlow dyno had no



**When only the biggest is big enough, Holley's No. 9377 annular discharge Dominator carb fills the bill. Two of these carbs, each rated at 1150 cfm, administer air and fuel to the engine through an intake manifold with Lincoln Tunnel-sized runners.**



**The label seems innocent enough, but the figures lie. This particular Kaase Boss displaces an awesome 672 cubic inches. When the engine fires up, it's "hold 'er Luke, she's headed for the barn!"**



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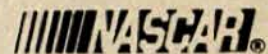
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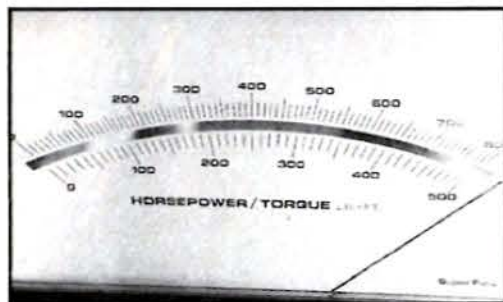
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## FAT BLOCKS

trouble loading the engine, but its instrumentation is scaled to read *only* up to 800 lbs./ft. of torque. Jon's colossal Boss motors kept the gauge pegged until well past its 5500 rpm torque peak, so he really doesn't know how much torque the motor produced. However, he did get a reading of approximately 1150 (corrected) horsepower at 7000 rpm. Kaase estimates maximum torque to be in the vicinity of 900 lbs./ft.

Due to the relative newness of the A/R engine package, Kaase encountered some block-to-intake manifold incompatibility. Both regular and "tall" versions of the block can be had, but due to temporary availability problems, Jon wound up with a "tall" block and a "short" manifold. Being an inventive type, the "Sheriff" wasn't



What do you do when your dyno goes "tilt?" Sheriff Jon's 672 Boss pegged the SuperFlow gauge from 5500 to just below 7000 rpm. Peak torque is estimated to be in the vicinity of 900 lbs./ft.



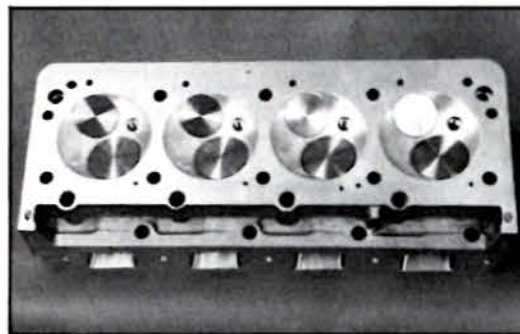
Putting a 4 1/2-inch bore in perspective is no easy feat—unless your name is Orville Redenbacher. The 30-ounce jar slid into the cylinder with room to spare.



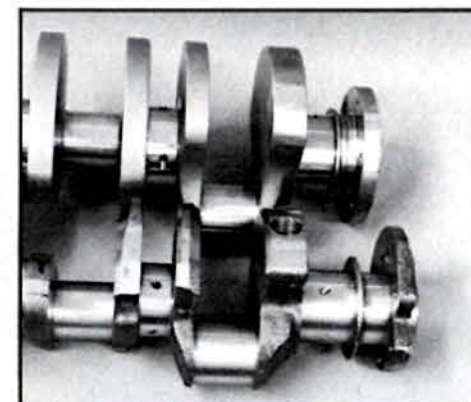
The engine's bores are filled with Arias pistons, which are connected to the crankshaft by Bill Miller aluminum rods.

even slowed down by the "outlaw" manifold. He just rounded up a posse, went out and lassoed some special polypropylene stock, and whittled it into spacers. Besides filling the gaps, the spacers also insulate the manifold and Holley carbs from engine heat.

If a 672ci powerplant is impressive in a race car, just contemplate what it would be like beneath the hood of a street machine. No nitrous, no blower, and an easy 750 lbs./ft. of frame-twisting torque. Savor that thought for a moment, because unfortunately, the cost is prohibitive. According to Kaase, the exotica required to build one of his monster motors runs approximately \$24,000 for a complete engine. Of course, that includes a complete dyno check and a trip to Texas. ☞



Considering the Jovian scale of everything else in the engine, it isn't too surprising to find the combustion chambers filled with 2.450-inch inlet and 2.00-inch exhaust valves. In some engines, the pistons aren't that big.



Crankshaft "A" is from the 672ci Boss motor; crankshaft "B" was lifted from a 350ci Chevrolet. Any problem determining which is which?



Five inches is a l-o-o-o-n-g way down the bore. Now think about that piston making the trip 8000 times a minute. The engine frequently sees that rpm level during competition.

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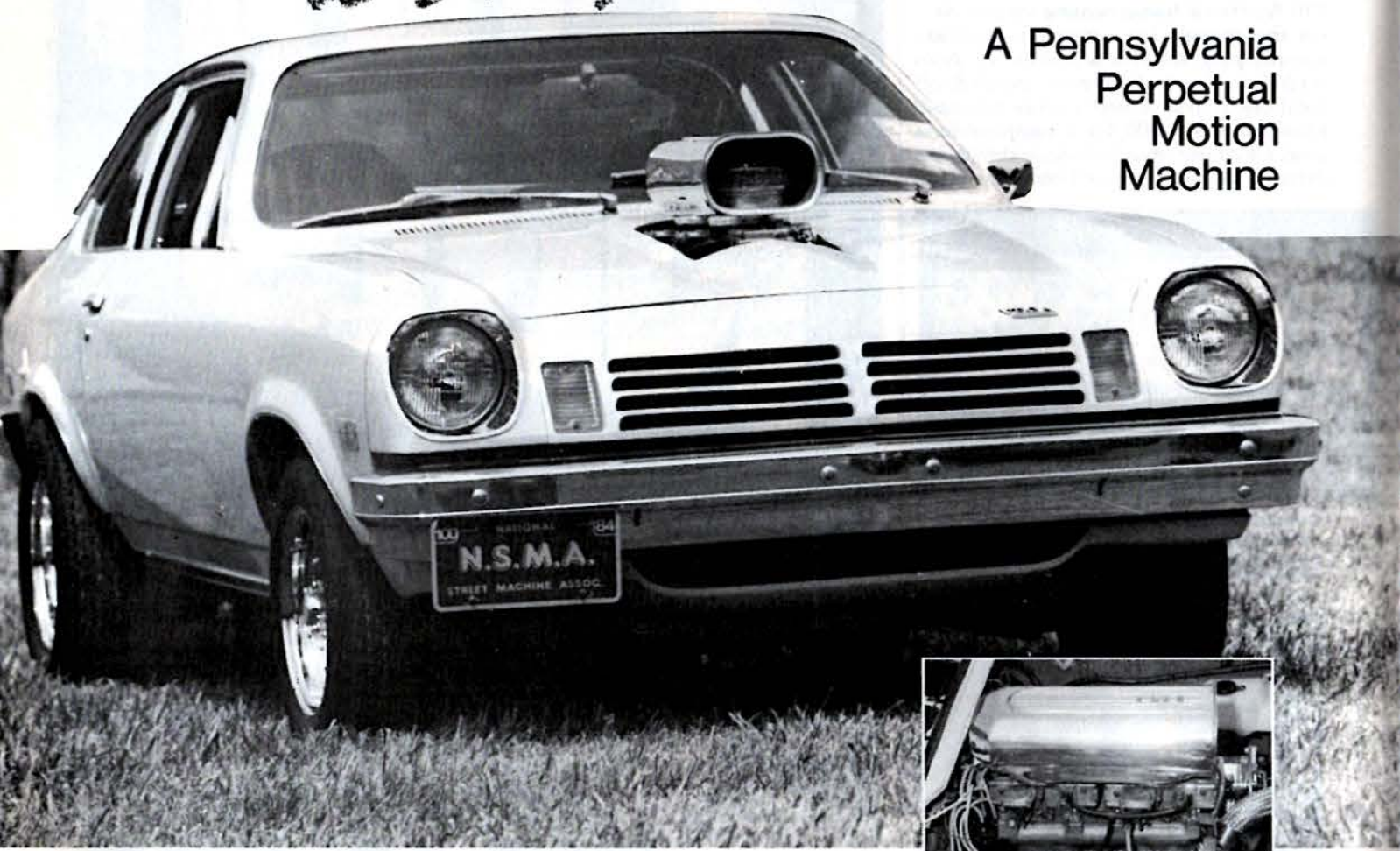
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# VEGA-bond



A Pennsylvania  
Perpetual  
Motion  
Machine



**S**treet machiners are a restless breed—constantly on the move, looking for change and excitement. Chuck Thomas is just such an individual. His screaming yellow '75 Chevy Vega is a prime example of street machine evolution. He bought the car brand new and has plied his considerable skills refining the machine into this prime-cut street cruiser.

Categorizing a stock Vega as a performance car is a bit of a stretch. But its demure design does offer some irresistible advantages to a street-wise car crafter.

Its light weight and ample engine bay can make a small-block transfusion both simple and effective. The steel worker from Clairton, Pennsylvania, made the most of the raw material. A tunnel-rammed

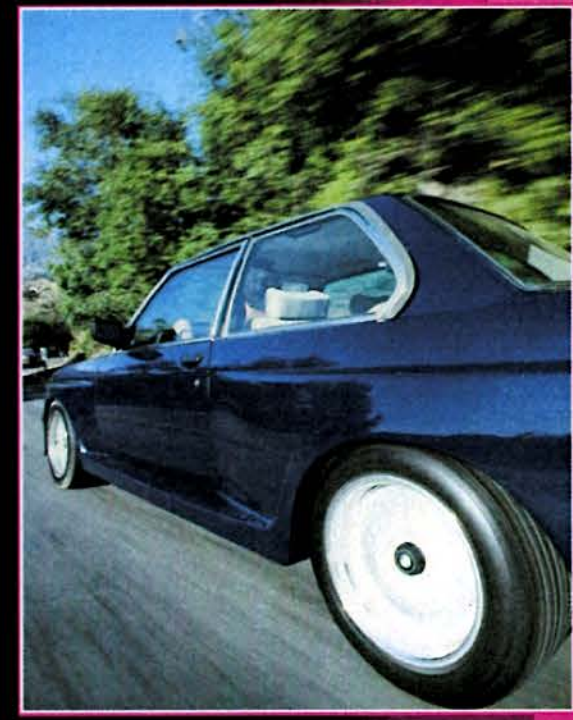
283ci small-block replaces the stock four-cylinder wheezer, and has been mildly built with parts from TRW and Crower. A Weiand tunnel ram is topped off with a pair of 600 cfm Holley carbs, while a stock driveline helps the power meet the pavement. Cragar wheels and Firestone tires, as well as the yellow lacquer applied by Tom Burnsworth, are responsible for the car's graphic presence.

If you're expecting Chuck to sit back and rest on his laurels, guess again.

That stock Vega driveline will soon be deep-sixed in favor of a Ford 9-inch, and the Cragar SST's will be updated in the very near future. Bodies in motion seem to always stay in motion. ☐



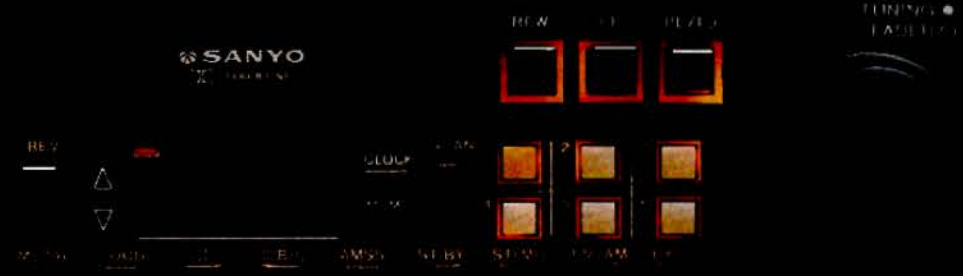
# Auto Sounds 1984



## THE INS & OUTS OF CAR STEREO INSTALLATION



# Car Stereos: Selection & Installation



Not for the meek

There are some people who simply can't appreciate all that Sanyo's new FT-E25 car stereo system has to offer.

With 2 or 3 times the power of most car stereos, and hardly a trace of distortion, Sanyo gives automotive sound the

clarity and "sock" it's always lacked. Of course, you get bass, treble, and loudness controls plus a built-in tader to make the most of 4-speaker installations.

Our digital electronic tuning and

sophisticated FM Optimizer system deliver superb stereo reception without fading or "picket fencing." And besides Dolby B<sup>®</sup> it has super-advanced Dolby C<sup>®</sup> noise reduction to keep tape hiss inaudible.

Fortunately, we've made it easy to use — with auto reverse, automatic tape and radio search, human engineered controls, and clever illumination that eliminates fumbling in the dark.

A Sanyo auto sound dealer will challenge all your preconceived ideas by putting the FT-E25 (or one of our other new masterpieces) through its paces.

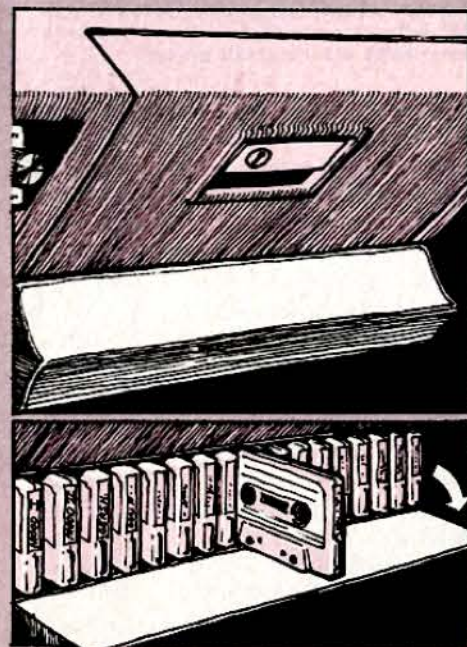
Warning: Sanyo car stereo definitely separates the men from the meek.

**SANYO**  
The modern art of electronics.

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Of all the modifications you can make to your car, perhaps the simplest, least expensive and most instantly gratifying is bolting in a new sound system. The moment the last electrical connection is made and you give the "ON" knob a twist, you have access to anything on the air. The addition of AM, FM and cassette player transmits sounds that are clean, rich and satisfying. A new radio will help take the drudgery out of day-to-day driving and add to the pleasure of recreational motoring without increasing gas mileage, risking a speeding ticket, or the other complications that most car customizing is liable to entail.

It's a fairly straightforward proposition, right? Just pop a new sound unit in the dash and you're off. But there's a catch: Who's going to do the popping? You should have no problem finding a radio that fits your taste and budget. The market is vast and the choices are virtually unlimited. If you practice intelligent shopping, finding hardware that suits you won't be difficult. Installing it and getting it to per-



The Cassetter<sup>®</sup> is one handy audio accessory that helps organize your tapes and protects them from the sun.

form, however, may prove more challenging. You can either install the components yourself or pay to have it done. Each of these prospects can be intimidating and frustrating, and neither is without traps for the unwary. But if you follow the advice on these pages, either path will be smoother.

## Matching Radio To Car: The Pop-In Unit

If you're going to attempt your own installation, first make sure the radio you buy fits your car. Virtually every modern automobile makes allowances for the addition of a radio and speakers. Whether it is used or not, space is provided by designers for audio components. Unfortunately, the dimensions of this space vary widely from car to car. Consequently, there is no standard-size radio, and a bewildering variety of styles and dimensions to confound the consumer.

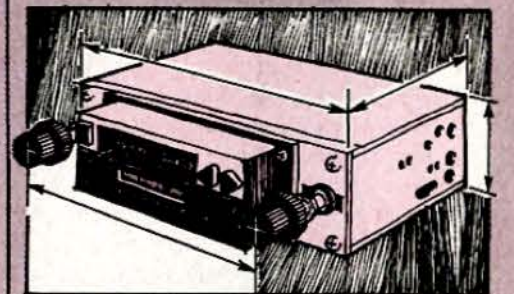
Don't assume that the salesman at your local discount store or stereo shop will be of much help. Even if you chance across a particularly knowledgeable vendor, the number of possible combinations is so vast he may not know whether the radio you want will fit your car.

In the case of most newer cars, the question of compatibility is readily answered. Most major radio manufacturers offer units designed for specific late-model automobiles such as the GM J-models, or the Chrysler K-cars. These radios interchange easily with stock units and present few difficulties for the installer.

In addition, car radio manufacturers usually include comprehensive application charts in their literature (If you can't find one in the dealer handout brochures, ask to see the full-line catalog that's kept behind the counter.) If you own a popular late-model car, a Camaro or Thunderbird for example, you should be able to determine from the chart whether or not a given radio will fit. This chart should also outline any special hardware or electrical components you will need to complete

the installation: a bracket or two, special wiring or trim pieces to make the radio blend with your car's interior.

However, if you have an older or unusual car such as a low-volume import, there may not be installation charts to guide you. Before you begin shopping for a radio, accurately measure the available space in your dashboard. This should ensure that you don't buy a radio that's too big. The key dimensions (see illustration) are height, width and depth of the radio chassis, the distance between tuning knobs and the height and width of the nosepiece. If possible, remove your old radio (after disconnecting one battery cable so current cannot flow through the electrical system) and take it with you on your shopping excursion to compare against new radios.



Height, width and depth of the chassis, height and width of the nosepiece and the distance between the centerlines of the tuning knobs are the key radio dimensions.

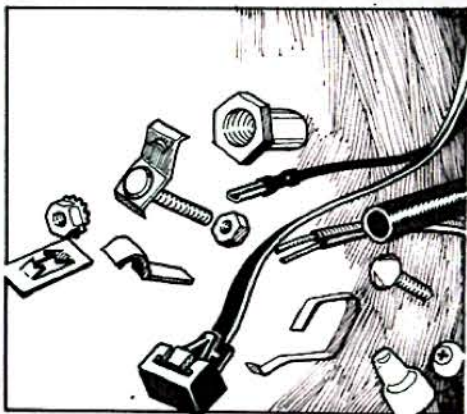
The second factor to keep in mind is wiring compatibility. Until recently, car radios were wired using a common ground. That is, only one wire from the radio's chassis was necessary to ground the system. As auto audio progressed, with multiple speakers and components such as equalizers and amplifiers making their appearance, a floating ground became the norm. Now, each component has its own ground wire. This improves the electrical integrity of the system but adds to the complexity of installation.

Because each installation is different, thoroughly study the wiring diagram packaged with every new car radio to make sure you connect the ra-



**Car Stereos:**

dio wires to the proper wires in your car. Radio manufacturers have considered the possible contingencies and provide detailed instructions which should be followed diligently. There are no safe wiring short cuts or secrets to make this chore easier, it's simply a matter of care on your part. Check and double-check each connection to ensure that every wire goes exactly where it should. You'll regret it if you don't.



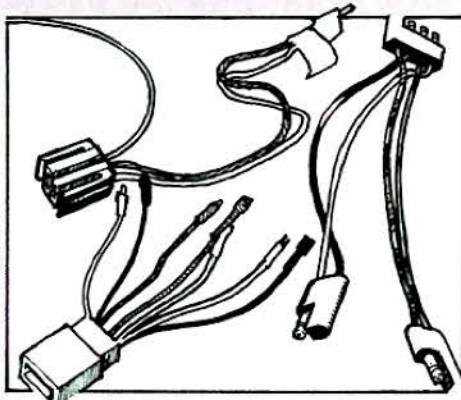
Special hardware should be used for securing wiring and upholstery trim: It results in a tidier and more secure installation.

Even so, the plugs that terminate the radio's wiring may not mate with the plugs on your car's wiring: These are usually inexpensive plastic connectors that facilitate the removal of the radio. If you're a stickler for detail, you can buy a duplicate set of auto plugs from your car dealer and replace the radio's incompatible plugs. Or, you can simply snip both connectors off with a wire cutter and join the wires directly with wire nuts or crimp caps.

### Matching Radio To Car: Minor Modifications

The next hurdle for the do-it-yourself radio installer can call for some creativity. This occurs when you discover that the drop-in radios available for your car don't have the features you want. Most likely, you will find that the radio you've chosen is too large, too long, or otherwise incompatible with the stock location.

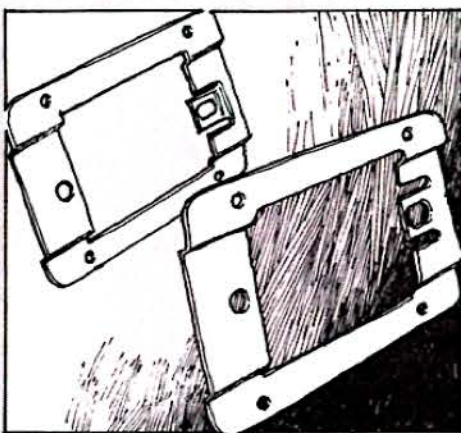
In extreme cases it may be impossible to fit the desired radio into your car's dash without major surgery, particularly if your car is a compact or subcompact with limited dashboard



Custom wiring adapters permit simple connections between a new radio and your car's stock wiring.

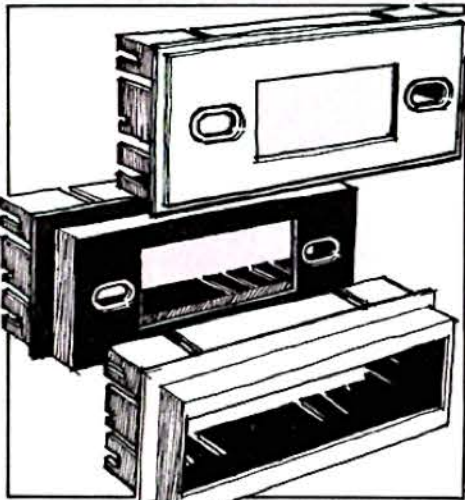
space. Unless you're an expert with sheetmetal and upholstery, don't attempt the installation yourself. Instead, reconsider your choice of radios—you may be better off settling for lower performance and fewer features instead of getting involved with extensive, and expensive, modifications.

Many installations are less challenging and can be completed without any hacking or sawing. Some radio manufacturers package their units with a choice of spacers, gaskets and decorative panels which you can use singly or in combination to assure a proper fit. In other cases there are brackets, faceplates and adapters designed for specific radio-to-car installations. These items are not widely available on a retail basis. However, they may be obtained through a professional installer. They're manufactured by a handful of companies such as Ampersand (9180 Kelvin Ave., Chatsworth, CA 91311; 213/998-9201, 800/423-5167) which lists hundreds of knobs, trim plates,



Aftermarket adapters such as these, permit simple replacement of the stock radio with a better unit.

chassis brackets, mounting plates, speaker grilles and other items in its 32-page catalog. Some are identical to stock equipment so you can replace a hard-to-find knob on an old Buick, for instance. Using these relatively inexpensive, custom-designed components gives the installer a wider choice of radios than would otherwise be possible. In addition, Ampersand makes adapters designed to mate certain brands of radios to specific cars such as faceplates for late-model General Motors cars which use the Delco 2000 series radio (this includes all GM vehicles except the Chevette, Pontiac T1000 and full-size trucks and vans).



Custom plastic adapters (these are for GM J-Cars) ease replacement of stock radio with aftermarket units.

The faceplates, which are made from injection-molded plastic and match the style and quality of the GM original, are sold in two depths with seven different openings and can accommodate virtually any radio on the market that's less than 6½ inches deep (and that's just about everything). Similar hardware is available for any number of other applications although Mike Brann, Ampersand's research and development director, warns, "You'll have a hard time finding adapters and custom hardware for older cars. Most of this equipment is for more recent models."

Metra (660 McDonald Ave., Brooklyn, NY, 11218; 212/438-1200, 800/221-0932) also carries a broad line of hardware, and fabricates wiring looms which connect certain brands of radios to the existing wiring in various car models. These harnesses have fittings

## If your graphic equalizer can't triple the power of your car stereo. And surround you with Ambience. It isn't a Panasonic.

This Panasonic graphic equalizer does more than shape music in your car. It also includes four powerful amplifiers.\* To give you more than three times the power of the average car stereo.† And Ambience to surround you with "concert hall" sound.

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And the Commander gives you four powerful, low-distortion amplifiers. So whatever you listen to will be crisp. Clean. And clear.

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Panasonic Ambience surrounds you with music as no ordinary car stereo can. But after all, this isn't just an ordinary car stereo. It's from Panasonic.



\*4 x 25W (total 100W) maximum power output at 1kHz. †Based on 1984 industry average 6.88 watts per channel.

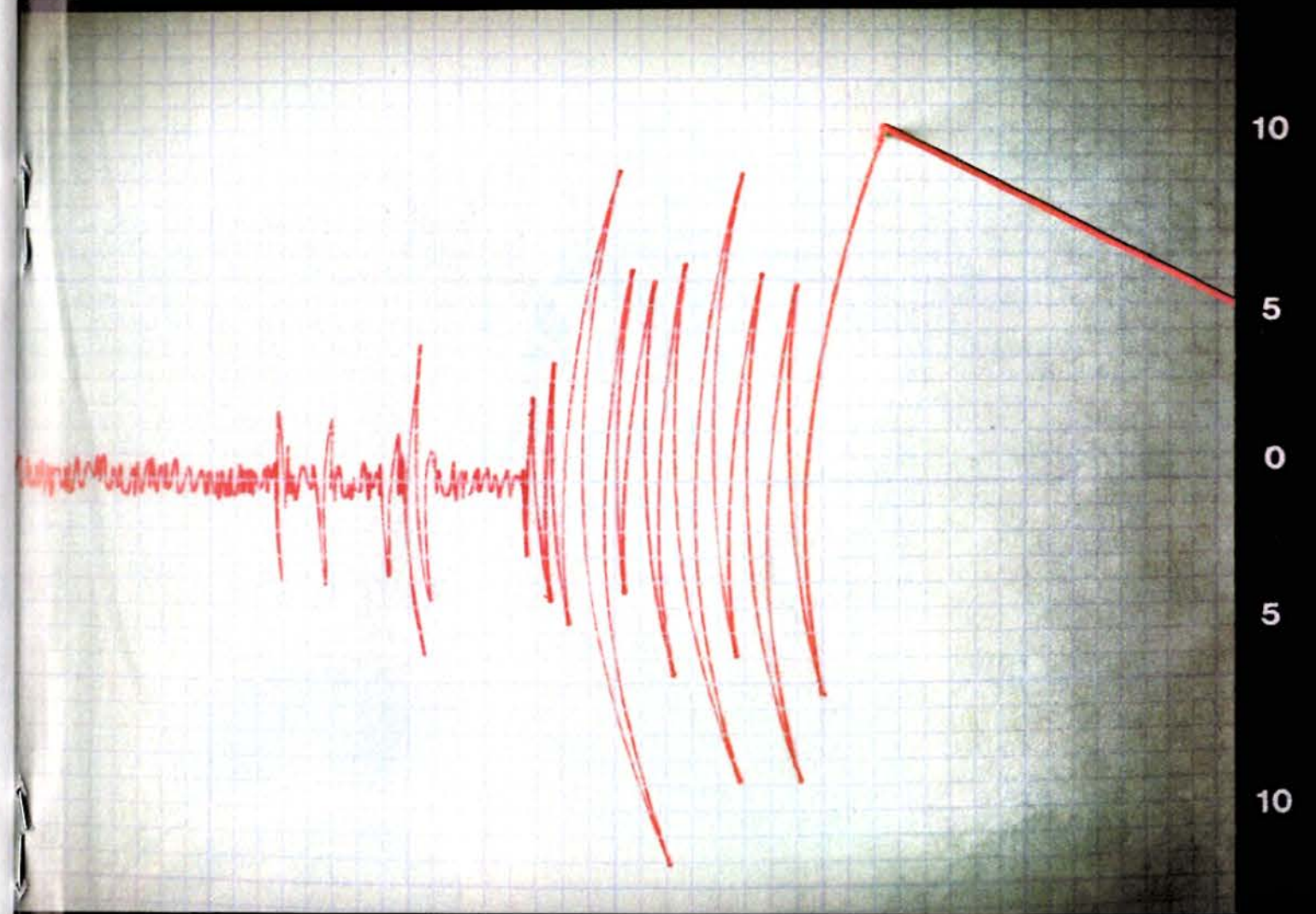


The Panasonic Las Vegas Invitational, golf's richest. Almost \$1,200,000 in prize money. \$162,500 to the winner. September 19-23, 1984. Watch it on ESPN.

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CAME UP WITH  
THE NEW  
HIGH-POWER  
SUPERTUNER III,  
WE DIDN'T USE  
CONVENTIONAL  
MEASUREMENT  
METHODS.



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Two new Supertuner III's with three times the power of standard car stereos.

Which means when "Shake it, baby, shake it" comes on, you can really goose it. Without the added cost and complexity of an add-on amp.

So when you turn up the juice, it will seem like the earth just moved.

Not just because you can play the music so loud. But because you can play it so loud with so little distortion.

And, as if this

weren't in itself enough of a blast, keep in mind that the high-powered Supertuner III's are, above all, Supertuner III's.

Which means that when you've got them cranked all the way up, listening to your favorite FM station, you're not going to be listening to high-volume static. So, if you like your music loud, put a new High-Power Supertuner III in your car right away.

And just remember to please turn the volume down when driving in hospital zones.

Or past earthquake measuring devices.



**PIONEER**  
Because the music matters.



# Car Stereos:

which match the plastic connectors of both the radio and the car. They save the installer the trouble of stripping wires and soldering connectors and, perhaps more important, they minimize the chances of cross-wiring and damage to the radio.

Though this special hardware can simplify an otherwise difficult installation, the at-home installer may have trouble finding it. Metra, Ampersand and similar firms generally sell directly to professionals who are probably more interested in installing a radio than in selling you the parts to do it yourself. However, you can order directly from either company or purchase their catalogs.

## Amps, Equalizers And Other Components

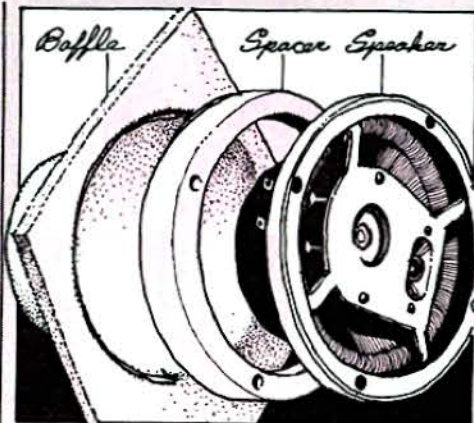
While custom hardware can simplify the installation of a radio, ingenuity and skill are required for successful installation of components such as a graphic equalizer, stand-alone tape deck or an amplifier. Auto makers have not made provisions for such gadgetry, so you'll have to improvise.

Equalizers and tape decks create the biggest challenge because they must be easily accessible. The easiest, and least attractive, solution is to hang them under the dashboard. If you want to incorporate them into your instrument panel, you'll have to do some major cutting and filing. An alternative is to use the glovebox or an aftermarket console that fits over the transmission hump for a clean, professional-looking installation. Unfortunately, these consoles are not available for all cars. A check of the auto accessory stores in your area, and of mail-order house ads in car magazines will quickly tell you if this is a viable option.

Amplifiers are more easily dealt with because they can be installed out of sight. They must be mounted away from the elements and heat, and in a place where cooling air is available. To minimize electrical interference, amps should be isolated from your car's ignition system.

## Speakers

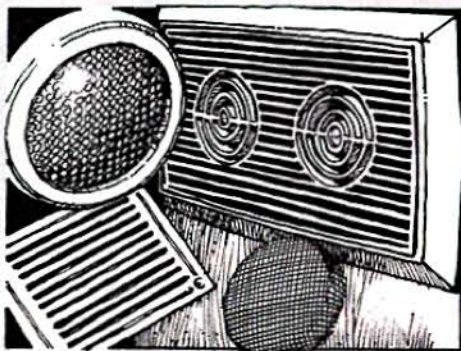
When you buy a new radio, you'll most likely want to replace or augment your old speakers. This task can be as simple as switching new speak-



Different width spacers allow speaker installation in tight areas, and an inexpensive baffle improves performance.

ers for old, or as involved as sawing holes in metal, cutting upholstery and stripping the car's interior to facilitate wiring. The least involved route to take is to upgrade your car's existing speakers. This is probably also the least expensive way to improve your radio. In most cases, stock speakers are significantly inferior to audio manufacturers' bottom-of-the-line units. Installing a pair of modestly priced aftermarket speakers, even without a new radio, will produce a noticeable improvement in fidelity. Drop-in speakers are made to fit most popular cars and can be installed in a few minutes with little more than a screwdriver.

In one sense, speaker installation is simpler than radio installation. Because speakers are more standardized than radios, it's easier to find some that fit your needs and budget. Among the most common speakers are the oval-shaped "six-by-nines." They're the universal choice for flush-mounted rear-deck use. Stock six-by-nines are



A wide variety of speaker grilles for flush mounting are available from aftermarket manufacturers such as Ampersand.

usually rudimentary, high-efficiency units.

High-efficiency, when referring to speakers, is a deceptive term. It implies that the speaker does its job very well, but really means that the speaker is designed to function over the entire frequency range a radio can produce. In other words, it does everything adequately. Speaker manufacturers have overcome the limitations imposed by the six-by-nine format rather ingeniously, however, by stacking mid-range and tweeter drivers within the speaker cavity. This helps reproduce both high and low frequencies with truer fidelity, without presenting major installation obstacles.



Replacing inferior stock 6 x 9 speakers (top) with aftermarket three-way speakers (bottom) results in an instant improvement in sound quality for a relatively low price.

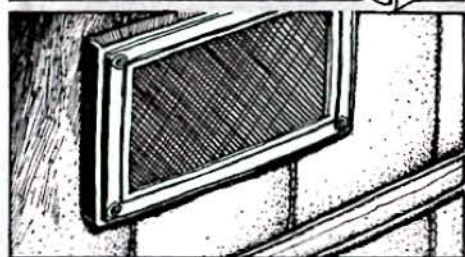
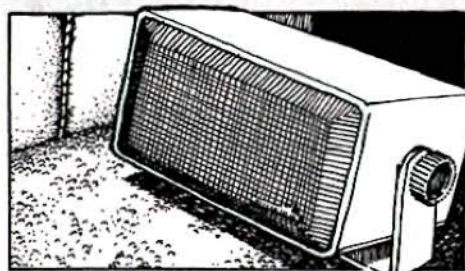
While replacing stock speakers is an elementary task, adding speakers is another matter altogether. The preferred locations, and usually the only speaker space available, are in the front doors and the rear package tray. As with a radio, before you buy any speakers, carefully measure the available space. Also consider the thickness of your car's doors and what's underneath its rear deck.

First remove the upholstery from one door, find a suitable space for the speaker and determine the largest area available, taking into account the movement of window glass and the various linkages inside the door. This will narrow your choice of speakers to a size your door will accommodate.

Some metal cutting may be required to install speakers in your car's

doors. Professional installers use large hole saws and specialized tools not usually found in the home workshop because of cost and limited utility. Determine whether the tools you have will do the job (tin snips make poor adversaries of high-strength steel). If metal slicing is beyond you, don't give up. You can forego door speakers and settle for a speaker or two in the dash (most cars were built with enough space for at least one small speaker among the instruments, vents and glove compartment), and a pair in the package tray. The tray is usually made of softer materials than metal and it's far simpler to cut (although you may also have to trim the sheetmetal beneath it).

Flush-mounted speakers were long the vogue for package tray installation, but surface-mounted mini-speakers are becoming popular. These offer some advantages, both to the installer and acoustically. For one, you don't need to cut holes in the package tray. In addition, you can aim the speakers at the listener, reducing sonic scramble that results when sound waves are bounced off glass, as happens with flush speakers.



Good-quality mini-speakers simplify rear deck installation (top) while flush-mounted speakers are better for front doors.

When you've selected your speakers and decided where to mount them, it's important to exercise extreme care, particularly when cutting upholstery. If you make a mistake here, there's little you can do to cover it up. There is more room for error in cutting the

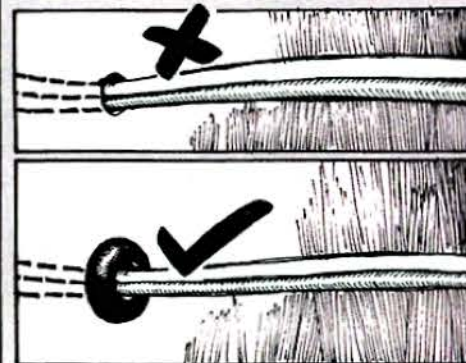
metal beneath the upholstery as far as appearance is concerned. However, that metal is a functional part of the car's structure and any cutting weakens it to some extent. Cut steel only when there's no other way.

In most cases you have little choice but to attach your speakers with sheetmetal screws. If it's at all possible, though, use a bolt, washers and double nuts to secure the speakers as firmly as possible. As a result of a car's constant vibration, sheetmetal screws tend to come loose.

## Wires And Connectors

Once the speaker locations have been determined and necessary cutting and drilling completed, you can run the wiring. If you are replacing stock speakers and want to avoid a lot of trouble, use the existing wiring. If you want to maximize performance, rewire with the largest diameter wire you can. Aftermarket manufacturers make heavy-duty cables designed especially for car use which are relatively expensive, but if you're using expensive top-of-the-line components you should connect them with comparable wire. In most cases, though, 16- or 18-gauge wire will be sufficient. If you're really watching pennies, you can use zip cord, standard house lamp wire, or home hi-fi wire available in any stereo store. Each hi-fi lead is color-coded so you don't have to guess which connects to the positive and negative terminals of your components.

Ideally, to reduce the chances of electrical interference, speaker wires should be isolated from other wiring. This is difficult to achieve. Your car's wires are routed along the simplest possible paths, so in many places



Rubber grommets should always be used when running wire through sheetmetal.



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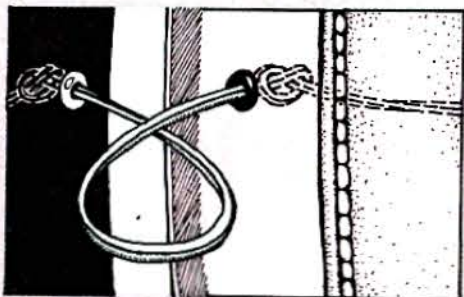
1 Crutchfield Park, Dept. AS, Charlottesville, VA 22906



**Car Stereos:**

you're left with little choice but to follow them.

In any event, wires should always run inside the car and attach firmly to its surface every two feet with plastic wire ties or some other fastener. They should never be exposed. A visit to your local electronics store will introduce you to many clever, inexpensive items designed to keep wires secure and out of the way. Use rubber grommets wherever you have to drill a hole to run a wire, and keep the wire away from sharp edges that could chafe it. When running wiring from the car's body to a door, leave a small loop in the wire so it will not twist or strain when the door is opened.



When running wire through a door, leave a small loop to keep the wire from flexing and breaking when the door is opened.

Don't skimp on wire. If you run a lead from the radio to the package tray, leave a couple of extra feet at each end. You can tidy up after the wire is secured. Try to avoid splicing wires together to make up a longer length. If you must, solder the connection and cover it with shrink tubing. Solder every connection you can, or at least use wire nuts. Do not twist the bare ends of two wires together and wrap them in electrical tape. Care at this stage may save you a lot of trouble in the future.

### Tools And Special Equipment

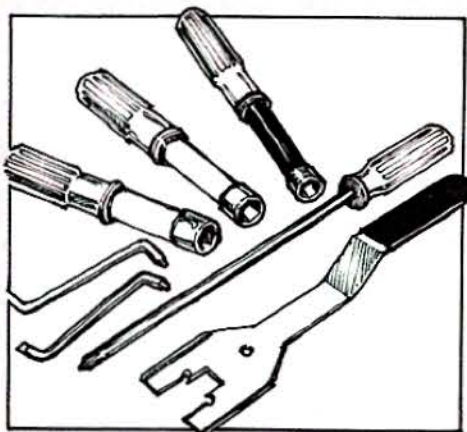
Even if you have a toolbox equipped with everything from Whitworth spanners to metric stud pullers, you just might be missing one tool that's indispensable for your radio installation. Late-model Chrysler cars, for example, require a special three-pronged tool for the removal of certain radio-related screws, and a Torx-head screwdriver is needed to remove

the radio from some GM cars. Before you undertake radio installation, check your car's service manual to see if you'll need out-of-the-ordinary tools. Otherwise you may find yourself stymied by a screw or two that no improvisation will dislodge.

All radios with tuning and volume knobs have 1/2-, 3/16- or 5/8-inch (9- or 10mm on metric models) nuts on the two shafts which must be loosened before the radio will slide out of the dash. You will need either deep sockets or nut drivers (a box wrench or open-end may work in some cases) to remove these. Because you'll be working in tight, hard-to-reach places, a right-angle screwdriver will prove useful, as will a thin-bladed, long-shaft screwdriver.

Take care when removing door panels and other upholstery. It is easily damaged. A special tool that resembles a carpet tack puller can make this job easier. You'll also need sharp knives for cutting upholstery and a keyhole saw to cut through pressboard and fiberglass. A telescoping magnet or a flexible-shaft, three-fingered grabber are lifesavers when retrieving parts accidentally dropped into deep, dark recesses. In addition you'll need a soldering iron, a wire stripper and a crimper for attaching wire ends and connectors. A voltmeter is invaluable in identifying hot wires as is a thin, flexible plumber's snake for pulling wire through otherwise inaccessible places.

Even with all the right equipment, you might run into a situation where there's just no tool for the job. Such a predicament is no stranger to the pro-



Special tools may be necessary to remove certain radios and to detach upholstery trim without damaging it.

fessional installer. He is forced to improvise and you may have to do the same. If your car has a fiberglass body, or its engine has been modified with high-performance ignition gear, you might run into interference that destroys the high-fidelity sound you're after. This can be eliminated, or at least reduced, by using "chokes" and filters which slip into the hot wire, or by shielding the offending electrical components of the engine. In extreme cases, there is nothing that can be done to eliminate interference: If your car's stock radio performed well, the radio you replace it with should also.

### Let A Pro Do It

If all this do-it-yourselfing seems like too much trouble, you can always farm the job out. However, even this route has its pitfalls. An incompetent installer can damage both your audio gear and your car. To prevent this, first examine your installer's credentials. Look at and listen to jobs he's done for other people. If he has any confidence in his work, he'll be happy to supply references.

His shop, tools, equipment and work environment offer an indication of his qualifications. Is his shop clean and organized? Are his tools in good order? Is the operation run in a businesslike manner? If the answers are no, try someplace else.

His work should be warranted at least to cover any related problems you may have within a specified period of time. For example, you may find that at higher engine rpm there's an electrical noise you don't notice at lower speeds. Will the installer trace the problem for you? Will he charge you for the work? Settle these questions before you assign the job.

Some installers also stock and sell favored brands of audio equipment. This type of arrangement can lead to potential conflicts of interest to your disadvantage. Although one-stop service is convenient, you may pay more for the hardware than if you bought it at a high-volume outlet or discount store and had it installed by a specialty shop. Examine all options.

In any event, a first-class stereo installation is worth the effort it takes to find a reliable craftsman to do the work. A job well done will be music to your ears.



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## Livermore, California



By Bruce Hampson

While it's true that Livermore is a reflection of countless other northern California farming communities, we would be remiss in stating that it's virtually indistinguishable from the others. Livermore stands out for two reasons: it's the site of the Livermore Laboratories, frequent target of anti-nuclear activists, and it's also the melting pot for cruising in northern California's Alameda County. Friday and Saturday night find cars from as far away as Pleasanton, San Leandro, and even San Jose idling up First Avenue; it's a hot-spot for youth locked into the repetitiveness of country chores. San Francisco might be but an hour's drive west across the San Mateo Bridge, but there's a world of difference between them.

Perhaps we should quell one rumor right from the start: Livermore cruisers do not glow in the dark. We discovered this up close and personal, making a few passes down the half-mile length of cruising turf in Livermore inside Mike DeFazio's well-bred '68 Mustang. Both Mike and Roy Sorenson, who originally provided us with some background about the local cruise, live in Castro Valley, some 20 miles to the north. Neither of the two have done any serious cruising since the location shifted from their hometown to Livermore a few years



back, but each was aware of the action down south.

Mike's personally painted Mustang is probably the only thing blacker than a country evening. The jet-black pitch is flawless, broken only by a ribbon of magenta candy running stem to stern along the upper quarter panels, and twin velocity stacks jutting skyward through a hole in the hood. Meeting at Mike's place just before 9:00 p.m. on a Friday night, it's decided that I'll ride in the 'Stang, with Roy following us in the magazine-sponsored rent-a-wreck. With

less than 1/2-inch clearance between the Ford's wheelwells and the massive Goodyear tires, it becomes apparent almost immediately that this ponycar wasn't built to carry backseat passengers. Besides, no one wants to change the tires, so the AMC provides insurance during the run to Livermore.

Climbing over the rollcage, the first thing I notice is a lack of seat belts for the shotgun bucket. "Sorry, I haven't installed them on that side yer," Mike notes. "My girlfriend says I'm trying to kill her." DeFazio turns the key, and the





Mustang sends a cacaphony of sound screaming into the quiet neighborhood. We back out of the drive, and we're gone.

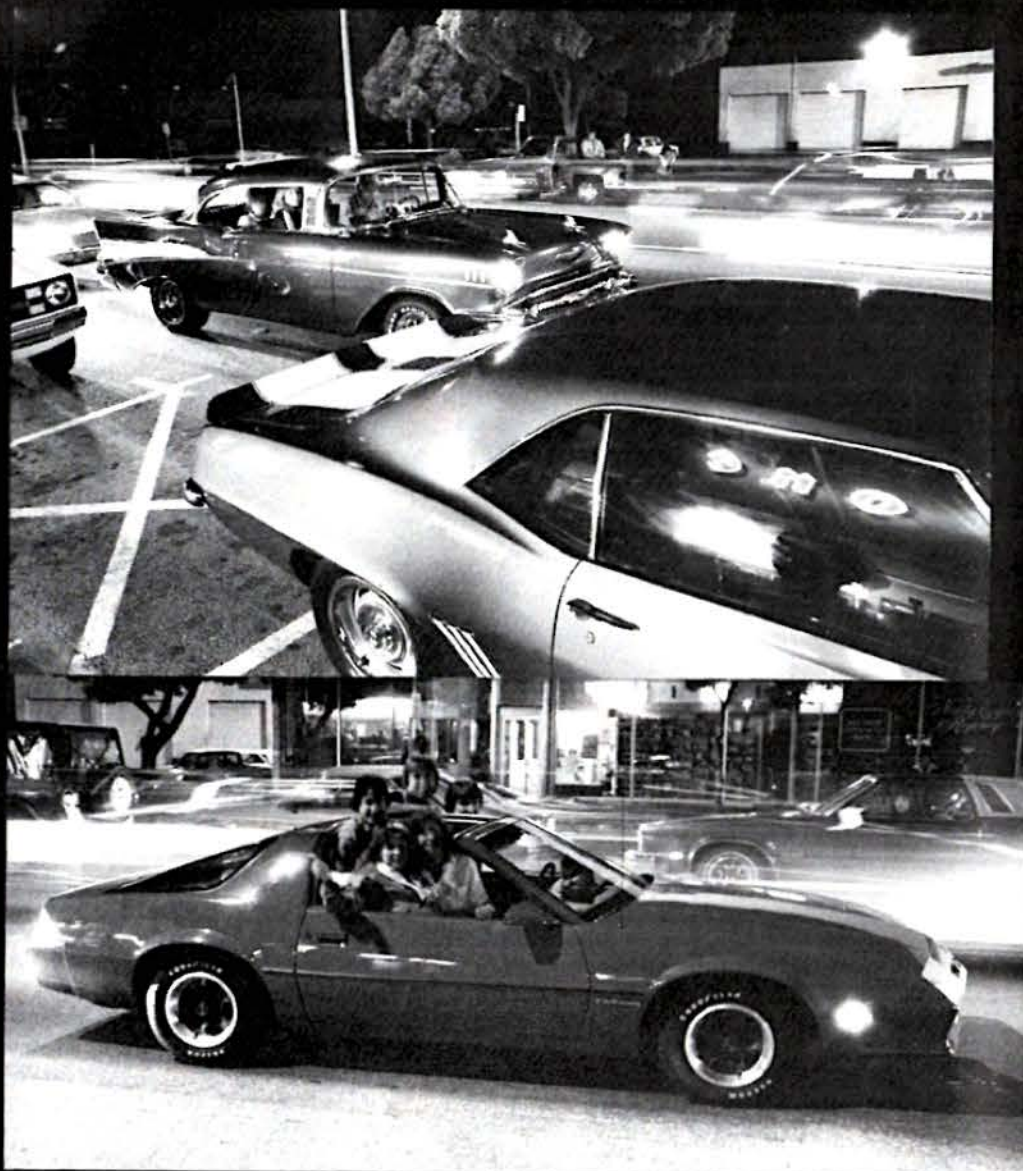
The ride into Livermore is uneventful, though it takes some getting used to the night rider. "Don't worry, it's a crash-box," Mike points out when I ask about the shifts. The Mustang changes gears with the sound of a 4-speed slipping from one cog to the next without benefit of synchro's. Mike's put untold hours into the ponycar, doing virtually everything himself. Conversation ranges from small-block buildups ("Forget all those 'economy small-blocks'; why don't you guys ever show how to build a real killer little-inch Ford?") and aspirating the 302 ("I bought three cylinder heads. We cut one of them in half to see how close we could come to the water jackets.") to the 5.13-gear, Detroit Locker drivetrain of the '68. Twenty minutes later, we veer off at the West First Street exit off Highway 580.

Once on the street, things begin to happen. A young girl standing at the intersection of First and "H" Street gives us the once-over. "Hey, can you do that to my car?" She points at her stock 'Stang. There's only one traffic signal along the half-mile stretch of cruising turf, found at "P" Street. Still waiting for the green light, a fellow breaks away from the crowd lining the sidewalk and strolls up to the car. "What are you running in this monster?"

"A 302."  
"You've gotta be kidding. Is that all?" The small-block motivation is questioned ceaselessly all night. The light finally changes, and we leave the interrogator scratching his head.

Mike points out a clean '69 Camaro; a friend of his used to own it some time back. DeFazio's keeping an eye open for a fast Firebird that's rumored to hail from these parts. "It's supposed to be pretty hot," Mike acknowledges. "Maybe he'll be out tonight," he adds with a grin. DeFazio's car is well-known to the regulars, particularly the cruisers down from Fremont. "We used to race with them a lot; it was Fremont against Castro Valley. Then I built the 302, and nobody could beat it. I heard someone from Fremont was putting together a blown Hemi, but he never got it to work right."

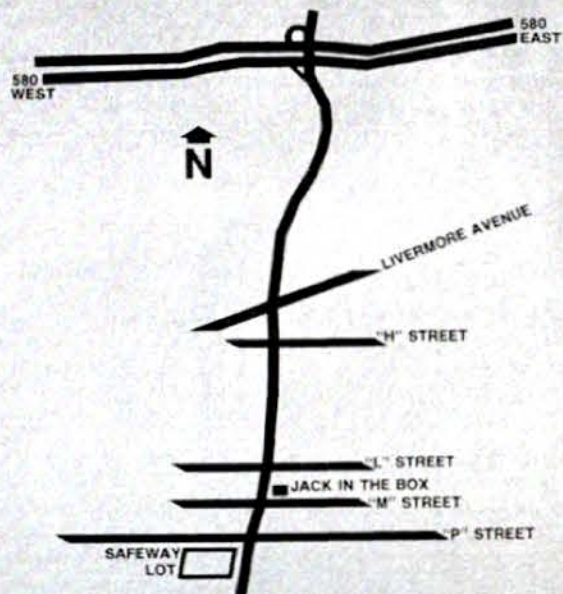
Making the return trip, we hit the



### HOW TO GET THERE

Located across the bay from San Francisco in Alameda County, Livermore is situated just off Interstate 580 midway between Highway 17 (Nimitz Freeway) and I-5. Take the "West First Avenue" exit off the 580 and proceed south 2½ miles into the Livermore business district. Most of the cruisin' in Livermore occurs along a half-mile stretch on First Avenue from Livermore Avenue to "P" Street, interrupted by a single traffic signal at "L" Street.

Cruisin' is year-round (as weather permits) on both Friday and Saturday nights. The hot ticket is most any Saturday evening between late May and early September.



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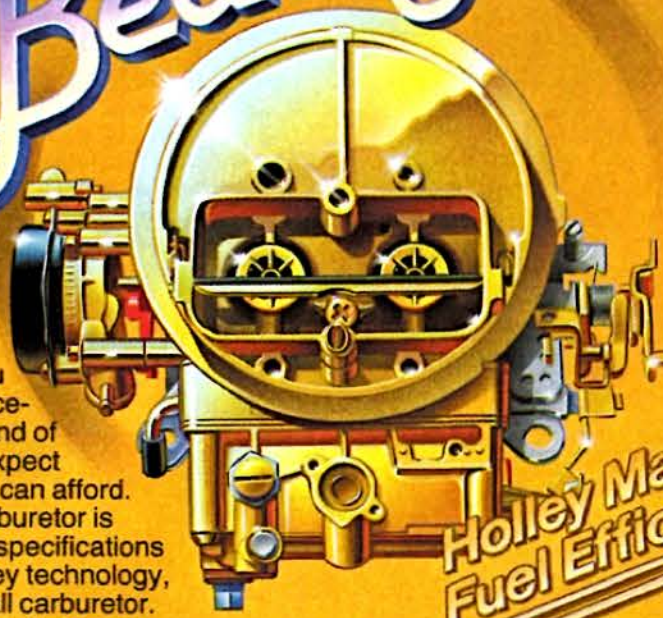


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up with sometimes," John pointed out. "If you step out of line and do something wrong—like burnouts or standing in the street—they'll let you know about it in no uncertain terms. Other than that, there aren't any real problems."

It's getting near the witching hour, and a distinct chill has settled over the area. But the streets are still full. A group of bikers is standing in front of a Chevy dealership, and one of them yells across the street to DeFazio.

"Ten seconds... but how many times?" comes the call.

"Anytime I want to!" Mike yells back. "He's got a 1100cc Kawasaki with all kinds of trick stuff on it," Mike explains. "He and I went out to the track to-

gether. My first pass was 10.92; all he could muster all day was 11.21."

Making another lap, we head the Mustang towards the curb near where the bikers had set up shop. The black ponycar instantly draws a crowd, one of which wandered over from a mini-truck parked across the street.

"What'll it run?"

"10.78."

The truck driver finds this a bit unbelievable, especially from a 302.

"Seriously, how fast will it run?"

Mike looks at the questioner, shakes his head and answers, "12.60." The truck shoe finds this more in line with his concept of small-block Ford reality. With time getting away from us, we opt

for one more lap. Heading back down First Avenue, a guy pulls alongside us in a stock Camaro.

"How much farther is the 580?"

"About two miles."

"Good. Man, I hit this town on the wrong night!"

As it turned out, so did we. If cruising Friday night was nice, the atmosphere 24 hours later was nothing short of terrific. Judging by the heavy hitters out on the boulevard, we'd say that Saturday is the best night to hit Livermore. Just one thing: somewhere north of the city proper there's a stretch of asphalt marked off for clandestine quarter-mile competition. Stay off of it. The lane's nothing but trouble. ☐

## CRUISIN' LIVERMORE

continued

light at "P" Street again. Someone alongside us is gesturing frantically.

"Hey man, is that a race car, or what?"

"Hey Ronnie," Mike laughs. "What's happening? That's a pretty nice car you've got there."

"Yeah, it's got a 454 under the hood! Want to see it move?" At the green, Ronnie's austere white Chevette chugs off on four stock cylinders. Up ahead,

traffic slows as a billow of steam cascades into the air. Someone's disintegrated a radiator. As we slow for the '66 Fairlane, now running off the power of three teenagers pushing it into a gas station, another group is checking out the road clearance on our cruiser. "From straight on, the oil pan is the first thing you see," Mike notes. "It's only about this far off the ground." He spreads his thumb and forefinger about two inches apart. Definitely not built for speed bumps.

A Firebird idles by, but it's not the

same car Mike's heard about. We pass a former street hero, a '71 Z/28 Rally Sport, that its current owner is restoring back to its former glory. I find out later the new owner, Mike Roe, bought it from the original title holder, and has since done a substantial amount of restoration. The car still sports the original LT-1 block, providing plenty of power. Roe is parked along with John Mock, who's blacked-out '83 TA is down from Fremont. Both like cruising in Livermore. "The police out here are pretty cool, considering what they have to put



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modified '73 Vega wagon. Backing the machine with enough energy to avoid the effects of perilous urban driving is a host of performance equipment fitted to the likes of a 4-inch-bore small-block. The base of the engine is a short-block made up of high-performance factory and aftermarket hardware. The big-ticket items include a set of TRW forged aluminum slugs, LT-1 connecting rods, and a 327 forged steel crank. *continued*



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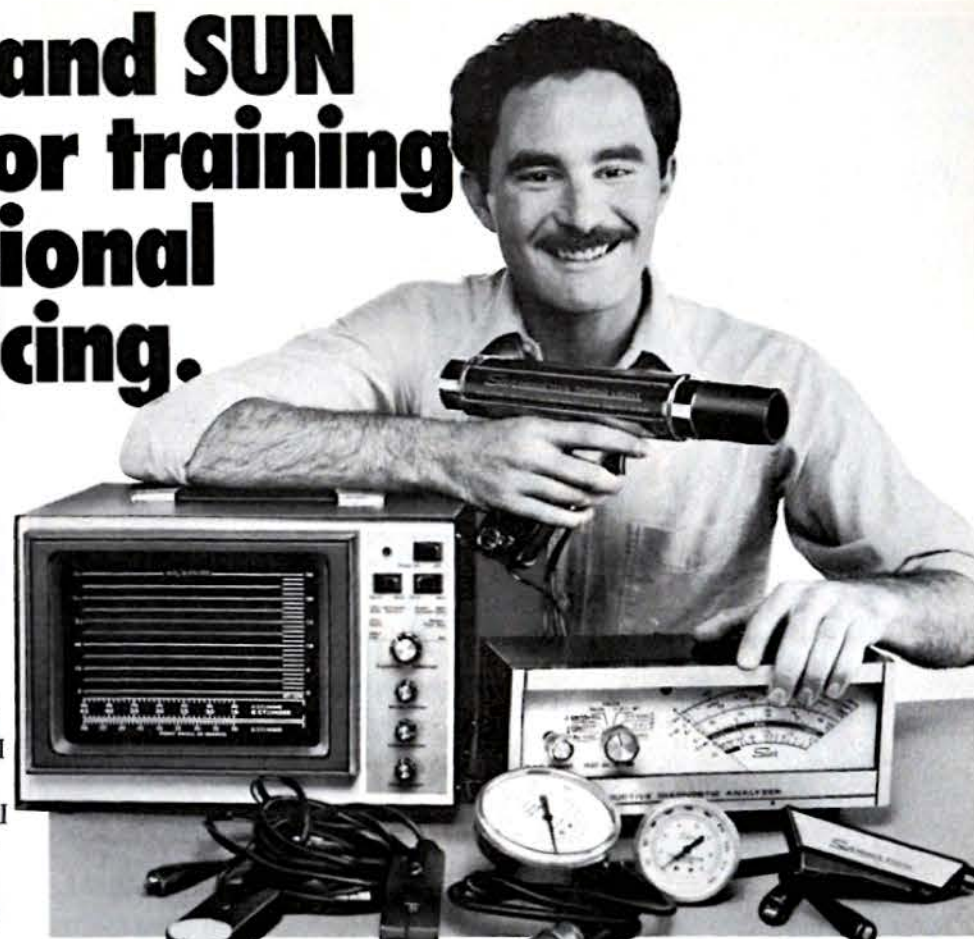
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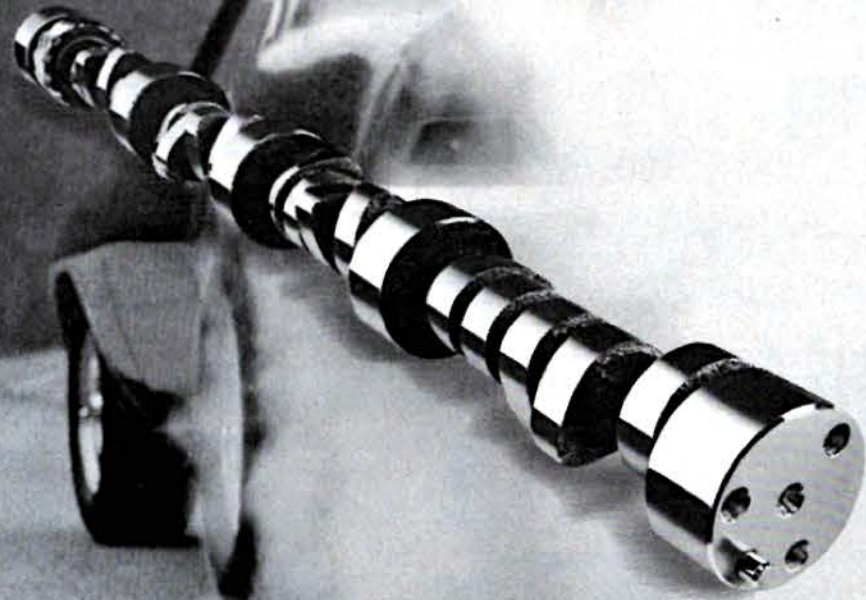
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# MISSILE

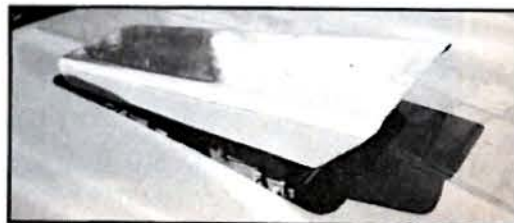
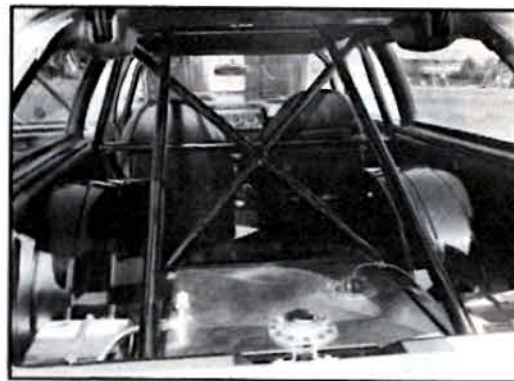
The valvetrain consists of a combination of Sig Erson camshaft/lifters and Crane pushrods, roller rockers, and valvesprings, all of which control the 2.02-inch intake/1.60-inch exhaust valves manufactured by Manley. Metering the air/fuel ratio of the mouse motor is a pair of 500 cfm Carter AFB's fitted to an Edelbrock tunnel ram. Fire in the hole is provided via a Mallory ignition system.

Knowing that all the power of a well-prepped engine is worthless if you can't put it to use, Gary had a

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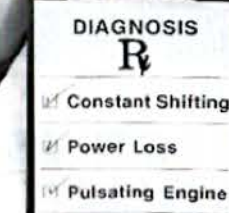
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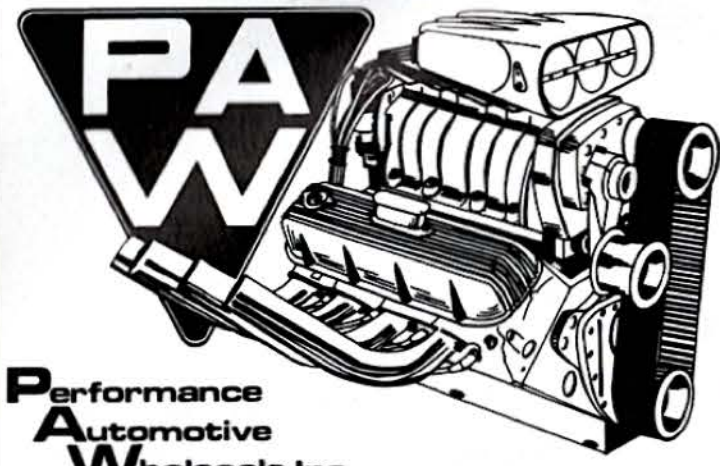
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  - 300-18 351W Ford 158.00
  - 300-20 351M-400 Ford 151.00
  - 300-11 Ford 390-428 195.00
  - 300-9 Pontiac V8 149.00
  - 300-15 Oldsmobile V8 172.00

- EDELBROCK TORKER MANIFOLDS**
- Your Low Price
- 2935 AMC V8 68 9 139.00
  - 2930 AMC V8 70 139.00
  - 2725 SB Chevy 124.00
  - 2740 BB Chevy 0 Pt. 138.00
  - 2745 BB Chevy Pt. 138.00
  - 2735 340-360 Mopar 139.00
  - 3010 361-383-400 Mopar 138.00
  - 3015 413-426-440 Mopar 138.00
  - 2755 SB Ford 129.00
  - 2760 351C 4V Ford 148.00
  - 2795 429-460 Ford 154.00
  - 2730 Olds V8 159.00
  - 2720 Pontiac V8 139.00
- TEAM Q**
- Street Ram 7525 S.B. Chevy \$116.95  
7535 B.B. Chevy 0 Pt. \$124.95
- Power Ram 7530 S.B. Chevy \$124.95  
7540 B.B. Chevy 0 Pt. \$129.95
- ON SALE WEIAND MANIFOLD SPECIAL**
- OPEN PLENUM RPM RANGE 2000 - 6000
- 7546 **\$74.95**
- HOLLEY CARBURETORS**
- Your Low Price
- Z SERIES
  - 300-31 AMC 70-79 167.00
  - 300-28 S.B. Chevy 148.00
  - 300-29 S.B. Mopar 163.00
  - 300-30 S.B. Ford 149.00

- EDELBROCK VICTOR MANIFOLDS**
- Your Low Price
- SB Chevy 139.00
  - BB Chevy Pt. 154.00
  - SB Mopar 159.00
  - Olds 330-350-403 155.00
- CARTER AFB CARBURETORS**
- Your Low Price
- 9635 625 CFM Chevy 147.00
  - 9637 625 CFM Ford 147.00
  - 9636 625 CFM Mopar 147.00
- WEIAND #1002 AIR CLEANER**
- 5 1/8 Neck Fits Holley Carbs
- Your Low Price **\$13.95**
- WEIAND MANIFOLD SPECIALS**
- SP180 SINGLE QUAD SPLIT PLENUM RPM RANGE 650 to 6000
- Your Low Price
- 8004 S.B. Chevy \$89.95
  - 8005 B.B. Chevy 0 Pt. \$119.95
  - 8006 289-302 Ford \$119.95
  - 8010 351M-400 2V \$119.95
  - 8007 S.B. Mopar \$119.95
  - 8008 383-400 Mopar \$123.95
  - 8009 413-426-440 Mopar \$122.95
- These Manifolds are Non E.G.R. We have E.G.R. Manifolds, please phone for price.
- HOLLEY PERFORMANCE ELECTRIC FUEL PUMPS**
- Your Low Price
- 12-801 Street 48.00
  - 12-802 Race w/Reg. 68.00

- CARTER THERMO-QUAD CARBURETORS**
- Your Low Price
- 9810 800 CFM Chevy 187.00
  - 9811 800 CFM Mopar 187.00
- CARTER AFB COMPETITION CARBURETORS**
- Your Low Price
- Carter AFB Competition Series Manual Choke
- 4758 500 CFM 130.00
  - 4759 625 CFM 130.00
  - 4760 750 CFM 130.00
  - 4761 500 CFM No Choke 112.00
  - 4762 750 CFM 112.00
- HOLLEY PERFORMANCE CHROME PLATED FUEL PUMPS**
- Your Low Price
- Most Engines **\$29.95**

**WHY ARE P.A.W. PRICES LOWER? WE BUY DIRECT, WE SELL DIRECT & THAT SAVES YOU MONEY. POPULAR NAME BRANDS AT WHOLESALE PRICES.**

**HI-PERFORMANCE CAMSHAFT KITS**

AVAILABLE FOR ALL MAKES STREET • STRIP • R.V. • RACING

HYDRAULIC OR SOLID

KIT INCLUDES: CAMSHAFT-LIFTERS-SPRINGS

YOUR CHOICE HYDRAULIC OR SOLID

**KIT A. CAMSHAFT KIT B. CAMSHAFT & LIFTERS KIT C. CAMSHAFT, LIFTERS & SPRINGS**

AMC 199-232-258 1158.00 204.00  
287-290-304-327 209.00 259.00  
343-360-401 209.00 259.00  
390 209.00

**BUICK** 163.00 204.00  
300-340-350 209.00 274.00  
400-401-425-430-455 215.00 274.00

**CADILLAC** 283.00 344.00  
194-230-250-292 154.00 204.00  
265-283-327 154.00 194.00  
305-307-350 154.00 194.00  
396-400 184.00 219.00  
400-427-454 194.00 269.00

**FORD** 154.00 204.00  
144-170-200-250 154.00 189.00  
260-289-302-351W 169.00 219.00  
351C-351M-400 189.00 214.00  
429 194.00 329.00  
428-460 209.00 249.00

**MOPAR** 154.00 204.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**OLDSMOBILE** 209.00 259.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**PONTIAC** 154.00 204.00  
326-350-389-400-455 209.00 279.00

**SUPER STOCK PISTON KIT**

Kit Includes

- PISTONS & PINS
- PISTON RINGS
- ROD & MAIN BEARINGS
- PERFORMANCE GROUND
- CAMSHAFT

Your Low Price **CAST FORGED PISTONS PISTONS**

AMC 199-232-258 1158.00 204.00  
287-290-304-327 209.00 259.00  
343-360-401 209.00 259.00  
390 209.00

**BUICK** 163.00 204.00  
300-340-350 209.00 274.00  
400-401-425-430-455 215.00 274.00

**CADILLAC** 283.00 344.00  
194-230-250-292 154.00 204.00  
265-283-327 154.00 194.00  
305-307-350 154.00 194.00  
396-400 184.00 219.00  
400-427-454 194.00 269.00

**FORD** 154.00 204.00  
144-170-200-250 154.00 189.00  
260-289-302-351W 169.00 219.00  
351C-351M-400 189.00 214.00  
429 194.00 329.00  
428-460 209.00 249.00

**MOPAR** 154.00 204.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**OLDSMOBILE** 209.00 259.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**PONTIAC** 154.00 204.00  
326-350-389-400-455 209.00 279.00

**SUPER STOCK CRANKSHAFT KIT**

Kit Includes

- PISTONS & PINS
- PISTON RINGS
- CONNECTING RODS
- CON ROD & MAIN BEARINGS
- CRANKSHAFT

Your Low Price **CAST FORGED PISTONS PISTONS**

AMC 199-232-258 1158.00 204.00  
287-290-304-327 209.00 259.00  
343-360-401 209.00 259.00  
390 209.00

**BUICK** 163.00 204.00  
300-340-350 209.00 274.00  
400-401-425-430-455 215.00 274.00

**CADILLAC** 283.00 344.00  
194-230-250-292 154.00 204.00  
265-283-327 154.00 194.00  
305-307-350 154.00 194.00  
396-400 184.00 219.00  
400-427-454 194.00 269.00

**FORD** 154.00 204.00  
144-170-200-250 154.00 189.00  
260-289-302-351W 169.00 219.00  
351C-351M-400 189.00 214.00  
429 194.00 329.00  
428-460 209.00 249.00

**MOPAR** 154.00 204.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**OLDSMOBILE** 209.00 259.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**PONTIAC** 154.00 204.00  
326-350-389-400-455 209.00 279.00

**SUPER STOCK MASTER KIT**

Kit Includes

- PISTONS & PINS
- PISTON RINGS
- CONNECTING RODS
- ROD & MAIN BEARINGS
- CRANKSHAFT
- CAMSHAFT-LIFTERS-SPRINGS
- TIMING CHAIN SET
- OIL PUMP
- CAM BEARINGS
- GASKET SET

Your Low Price **CAST FORGED PISTONS PISTONS**

AMC 199-232-258 1158.00 204.00  
287-290-304-327 209.00 259.00  
343-360-401 209.00 259.00  
390 209.00

**BUICK** 163.00 204.00  
300-340-350 209.00 274.00  
400-401-425-430-455 215.00 274.00

**CADILLAC** 283.00 344.00  
194-230-250-292 154.00 204.00  
265-283-327 154.00 194.00  
305-307-350 154.00 194.00  
396-400 184.00 219.00  
400-427-454 194.00 269.00

**FORD** 154.00 204.00  
144-170-200-250 154.00 189.00  
260-289-302-351W 169.00 219.00  
351C-351M-400 189.00 214.00  
429 194.00 329.00  
428-460 209.00 249.00

**MOPAR** 154.00 204.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**OLDSMOBILE** 209.00 259.00  
170-198-225 154.00 228.00  
273-318-340-360 209.00 279.00  
361-383-413 234.00 279.00  
440 234.00 279.00

**PONTIAC** 154.00 204.00  
326-350-389-400-455 209.00 279.00

**HIGH VOLUME OIL PUMPS**

20% More Volume than stock pump.

S.B. CHEVY **\$19.95**  
ALL OTHERS **\$24.95**

Chevrolet Mopar Ford Pontiac

**HI-PERFORMANCE DOUBLE ROLLER CHAIN SETS**

**\$19.95**

SB Chevy

Others Your Low Price

- BB Chevy 29.95
- SB Mopar 29.95
- BB Mopar 29.95
- SB Ford 39.95
- 351C-400 Ford 39.95
- 429-460 49.95
- 390-428 29.95
- Oldsmobile 49.95
- Pontiac 39.95

**PERFORMANCE LIFTERS**

Solid/Hydraulic **\$39.95**

Set of 16 Most Cars

**CHROME MOLLY PUSH RODS**

Set of 16 Available for Most Engines **\$39.95**

**HI-PERFORMANCE TIMING CHAIN SETS**

Steel Gears **\$18.95**

SB Chevy **\$18.95**  
All Others **\$24.95**

**ENGINE OVERHAUL SPECIAL**

Kit Includes

- Con Rod Bearings
- Main Bearings
- Most V8 & 6 cyl. Std. 010-020-030 Piston Rings
- Most V8 & 6 cyl. Std. 030-050 Gasket Set
- Most V8 & 6 cyl. 3 & Save

Your Low Price **\$79.95**

**GASKET SETS**

SB Chevy **\$14.95**  
BB Chevy **\$14.95**  
SB Ford **\$14.95**  
BB Ford **\$14.95**  
Cleveland **\$14.95**  
SB Mopar **\$14.95**  
BB Mopar **\$14.95**  
Pontiac **\$14.95**  
Olds **\$14.95**  
SB Chevy **\$14.95**

All Others **\$19.95**

Bathub Intake Manifold Gasket not included on some models.  
SB - Small Block  
BB - Big Block

**TRW FORGED FLAT TOP PISTON & RING SPECIAL**

Available Std. 030 (040-060 CALL)

- Chevrolet 283-327-350 119.00
- 454 219.00
- Ford 269-302 119.00
- 351C 154.00
- 390 144.00
- Mopar 318-340 163.00
- 383 169.00
- 440 209.00

ADD \$15.00 for Molly Rings

**ROCKER ARMS**

FORD SB 289-302 351W 49.95 set 16  
State year, rail or non rail  
351C-Boss-429 96.00 set of 16  
Adjustable Kit with Arm, Ball & Nut  
390-427-428 69.95 set of 16  
Adjustable Rocker Arms.

PONTIAC 350-389-400-428-455 1.5 ratio 49.95 set of 16  
428-460 49.95 set of 16  
350-389-400-428-455 1.6 ratio 49.95 set of 16  
Adjustable Rocker Arms.

Kit Includes Arms, Balls, Nuts

**PUSH ROD GUIDE PLATES**

SB Chevy 16.95 Set  
BB Chevy 29.95 Set  
SB Ford 29.95 Set  
351C Ford 29.95 Set  
429-460 Ford 29.95 Set

**350 CHEVY TRW FORGED 11:1 PISTONS WITH RINGS**

Available Std. 030-060  
Your Low Price **\$249.00**  
ADD \$15.00 for Molly Rings

**FLAT TOP PISTON SPECIALS WITH RINGS**

Available Std. 030-040-060

- Chevrolet 305-350 99.00
- 400 119.00
- Ford 302-351W 99.00
- 351C-351M-400 114.00
- Mopar 318-340-360 99.00
- 318-340-360 99.00

For Molly Rings ADD \$15.00

**HI-PERFORMANCE CONNECTING RODS**

Shot peened, magnafluxed resized chrome Molly Rod Bolts for maximum strength

Pontiac, Ford, Chevy, Mopar

Set of 8 **\$148.00**

**SPECIAL 4130 CHROME MOLLY OIL PUMP DRIVE SHAFTS**

As Low As **\$99.95**

- Chevy 350 \$99.95
- Chevy 283-327 \$109.00
- Ford 289-302 \$109.00
- 351W (69 only) \$109.00

ADD \$15.00 for Molly Rings

**FREEZE PLUG KITS**

Steel \$2.95  
Brass \$6.50

**TECH LINE & PHONE ORDERS**

**818-993-7440**

C.O.D. • MAIL ORDER • UPS AVAILABLE

VISA FOR INSTANT SERVICE ORDER LINE CALL master charge

**SUPER SPECIAL S.B. CHEVY DELUX ENGINE REBUILD KIT**

Kit Includes

- PISTON RINGS
- CL77 ROD BEARINGS
- CL77 MAIN BEARINGS
- ENGINE GASKET SET
- OIL PUMP
- TIMING CHAIN SET

Your Low Price **\$99.95** S.B. CHEVY ONLY

Options available  
Molly Rings ADD \$15.00  
H.V. Oil Pump ADD \$6.00  
For Double Roller Chain Set ADD \$3.00

NOTE: Bearings Available  
Std. 010, 020, 030  
Rings Available  
Std. 030, 040, 060.

**HI-PERFORMANCE DOUBLE ROLLER CHAIN SETS**

**\$19.95**

SB Chevy

**ROCKER ARMS**

FORD SB 289-302 351W 49.95 set 16  
State year, rail or non rail  
351C-Boss-429 96.00 set of 16  
Adjustable Kit with Arm, Ball & Nut  
390-427-428 69.95 set of 16  
Adjustable Rocker Arms.

PONTIAC 350-389-400-428-455 1.5 ratio 49.95 set of 16  
428-460 49.95 set of 16  
350-389-400-428-455 1.6 ratio 49.95 set of 16  
Adjustable Rocker Arms.

Kit Includes Arms, Balls, Nuts

**PUSH ROD GUIDE PLATES**

SB Chevy 16.95 Set  
BB Chevy 29.95 Set  
SB Ford 29.95 Set  
351C Ford 29.95 Set  
429-460 Ford 29.95 Set

**WE SUPPLY ALL CORES - EXCHANGE IS NOT REQUIRED.**

California residents: Please note-items on this page are 1. Not legal for sale or use on any pollution-controlled motor vehicle in California. 2. Legal in California only for racing vehicles which may never be used upon a highway.



**WE CARRY A COMPLETE LINE OF MECHANICAL ENGINE PARTS FOR ALL APPLICATIONS. STOCK REPLACEMENT, HI-PERFORMANCE & RACING. WE SPECIALIZE IN ENGINE PARTS & THAT SAVES YOU MONEY. IF YOU DON'T SEE IT, PHONE FOR YOUR LOW PRICES.**

**SPECIAL OFFER**  
**HOLLEY WATER INJECTION KITS**  
 19-1 Low Compression Engines  
 19-2 High Compression Engines  
 19-3 RV's & Motor Homes  
**50% OFF**  
 Your Low Price  
**\$29.95**

**SUPER SPECIAL**

**SPECIAL UNASSEMBLED**  
**383 CU. INCH SMALL BLOCK CHEVY**  
 Unassembled SHORT BLOCK KIT  
 Seasoned 350 4-bolt mains, blocked bored oversize, custom honed, forged pistons, chrome molly rings, connecting rods, fitted chrome molly rod bolts, 400 cu. inch crankshaft, custom ground and polished for precision timing. Your choice of hydraulic or solid camshaft. Double roller timing chain set. Custom balanced for maximum performance.  
**YOUR LOW PRICE \$1295.00**

**CYLINDER HEAD SPECIALS**

**FORD 289 - 302**  
 EARLY CASTINGS SBC CHAMBER 1.84 INTAKE AND 1.50 EXHAUST VALVES SCREW IN STUDS. GUIDE PLATE ASSEMBLED WITH 3 ANGLE VALVE JOB HD LOCKS, RETAINERS, SPRINGS.  
**YOUR LOW PRICE \$399.00**

**ON SALE**

**CRANKSHAFT KIT SPECIALS**  
**CUSTOM CRANKSHAFT SPECIALS**  
**377 - 383 - 388**  
 STD BORE 030 OVER 060 OVER  
**CUBIC INCHES FROM YOUR 350 CHEVY**  
 KIT INCLUDES:  
 • FORGED PISTONS  
 • FLYWHEEL FROM 400 CHEVY  
 • CONNECTING RODS  
 • CRANKSHAFT  
 • MAIN BEARINGS  
 • CRANK PINS  
 • CRANK PIPES  
 • CRANK PIN NUTS  
 • CRANK PIN WASHERS  
 • CRANK PIN SCREWS  
 • CRANK PIN LOCKWASHERS  
 • CRANK PIN LOCKNUTS  
 • CRANK PIN WASHERS  
 • CRANK PIN SCREWS  
 • CRANK PIN LOCKWASHERS  
 • CRANK PIN LOCKNUTS  
**YOUR LOW PRICE \$399.00**

**SMOOTH IDLE - STRONG LOW END ENERGIZER CAMS**  
 Kit Includes  
 Camshafts-Lifters-Springs  
**\$139.95**

**427 or 454 BIG BLOCK CHEVY**  
 4 BOLT MAINS  
 AVAILABLE UP TO 468 CUBIC INCHES  
**SHORT BLOCK**  
 454 4 bolt mains, block bored oversized, honed for Molly Rings, Cam Bearings installed, Brass Freeze Plugs, Painted inside with Rustoleum, cut side factory color. Your choice of 10:1 or 11:1 compression ratio, forged TRW Pistons, chrome Molly Rings, CL77 Con Rod & Main Bearings, Heavy Duty Connecting Rods fitted chrome Molly 3/8 chrome Molly Rod Bolts, Crankshaft custom ground on Rod & Main Journals micro polished, Double roller timing chain set. Your choice of solid or hydraulic Camshaft. Custom balanced for maximum performance.  
**YOUR LOW PRICE - SHORT BLOCK \$1399.00**

**LONG BLOCK**  
 As above with oval port cylinder heads, Performance valve job, Heavy duty Springs, HD Locks, Chrome Molly Push Rods, Lifters, Hi-Volume Oil Pump, Long Slot Rocker Arms, and complete Engine Gasket Set.  
**YOUR LOW PRICE - LONG BLOCK \$1750.00**

**LONG BLOCK**  
 As above with oval port cylinder heads, Performance valve job, Heavy duty Springs, HD Locks, Chrome Molly Push Rods, Lifters, Hi-Volume Oil Pump, Long Slot Rocker Arms, and complete Engine Gasket Set.  
**YOUR LOW PRICE - LONG BLOCK \$1750.00**

**LONG BLOCK**  
 As above with oval port cylinder heads, Performance valve job, Heavy duty Springs, HD Locks, Chrome Molly Push Rods, Lifters, Hi-Volume Oil Pump, Long Slot Rocker Arms, and complete Engine Gasket Set.  
**YOUR LOW PRICE - LONG BLOCK \$1750.00**

**MOROSO STOCK FLOW STAINLESS STEEL VALVES**  
 Your Low Price  
**\$7.25 each.**

**CRANE ROLLER ROCKERS**  
 11750-15 1.5 S.B. Chevy  
**YOUR LOW PRICE \$229.00**  
 13750-16 1.7 B.B. Chevy  
**YOUR LOW PRICE \$249.00**

**ON SALE**  
**CRANE ECONOPOWER MAXIMUM VELOCITY CAMSHAFTS**  
 Kit Includes  
 Camshafts-Lifters-Springs  
**YOUR LOW PRICE \$139.95**

**ENGINE CLEANING BRUSHES**  
 12 Engine cleaning brushes, covering sizes 1/4 inch up to 5/8. A must for all engine builders.  
**YOUR LOW PRICE 12.50**

**ON SALE**  
**EDELBROCK TRUE ROLLER TIMING CHAIN SETS**  
 Buick V6 7829 39.95  
 Chevy V6, 90" 7800 49.95  
 Chevy S.B. 7800 44.95  
 Chevy B.B. 7810 49.95  
 Mopar S.B. 7803 49.95  
 Mopar B.B. 7804 49.95  
 Ford S.B. 7820 44.95  
 Ford 390-428 7808 44.95  
 Ford 351C-400 7821 46.95  
 Ford 429-460 7830 49.95  
 Olds V8 7813 49.95  
 Pontiac V8 7812 46.95

**ON SALE**  
**SIG/ERSON TQ 20 CAMSHAFT KITS**  
 Dynamic Off Road  
 Strong Low & Mid Range 2 or 4 Wheel 2000-5000 RPM, Good Idle.  
 Available for most V8's  
 Kit Includes  
 Camshafts-Lifters-Springs  
**\$139.95**

**ON SALE**  
**WIRE**  
 7mm Yellow Silicone 8.95  
 8mm Yellow Silicone 15.95  
 Straight or angle boots, copper or suppressed wire.  
**MALLORY PRO WIRE**  
 The Wire the Pro's Use  
 V8 Set \$24.95  
 Straight or Angle Boots  
 Copper or Suppressed Wire

**ON SALE**  
**ACCEL BREAKERLESS ELECTRONIC IGNITION DISTRIBUTORS**  
 Mechanical Advance  
 Chevy V8 89.95  
 Ford 289-302 99.95  
 Ford 351C-400 99.95  
 Ford 429-460 99.95  
 Mopar 318-360-360 99.95  
 Vacuum Advance  
 Chevy V8 99.95  
 Ford 289-302 109.95  
 Ford 351C-400 109.95  
 Ford 429-460 109.95  
 Mopar 318-360-360

**ON SALE**  
**ACCEL DUAL POINT DISTRIBUTORS**  
 Mechanical Advance  
 Chevy V8 48.95  
 Ford 289-302 51.95  
 Ford 351C-400 51.95  
 Ford 429-460 51.95  
 Mopar 318-360-360 51.95  
 Vacuum Advance  
 Chevy V8 69.95  
 Ford 289-302 79.95  
 Ford 351C-400 79.95  
 Ford 429-460 79.95  
 ACCEL 370000 Senior Racing Dual Point  
 Chevy V8 129.95  
 Ford 289-302 129.95  
 Ford 351C-400 129.95  
 Ford 429-460 129.95

**ON SALE**  
**MALLORY DISTRIBUTORS**  
 Dual Point  
 Mechanical Advance  
 Chevy V8 48.95  
 Ford 289-302 51.95  
 Ford 351C-400 51.95  
 Ford 429-460 51.95  
 Mopar 318-360-360 51.95  
 Mopar 383-440 51.95  
 Dual Point  
 Vacuum Advance  
 Chevy V8 69.95  
 Ford 289-302 79.95  
 Ford 351W 79.95  
 Ford 351C-400 79.95  
 Ford 429-460 79.95  
 Mopar 318-360-360 79.95  
 Mopar 383-440 79.95

**ON SALE**  
**UNILITE MECHANICAL ADVANCE**  
 Chevy V8 89.95  
 Ford 289-302 99.95  
 Ford 351W 99.95  
 Ford 351C-400 99.95  
 Ford 429-460 99.95  
 Mopar 318-360-360 99.95  
 Mopar 383-440 99.95

**ON SALE**  
**EDLEBROCK TRUE ROLLER TIMING CHAIN SETS**  
 Buick V6 7829 39.95  
 Chevy V6, 90" 7800 49.95  
 Chevy S.B. 7800 44.95  
 Chevy B.B. 7810 49.95  
 Mopar S.B. 7803 49.95  
 Mopar B.B. 7804 49.95  
 Ford S.B. 7820 44.95  
 Ford 390-428 7808 44.95  
 Ford 351C-400 7821 46.95  
 Ford 429-460 7830 49.95  
 Olds V8 7813 49.95  
 Pontiac V8 7812 46.95

**ON SALE**  
**SUPER COILS**  
 Your Low Price  
 Accel Supercoil 28.95  
 Accel Yellow 14.95  
 Superstock Mallory Voltmaster 29.95  
 Mallory Chrome 16.95  
 Mallory Pro Master 29.95

**ON SALE**  
**WIRE**  
 7mm Yellow Silicone 8.95  
 8mm Yellow Silicone 15.95  
 Straight or angle boots, copper or suppressed wire.  
**MALLORY PRO WIRE**  
 The Wire the Pro's Use  
 V8 Set \$24.95  
 Straight or Angle Boots  
 Copper or Suppressed Wire

**SPECIAL UNASSEMBLED 460 FORD**  
 SHORT BLOCK 10 or 11:1 COMPRESSION RATIO  
 Seasoned block, bored, oversized competition honed. Forged pistons, chrome molly rings, HD connecting rods, fitted chrome molly rod bolts, crankshaft custom ground and polished for precision timing. Your choice of hydraulic or solid camshaft, double roller timing chain set. Custom balanced for maximum performance.  
**YOUR LOW PRICE \$1095.00**  
 LONG BLOCK cylinder heads, competition valve job, hi-performance valve springs, HD locks, chrome molly push rods, hi-volume oil pump, gasket set.  
**YOUR LOW PRICE \$1395.00**

**TRW RACING PISTON SPECIAL WITH SPEED PRO MOLLY RINGS**  
 Chevrolet  
 327 12.00 \$299.00  
 350 12.5 \$299.00  
 Available Std. 030-060  
 Ford  
 289-302 12.5 \$299.00  
 Available Std. 030  
 Compression ratio based on early small chamber heads.

**ON SALE**  
**MOROSO OIL PANS**  
 Chrome Painted  
 SB Chevy 92.00 65.00  
 SB Chevy II 79.00 79.00  
 BB Chevy 106.00 77.00  
 SB Mopar 85.00 77.00  
 BB Mopar 88.00 68.00  
 SB Ford 139.00 112.00  
 351C 118.00  
 332-428 112.00  
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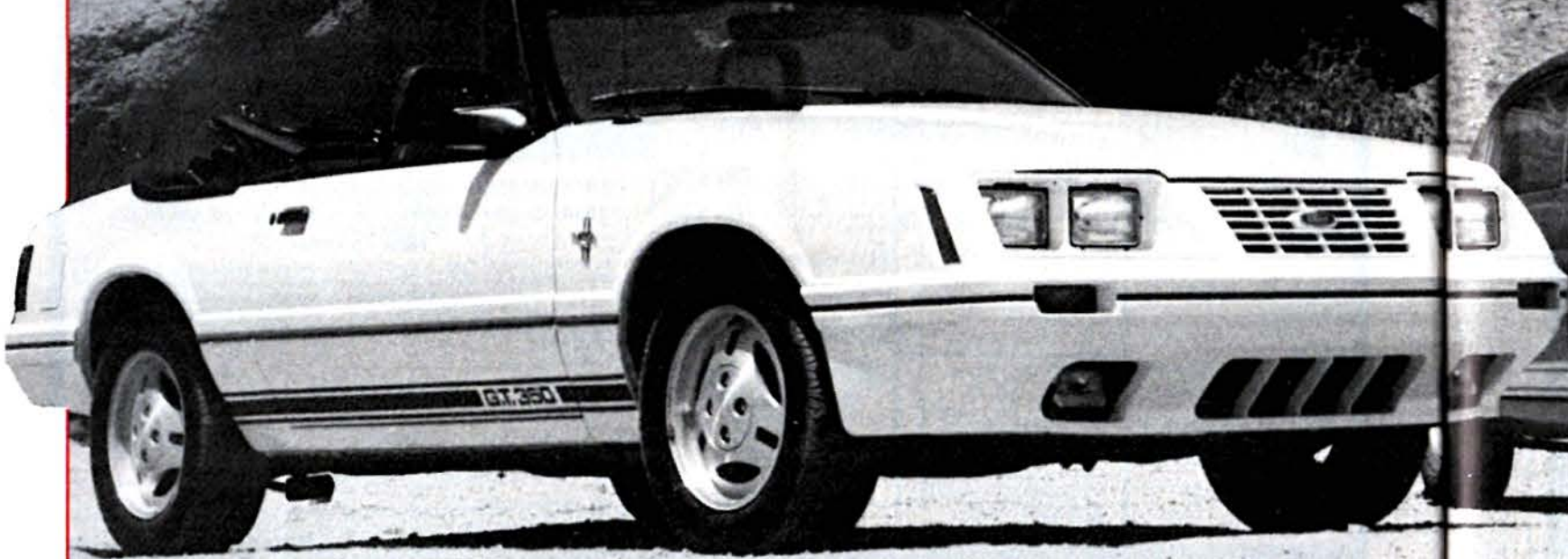
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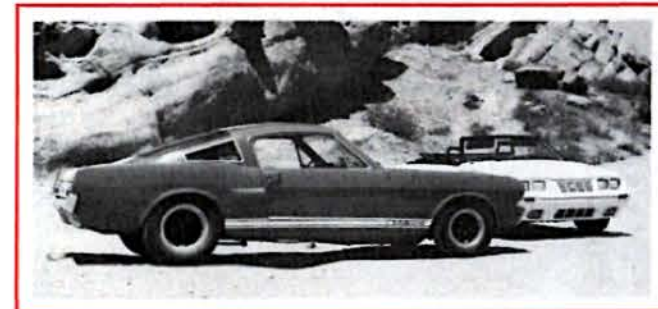
# The GENERATION GAP



## The GT 350's Twentieth Birthday

By David Ellis

**A**s you well know, performance is back, hotter than ever in the Eighties. We've rocketed out of the doldrums of the Seventies and are now being treated to the biggest influx of performance cars since the Sixties. The new cars accelerate, turn corners, brake hard, and knock down incredible fuel-economy figures. They're the end product of a long, arduous evolution that began when federal guidelines were imposed on the automakers. When you consider that a



new car must meet at least 150 federal specifications before it rolls off the assembly line, the fact that they work at all is truly miraculous. The new cars do everything well, but in terms of the "old" performance (i.e., straight-line acceleration) they are not spectacular. That poses certain problems.

A case in point is Ford's 20th Anniversary 1984 Mustang GT 350 and the 1966 Shelby GT 350. Direct numerical comparisons negate the most interesting points of both cars. With the '84 GT 350, it is a total driver's car with blazing (in Eighties' terms) acceleration, while the Shelby is a quick car with great (in Sixties' terms) handling. Is one better than the other? Have we lost something over the years?

Years ago, when power was the paradigm and fast quarter-mile cars reigned supreme, the Shelby was built as a no-compromise killer car. Aggressive styling was matched with the hardware to back it up—a 306-hp, 289ci small-block outfitted with an aluminum high-rise manifold and 715 cfm Holley carb, tri-y headers, and a beefed up suspension. Traction bars planted the rearend for that extra edge, while Detroit Locker gear sets were available for the stock Ford 9-inch. The list of options was awesome, includ-



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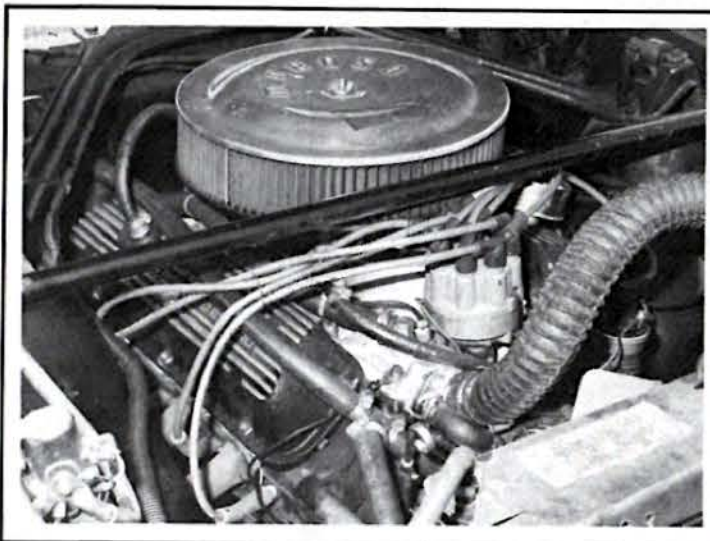
# GENERATION GAP



The '66 Shelby GT 350 cockpit is very spartan, reflecting its race heritage. Kaufmann's interior is almost factory original with the exception of the 8000-rpm tach and aftermarket steering wheel.

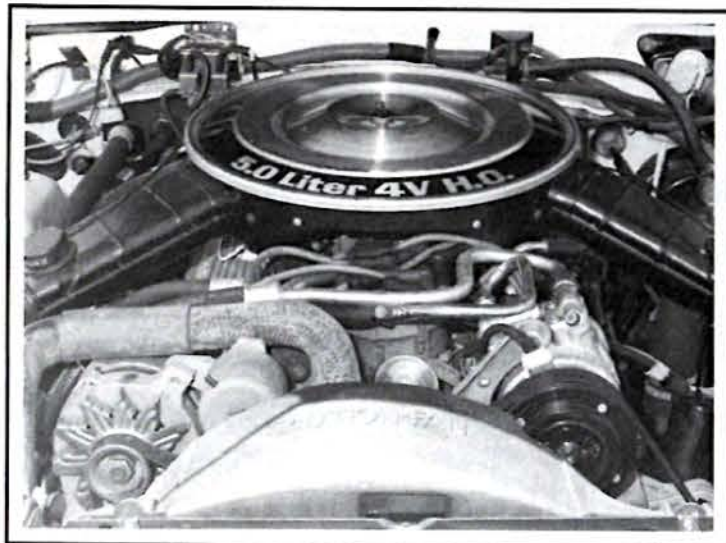


The '84 GT 350 interior is much the same as a stock Mustang GT. Real gauges (a luxury these days) grace the dash, along with an analog speedometer and tach.



The picture of simplicity, the Hi-Po 289 "K" engine was beefed up for high performance. Aluminum high-rise manifold, high-lift solid lifter cam, and a 715 cfm Holley pounded out the ponies.

High performance—Eighties' style. Tons of plumbing and complexity enables Ford to meet emissions and CAFE standards. Still, the engine packs quite a wallop.



ing a radical Paxton supercharger said to boost power output by 46 percent. The intended application was clear. The Shelby GT 350 characterized performance cars of its age.

Even Hertz Rent-A-Car got into the act, commissioning Ford to build 936 GT 350H cars for their Hertz "Sports Car Club" rental program. The black and gold cars could be rented by anyone who wanted to have a little fun on the nation's highways. There was even a little disclaimer on the instrument panel which read: "This vehicle equipped with competition brakes. Heavier than normal pedal pressure is required." There were 2500 Shelby GT 350's built in '66 including the 936 Hertz cars, six convertibles, and three all-out "R"-type race cars.

The 20th Anniversary GT 350 celebrates more of the name than the substance of the early supercar. Part of the reason is that the '84 GT 350 is little more than a reskinned stock 5-liter H.O. Mustang GT. Not that that's bad, it's just that it isn't an all-out specialty car like the original. A more accurate equivalent today would be the Mustang SVO. Talk about apples and oranges. The Shelby would knock the SVO on its tail in the quarter, and the SVO would put the Shelby on its roof in the first turn. See the problems we have trying to realistically compare current performance cars with their ancestors?

But we digress. As a performance car the GT 350 offers all of the pleasures of any 5-liter H.O. Mustang. The 175-hp engine packed plenty of punch through the gears, though the extra 250 pounds of weight for the convertible did put a damper on some of the acceleration. Still, there is no domestic car that has the same quality as a mashed-throttle Mustang. The L-69 Camaro and the '85 Vette may be objectively quicker, but there is something about that Holley 4-barrel kick in the pants that is very reminiscent of earlier days. The 3.27 rear gearing and close-ratio 5-speed provided a good mix of acceleration and economy. We had an opportunity to thrash both the '66 Shelby and the '84 GT 350's at Antelope Valley Raceway since resident Fordophile, Chris Kaufmann, was willing to flog his fire-engine red '66 Shelby for the cause.

Chris acquired the car in an advantageous trade almost a decade ago. The car was initially purchased as a road race car, then sold to a gentleman who wanted it for his wife. His wife refused to drive the 4-speed. An automatic was put in the car. She still refused to drive the car, so it sat for about three or four years. Chris found it and traded a pickup truck straight across for the Shelby.

The car was pretty well used up from its race days, although it retained almost all the stock components. The suspen-

continued on page 111

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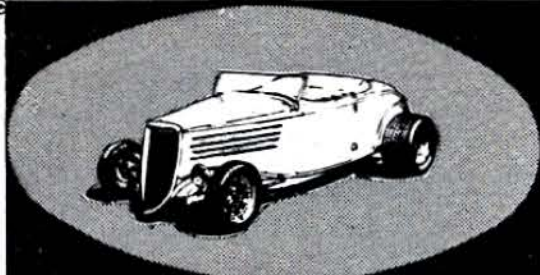
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# SILVER BULLET



## Unmasking a Blown Ohio Streeter



**R**ick Phillips is a patient man. He must be. He's owned this killer '67 Camaro since 1972 when it came home to roost in his Dayton, Ohio, garage as a scrapyard orphan.

Starting with a clapped-out race car whose abused background would make a social worker cry, Rick began the arduous task of restoring the Camaro's street dignity. First on the list was a strong foundation with a 6-inch narrowed 12-bolt, 4.88 Schiefer gears, and Lakewood traction bars and wheel tubs to enclose the monster McCreary 13x31x15-inch tires and Weld Wheels. Then a 4-point Lakewood rollbar was installed along with lightweight Solar bucket seats and a Mr. Gasket Vertical Gate shifter to actuate the "rock-crusher" M-22 trans.

With the rock-steady drivetrain in place, Rick added a Hays clutch and flywheel to handle the torque of a full-boogie 454. But Rick didn't stop with

just a 454. Atop the fat-block is nothing less than a 6-71 bolted to a Weiand blower manifold, with 1200 cfm of dual Holleys to feed those starving cylinders. Internally, the fat Rat features 8.5:1 pistons with a Crane cam to ensure proper valve action. Of course a blown 454 must also be able to exhaust all that pent-up pressure, and that's the responsibility of a set of 2-inch diameter Hooker headers.

While the horsepower is impressive, it wouldn't be as stunning if it were stuffed into ragged sheet metal. So Rick and friend Dennis Skaggs worked out the wrinkles, sprayed the car Lincoln silver, and then added blue hues on the Camaro's flanks along with a candy purple and brandywine stripe.

If there is one thing that Rick Phillips has learned from building his heavy-hitter Camaro, it's that patience pays off. In this case, with supercharged dividends. ☐

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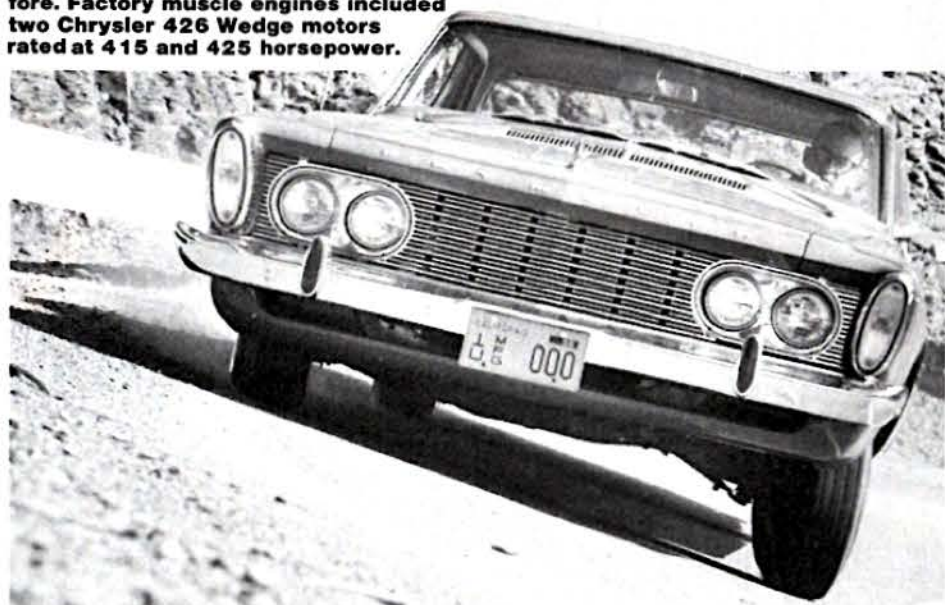




**1963: Bigger and Better than Ever**



Plymouth's lineup offered the same models for '63 as it did the year before. Factory muscle engines included two Chrysler 426 Wedge motors rated at 415 and 425 horsepower.



Offering the most power in the Buick line was the "new for '63" Riviera. An optional 425cid engine made 340 hp @ 6000 rpm.

# THE RACE IS ON!

By Todd Howard

You could best define 1963 as a year of refinement. The ground rules had already been set, the competition assessed, and the objective made simple: supply the people with the cars they want. In the early Sixties, power was the prime concern.

It doesn't take a financial wizard to realize the profits to be made by filling a void in the marketplace. While there wasn't actually a lack of performance options offered prior to '63, the sales charts still showed a continual climb in the public's quest for more gusto. Hence Detroit's Big Three (Chrysler, Ford, and General Motors) put forth their best when it came to satisfying the hunger pains of a youthful market in 1963.

The Chrysler Corporation retained its performance edge in 1963 by offering a lineup with the highest possible power-to-weight ratio, much as they did the year before. Not only were the cars lighter in weight than the competition's, they also offered one of the largest engine selections available, used jointly by both its Dodge and Plymouth divisions.

Popular Dodge chassis selections designed for heavy-duty engine options included the newly released 330, 440, and Polara platforms. Formerly designated as the Dart, Dart 330, and Dart 440, respectively, the revised models featured a restyled front fascia and smoother side panels. The Polara 500 was also considered to be a high-performance base despite the extra weight added by the lux-

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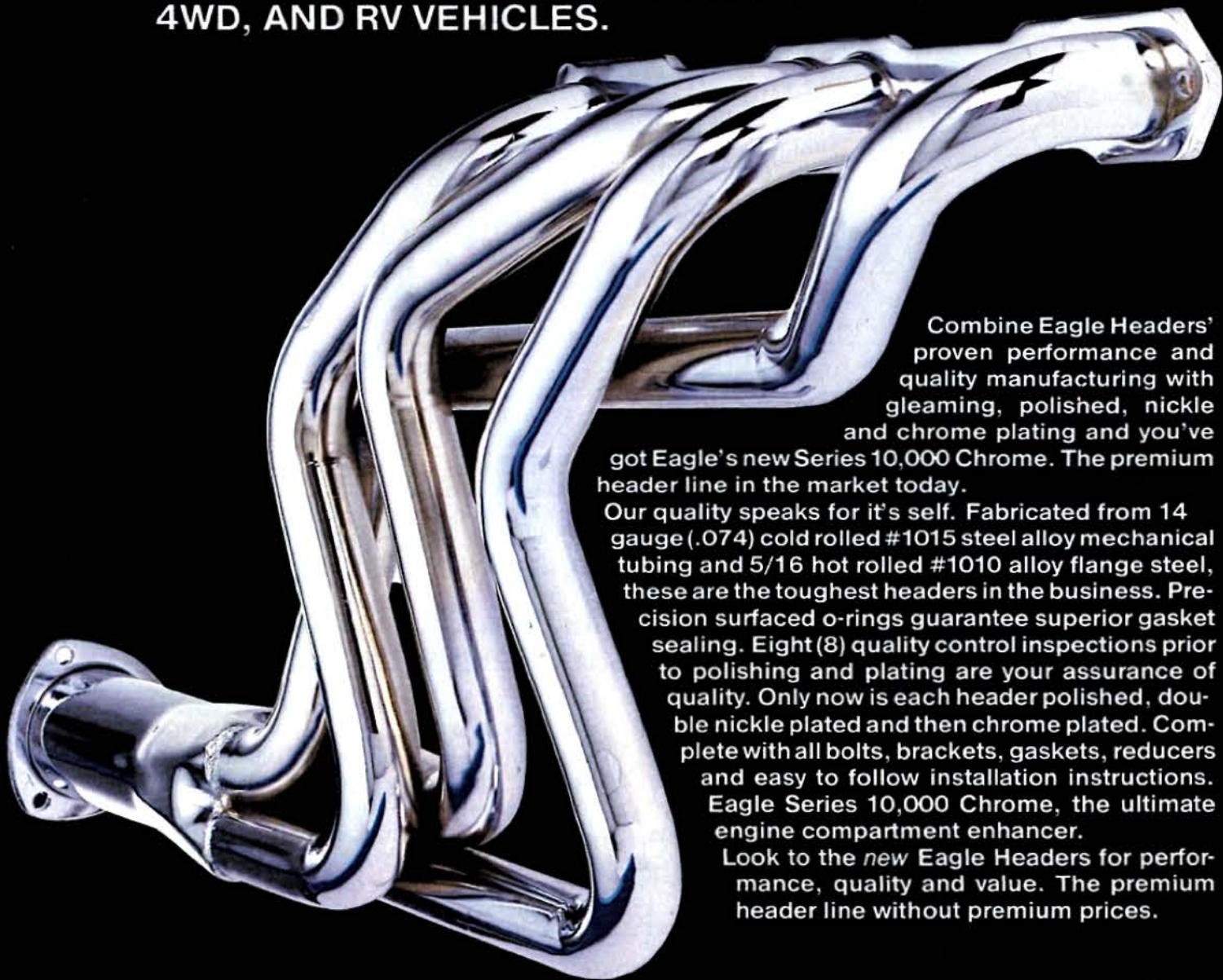
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## THE RACE IS ON!

*continued from page 82*

ury/sport coupe option. The Plymouth model line took on a major reconstruction as well, by replacing a majority of the sheet metal with cleaner sections. Performance cars for '63 included the Belvedere, Fury, and Sport Fury.

Probably the best jump Chrysler had on the competition was the famed Max Wedge 426-inch engine, introduced at the opening of the model year. The new 426 Wedge was offered in two versions: one featured 11.0:1 compression, twin 4-barrel Carter AFB carburetors, and solid lifters to develop 415 hp @ 5600 rpm, while the other bumped the compression to 13.5:1 and developed 425 hp at the same rpm. Designated as the Ramcharger in Dodges and the Super Stock II in Plymouths, the engine was released for sale with a half-year lead on Ford's 427 engine update (scheduled for '63½). While not dead yet, the 413 Wedge could still be ordered in detuned states of 340 and 390 hp. The difference in horsepower was attributed to the use of a single- or dual-quad induction system.



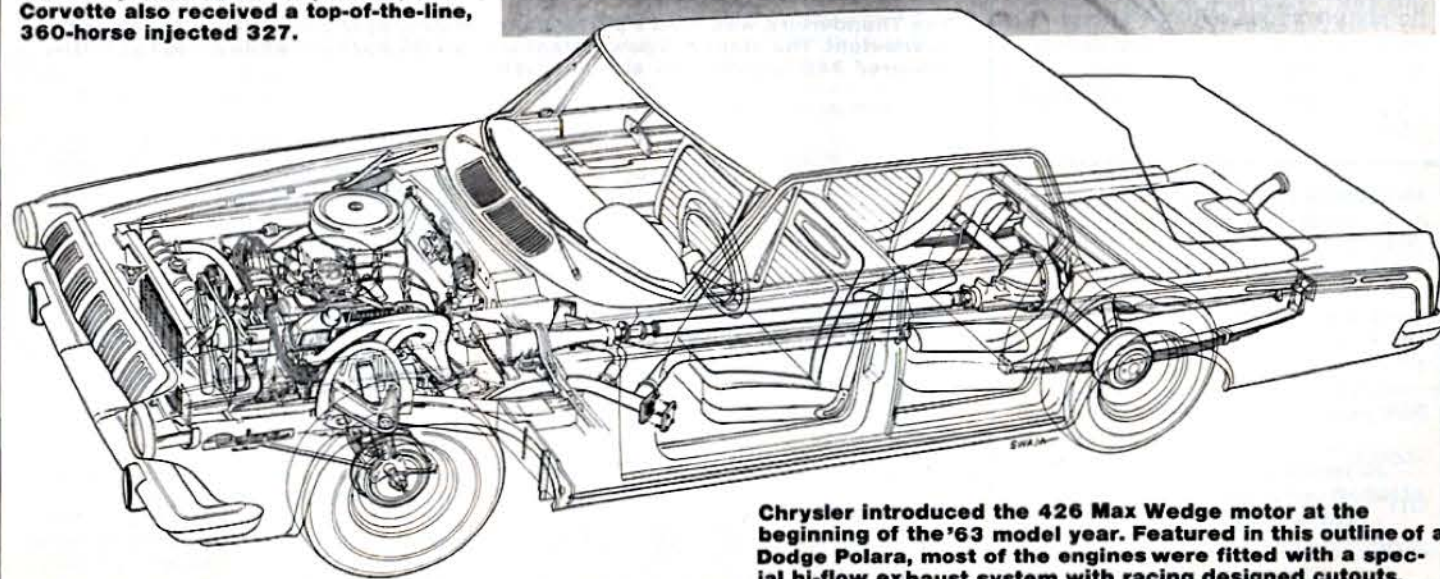
Along with a totally redesigned body and independent rear suspension, the Corvette also received a top-of-the-line, 360-horse injected 327.

A 383ci version of the B-block was also added for '63 and became very popular with the street crowd. Making 310 hp @ 4600 rpm was a 2-barrel, 10.0:1 version that replaced the 4-barrel-carbureted 318 of the year prior. With a 4-barrel, the 383 produced 330 hp. Other 383 power options included a single 4-barrel, 10.1:1 compression, 360-hp motor, and a 9.6:1 compression, 8-barrel, cross-ram manifold-equipped engine that generated a respectable 390 hp.

Ford and Mercury musclecars were still plagued with the overweight problem prevalent in '62. Still, production figures soared, with the Galaxie accounting for 46 percent of all Ford sales. Offerings included the standard Galaxie, a fancier Galaxie 500, and the most desired (although heavier in weight) Galaxie 500XL, featuring bucket seats and a floor-mounted shifter. Like Chrysler, Ford used the same basic engines in both the Ford and Mercury lines. Unchanged from last year were three versions of the 390cid engine: two with single 4-barrel Holley carburetors, while the third featured Holley tri-power induction. The single 4-barrel version developed either 300 hp @ 4600 rpm with 9.6:1 compression, or 330 hp @

5000 rpm with the Police package. The tri-power setup was a "T-Bird installed option only," accounting for 340 hp with its higher 10.5:1 compression.

The introduction of the 1963 model line left Ford with a smaller 406-inch engine to combat Chrysler's new 426, but that was soon rectified with a mid-year change—the new 427 big-block. Basically a .100-inch over 406, the new 427 was on equal footing with the opposition's high-horsepower offerings. The 427 was named the Thunderbird engine in Ford cars and the Marauder powerplant in Mercurys, and could be obtained in two "public" configurations and one "race-only" version. The two 427 engines available to the public featured either 410 hp @ 5600 rpm (derived from a single 4-barrel Holley and 11.5:1 compression), or 425 hp @ 6000 rpm (developed with the same compression and two Holley 540 cfm 4-barrels). The race-only 427 version, on the other hand, featured 12.0:1 compression and twin 600 cfm Holley carbs while still maintaining the street engine's 425-hp rating. All three 427 engines for 1963 were of the Low-Riser configuration, with the Medium- and Hi-Riser head designs to come later.



Chrysler introduced the 426 Max Wedge motor at the beginning of the '63 model year. Featured in this outline of a Dodge Polara, most of the engines were fitted with a special hi-flow exhaust system with racing designed cutouts.





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## THE RACE IS ON!

Again in '63, the full-sized Chevs proved to be the popular street cruisers, exhibiting only minor changes from the '62 models. Placing second in the low-weight wars behind Chrysler, a Chevy with the right drivetrain was hard to beat on the street. Probably the biggest engineering development to come from the Bow Tie manufacturer in this year, though, was the redesigned Corvette. A fastback model was added to the former "convertible only" sports car, as well as a totally restyled front-end featuring hideaway headlights for both models. A split rear window was also exclusive to the Stingray fastbacks of '63.

Performance-bred Chevy engines consisted of the 327 small-block introduced in '62 and the famed 409 that was first offered in '61. The 327 was a '62 carry-over item generating 300 hp @ 5000 rpm through the use of a Carter AFB 4-barrel, hydraulic lifters, and dual exhaust. The 409 was revamped for '63, however, with three different performance levels offered. The 340-hp version featured a single 4GC Rochester, hy-

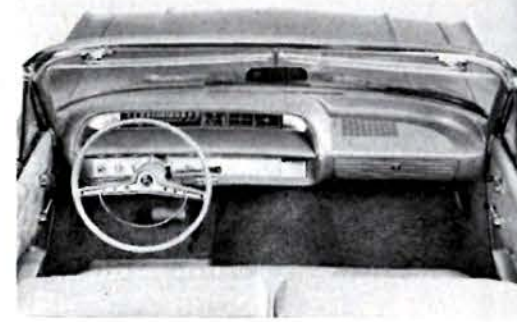
draulic lifters, 10.0:1 compression, and dual exhaust, while a change to solid lifters, 11.0:1 compression, and a Carter AFB yielded 400 hp @ 5800 rpm. The most powerful 409, though, developed 425 hp @ 6000 rpm with the mere addition of an extra Carter AFB fitted to an 8-barrel manifold. This accounted for the 1.04-hp-per-cubic-inch displacement (a figure topped only by the '63 fuel-injected, 360 hp/327 found in Corvettes).

Working to match Chrysler's displacement advantage, Chevrolet developed two 427ci blocks during 1963. The first was dubbed the Z-11, based on a bored-out 409 block, featuring 12.5:1 compression and providing 430 hp. Designed as a drag-race only engine, the powerplant was campaigned very successfully by Bill Jenkins throughout the '63 season. The other 427 motor, labeled the Mark II, was a totally redesigned canted valve big-block which saw limited NASCAR service before it was killed by GM corporate politics. However, the engine was to re-emerge in 1965 as the Chevrolet Rat motor we've all come to respect.

The remaining General Motors contenders in the race for horsepower supremacy were handicapped by excessive



The Thunderbird was Ford's performance luxury/sports car, although somewhat overweight. The standard powerplant was a 300 hp/390, while an optional tri-powered 340 hp/390 was also available.

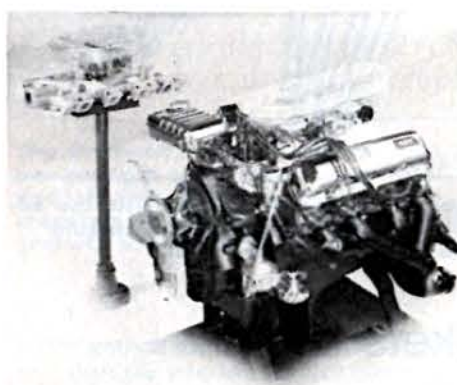


The Chevy Impala was probably the most popular car that spelled "performance" in the early Sixties. Potent motors included the 300 hp/327, a 340 hp/409 (new for '63), the single 4-barrel 400 hp/409, and the killer, dual-quad, 425 hp/409.

weight. Oldsmobiles and Buicks were the worst offenders, while Pontiacs were assisted somewhat with new and lighter engine-casting techniques.

The Pontiac performance lineup for '63 consisted of the Catalina, Bonneville, and Grand Prix; all restyled from the previous year. A host of new engines were also revealed. The single 4-barrel 303 hp/389cid engine was the only powerplant retained from '62, while a new tri-powered 313 hp/389cid was introduced. Also optional to Pontiacs was the 421cid big-block which was outfitted differently for '63. Two separate versions included the single 4-barrel carbureted 353-hp powerplant and the more powerful 370-hp offering, accomplished with the use of tri-power induction.

The end of the '63 model year marked the turning point in favor of a whole new generation of supercars. Just as the "Big Boy" combo of mega-inches in a full-sized car had been popular only a few years back, the time was right for the introduction of lighter-weight performance cars. Taking a lesson from the performance industry, the manufacturers began to see the advantages of putting high-horsepower engines into intermediate bodies, and in 1964, the intermediates would come of age! ☺



If you ordered Ford's most powerful engine in 1963, it could have been either a 406 or 427, depending on the time of year. The 406, available until midyear, could have been ordered with tri-power and 405 hp. New to the market in 63 1/2, though, was the 427 engine with single or dual-quad carburetion.



Offered with the optional early-model 406- and, later, 427-inch big-blocks, it's no wonder Ford's best seller in '63 was the Galaxie. Despite their excessive weight, the Galaxies still held their own on the street.

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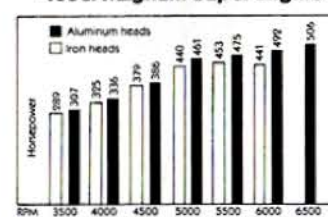
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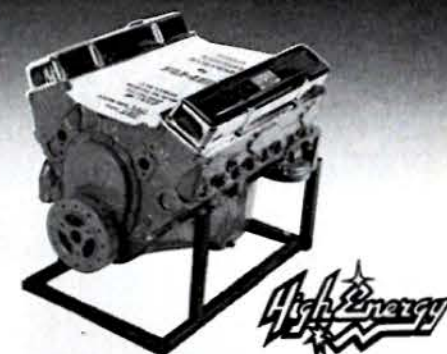
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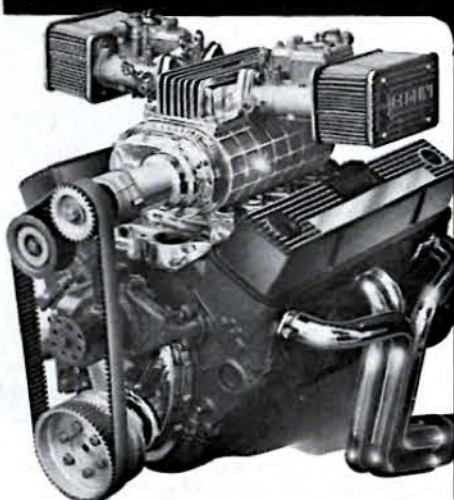
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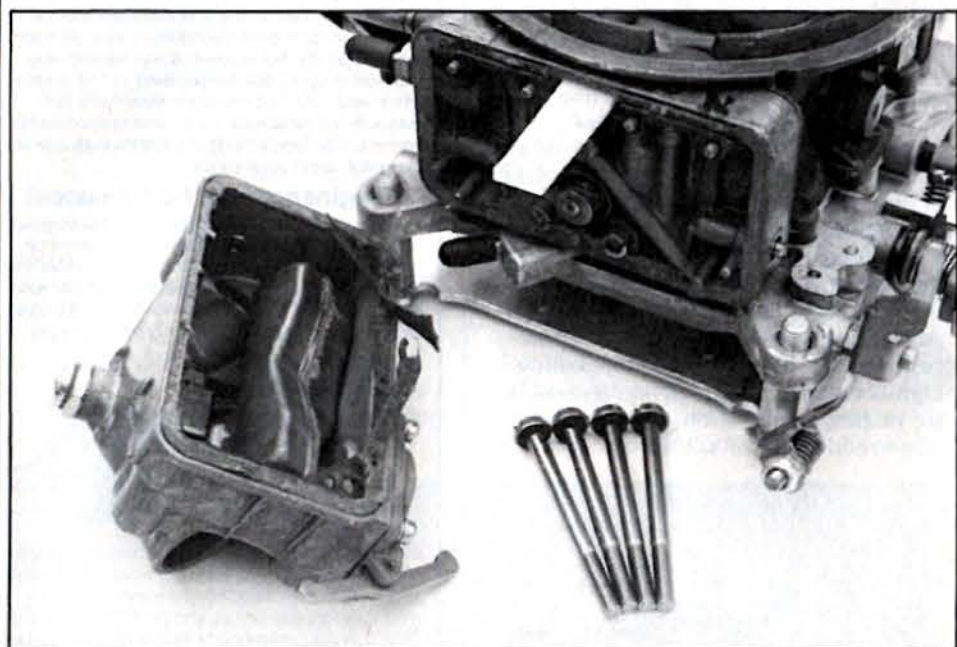
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How many times has this happened to you? It can be prevented with the addition of a set of Braswell synthetic rubber-reinforced gaskets. Shrinking gaskets and sticking float bowls can now be a thing of the past.

## Reusable Rubber Gaskets for the Serious Holley Tuner

By Jeff Smith

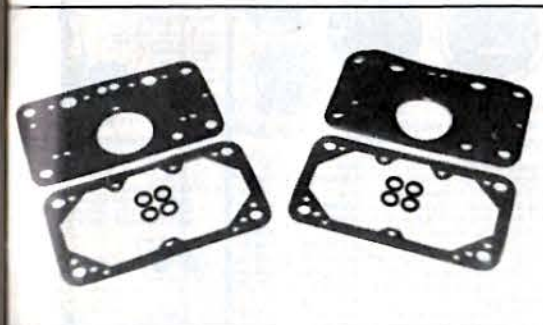
It's 7:30 on a Saturday night and your girlfriend is waiting for you to pick her up. So where are you? Leaning under the hood of your street cleaner, of course. You've decided to quickly change jets in the primaries of your 850 Holley carburetor. Then disaster strikes. The flimsy paper bowl gasket tears as you remove the bowl from the carburetor. And you don't have another gasket! As Karl Malden would say: What will you do?

If you flog on Holley carburetors, this has probably happened to you. But Dave Braswell, of Braswell Carburetion, has the remedy for the torn gasket blues. Dave has come up with a nylon-reinforced synthetic rubber gasket for both the two- and three-circuit Holley carburetors that eliminate this headache. The gaskets fit just exactly like the typical cork or paper replacement Holley

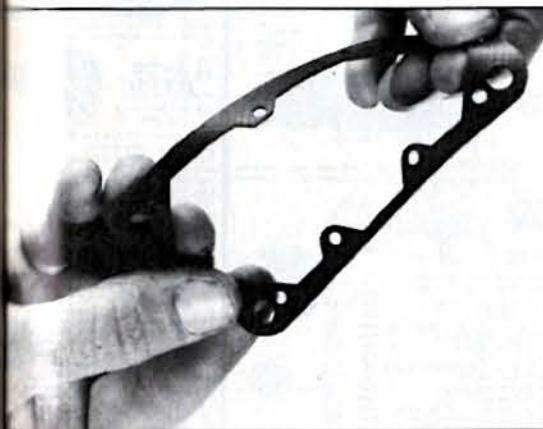
gaskets, but will last much longer and probably prevent many of the bowl gasket leaks that can afflict a Holley, especially after extended storage.

Braswell makes two different sets of gaskets, one set for the typical street performance Holleys, such as the 1850 600 cfm Holley, the 3310 750 vacuum secondary carburetor, and all of the Holley double-pumpers. The second style gasket is designed to be used with the race-oriented 4500-series Dominator carburetors. In addition, these gaskets are compatible with all fuels (including alcohol) and additives, and Braswell says the gaskets have been used successfully for an entire season of racing.

In addition to making the gaskets last longer, Dave has also improved upon the design slightly by enlarging the main fuel discharge passage. And all of the metering gasket holes have been carefully aligned to prevent restrictions. The gasket kit also comes with float bowl



Braswell offers their rubber gaskets for 4150- and 4160-series Holleys, as well as the competition-oriented 4500-series Dominator carbs. As an added feature, they are available in both two- and three-circuit versions.



The Braswell nylon-reinforced rubber gaskets are extremely flexible and will resist tearing, peeling, or cracking long after the paper or cork gaskets have failed.

screw gaskets that are much more resilient than the standard Holley pieces to resist the shredding and tearing that produce leaks.

Braswell Carburetion sells these gaskets in specific kits for your particular application, and are priced realistically at \$9 for a complete set. If you have a stable of Holley-equipped street or race cars, or are just into collecting rubber Holley gaskets, Braswell also has the gaskets available in bulk quantities. Should you value your time as much as you do your street machine, these carburetor gaskets may just be the ticket to eliminating some of the hassles of working with your Holley carburetor. However, now you'll have to come up with a different excuse for why you're always late when picking up your girlfriend. ☺

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## A Pair of Shining Early Supercars

# BLINDED BY THE WHITE

The intensity of the "horsepower wars" of the late Sixties could be attributed to one thing: competition. The Big Three and all of their inter-divisional rivals were locked in mortal combat on the track, in the streets, on the drawing board, and in the dealerships to produce and sell the most outrageous performance car possible. The competition kept the industry razor sharp. The performance image was well established, but it was the subtleties that made the difference. Take a good look at these two fine '69 street machines and you'll see what we mean. Both the Camaro and Firebird were leading performance cars. Similar in appearance and purpose, they reflected the whole range of performance options. The Camaro was to become the ultimate quarter-mile doorslammer, while the Firebird, though potent on the strip, was a standout through the esses.

Allan Strenkamp's blown '69 Z/28 is the more muscular of our two F-bodied fliers. His Dyer's blown 350ci small-block has been carefully built for the task—low-compression TRW forged pistons, a Competition Cams cam, and a full TRW valvetrain enable the motor to withstand the pressures generated by the blower. An Offenhauser manifold and a pair of Holley 600 cfm carbs provide the volumes of necessary fuel, while a pair of BlackJack headers handle the exhaust chores.

Allan's preference for quick escape velocities is reflected in the drivetrain. An M-21 Muncie 4-speed and a 4.10-geared Chevy 12-bolt rearend really spin the classic American five-spoke rims and BF Goodrich radial T/A tires. Rick Kroeger and Larry Streif teamed to make Allan's white hauler the hit of his native Dyersville, Iowa. Rick straightened out the body and applied the coats of white lacquer paint, while Larry designed and painted the distinctive candy stripes.

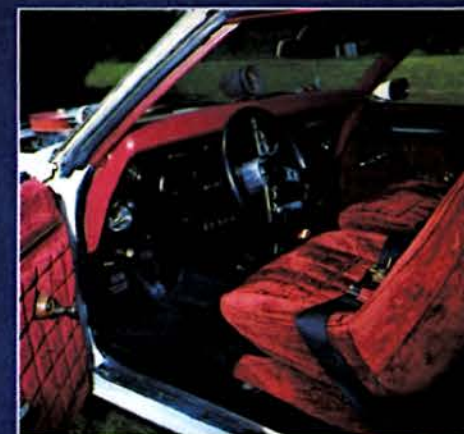
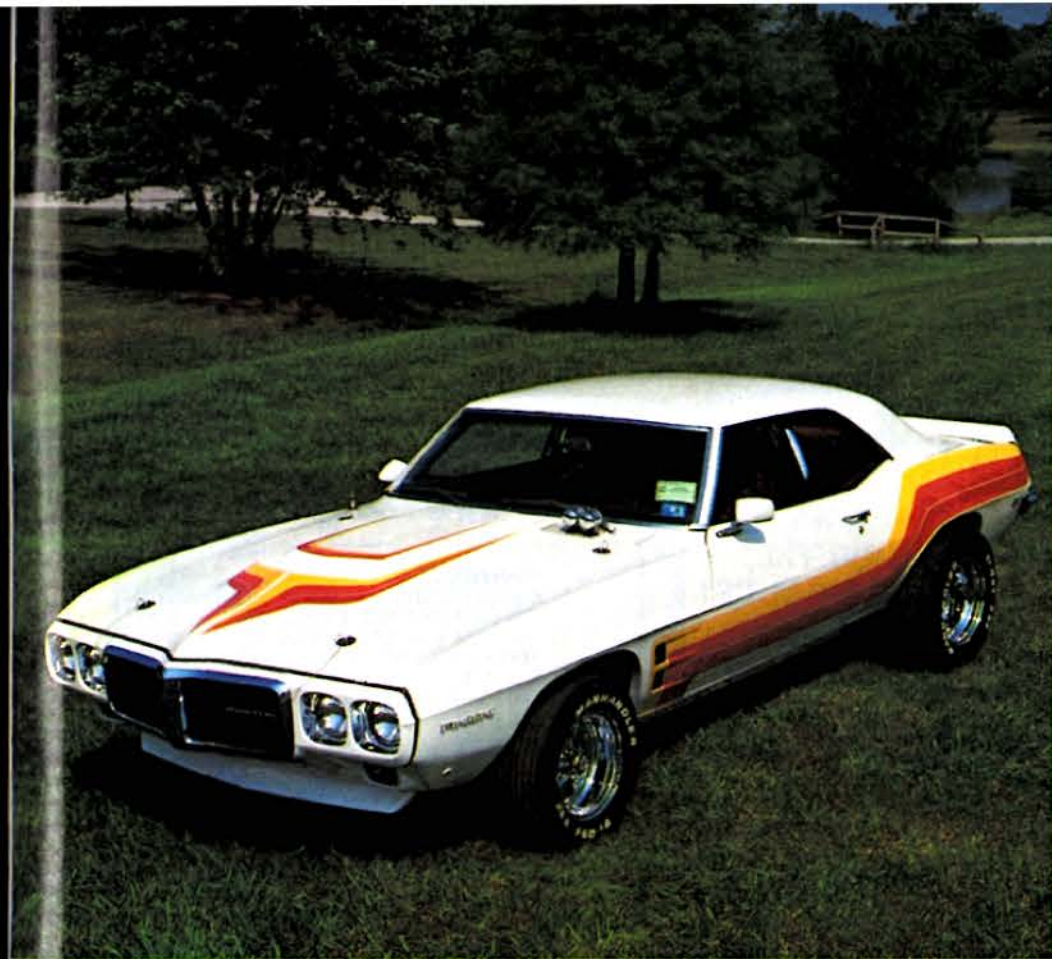
Cross-rammed F-body cars were the scourge of Trans Am racing back in the late Sixties. The race cars had it all—handling, acceleration, and durability, which is why the '69 Firebird of Bixby, Oklahoma's Paul Tryon has so much potential. Paul's car is indeed a rare 'Bird. The 400ci motor replaced an original Pontiac overhead cam six-cylinder, and has been built for maximum streetability. A pair of 400 cfm Carter carbs sits atop

a rare Mickey Thompson polished cross-ram manifold, providing fuel to the motor which has been built with parts from Arias, TRW, and Crane. A stock Pontiac set of intakes and exhausts resides in a pair of early Super Duty cylinder heads, while the exhaust gases exit via a pair of Cyclone headers. A Muncie M-22 4-speed and a positraction 4.11:1-geared 12-bolt rearend rounds out the drivetrain.

But there is more to this machine than meets the eye. You might wonder why someone would replace a rare engine like an OHC 6 with a 400ci big-block. Paul's street machine saw brief action as an all-out Bracket car. The Competition Engineering frame connectors and wheelie bars remain as an indication of the car's past life. But Paul has increased

the car's streetability by installing Monroe and Gabriel shocks and sticky Manhandler radials at all four corners. Front and rear spoilers, a fiberglass hood, and traditional rocket five-spoke aluminum wheels underscore Paul's performance predilections. "Candies & Pearls" applied the graphic white, red, orange, and yellow paint scheme to give the car its undeniable good looks.

As we mentioned earlier, it is the subtleties that make a big difference. Allan's car is all quarter-mile street machine, in keeping with Chevrolet's powerful performance on the strip; Paul's rather unusual Firebird reflects both quarter-mile performance and a bit of Pontiac's Trans Am-inspired design. Whatever your preference, it will be hard to find a nicer pair of vintage street machines. ☺



PHOTOS BY JON ASTER



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**HOLY MOSES!**

**An Inspirational  
429-powered Falcon**

By Greg Russell

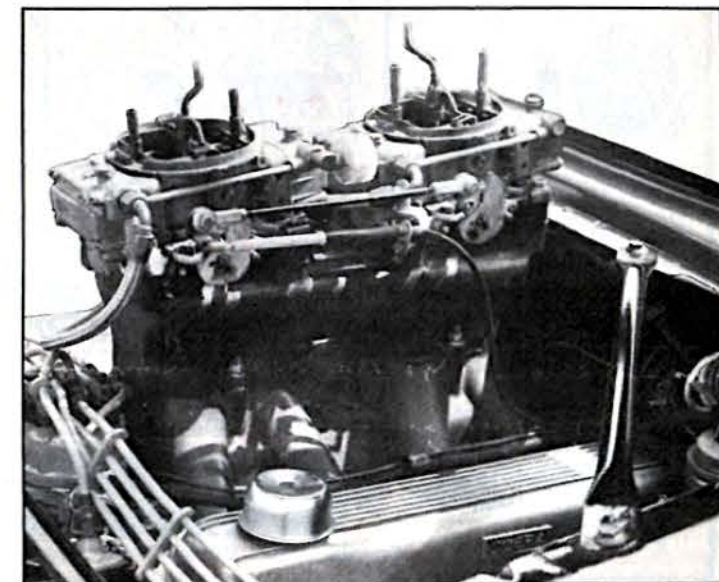
It's no big secret that the easiest way to build a really fast street car is to mate a large motor with a light body. Sanctioning association rules usually close that avenue to most class-legal racers, but out on the street there are no such constraints. Packing megacubes into tiny bodies is not a whip-it-out, whip-it-in affair, and many a brave soul has gotten in far over his head. However, Mark Moses is one individual well equipped to deal with the myriad problems involved with such a project. As

the owner of Moses Automotive in Toledo, Ohio, Mark did most of the work himself—and the result is nothing less than neck-snapping.

Most Ford enthusiasts pick Mustangs as the basis for engine swaps. But for a change of pace, and to establish the high visibility he desired, Moses chose a '64 Falcon Sprint instead. A 289 was as large a mill as Ford ever envisioned for the little bird, so a ton of strengthening was needed to ready it for the big-block 429. The frame mods were first in line with 2x3 tubing forming a ¼ rear sub-frame. Beneath those members rests a Merc 9-inch rearend chock full of Strange axles and 4.57 gears in a 4-pinion posi. An Alston full floater kit links the narrowed housing to Ford van leaf springs, while Competition Engineering torque links control the twist. Goodyear

Eagles measuring 26x15 inches on 15x12-inch Weld wheels grip the asphalt. Up front the stock suspension was trashed and replaced with Pinto components so Mark could benefit from the disc brakes and rack and pinion steering. More Goodyear rubber, 6.50x15's this time, and 15x3-inch Weld wheels are controlled by Monroe 50/50 shocks.

To attain the subterfuge factor Mark kept the body close to stock, although he did enlarge the rear wheel openings, fabricated the wheel tubs, exiled two batteries to the trunk, and narrowed a Mustang gas tank all in deference to the massive rubber. Aside from that, only the Bob Hogg-applied India Red lacquer is non-stock. The interior is pretty mild too. Stock seats face a filled dash equipped with a '65 'Stang gauge cluster and Auto-Meter gauges.





# HOLY MOSES!

All the aforementioned work was necessary to properly accommodate the star of the show, a 429 Super Cobra Jet. In original factory trim the SCJ was top-of-the-line with all the right parts like 4-bolt mains, beefy rods, and the like. Mark isn't a purist, needless to say, and had his own ideas on how to improve the package. Forged TRW 11:1 pistons replaced the stockers, and the reciprocating parts were balanced at Seaport Automotive. A huge 10-quart oil pan was fabricated to surround a Sealed Power high-volume oil pump, which eliminates

lubrication worries. Super Cobra's have great heads, so besides bringing all the chambers to spec, the only changes were TRW stainless steel valves and bronze guides. The stock cam was pitched and a General Kinetics solid lifter piece (.680 lift, 325 degrees duration) was substituted. Hefty 3/16-inch moly pushrods activate Harland Sharp roller rockers and Crane triple springs, while aspiration is via twin 660 Holleys on an Offenhauser tunnel ram. Lighting the fire was entrusted to a Ford dual-point distributor at the same time that homemade headers

whisk the leftovers into Corvair turbo mufflers. Turning all this FoMoCo fury into usable form is a '74 Lincoln C-6 automatic. Mark modified the unit by adding a 4000-rpm stall converter, a reverse-pattern manual valve body, and a '71 Mustang shifter, with Dana Corporation adding a 4-inch tube drive shaft for good measure.

Mark hasn't run his red rocket yet, but when we had the chance to take it for a ride the car showed true potential. After a hard launch and a trip through the gears, "Holy Moses" said it all. ☺



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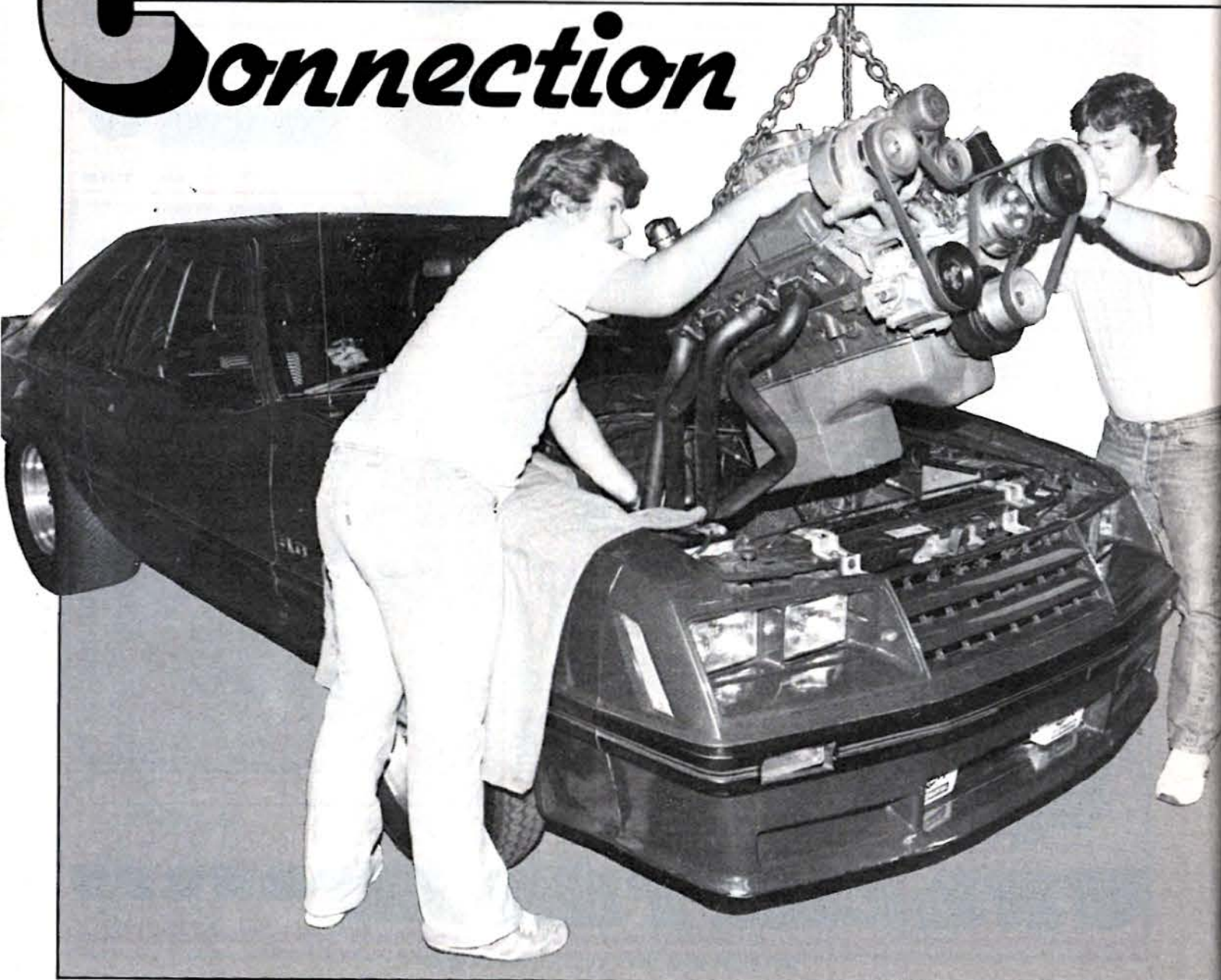
## Using Canted Valves to Unleash the Power in Your 289/302 Ford

By Todd Howard



The 351 2V Cleveland head is a natural for any 289 or 302 Windsor destined for street performance. While Ford originally designed the head for use with a 2-barrel carburetor, the port and valve sizes are better suited for mid-range power.

# The CLEVELAND Connection



**A**sk any knowledgeable performance enthusiast what it takes to go fast on the street and he'll tell you component compatibility is three-fourths of the battle. Tuning to compensate for mismatched parts is not the way to make optimum horsepower and torque.

But while Chevy lovers have always enjoyed the benefits of choosing from a multitude of part designs, the other guys haven't always had it as easy. Take the popular 289 and 302 Windsor small-block Ford applications, for example. Until recently, cylinder head port design limitations dictated one of two rpm operating ranges: low-speed street economy or all-out, 9000-rpm competition. Fortunately, a new intake manifold, manufactured by B&A Ford Performance has expanded the selection of cylinder head designs available to the 289/302 Windsor Ford enthusiast.

FoMoCo heads that are currently fit for duty include those from 289 2V & 4V; 302 2V & 4V; Boss 302; 351W 2V & 4V; and the 351C 2V & 4V engines. The 2V designation signifies heads engineered for 2-barrel carburetors, while the 4V name is given to heads made for 4-barrel carburetion. The difference lies in the size of the ports and valves which determines the most efficient operating range. Small ports and valves are favorable to low rpm/economy-minded driving, while large ports and valves are more conducive to high rpm, high-flow racing conditions.

Of the list of possibilities, though, only four heads are worth considering for performance street applications. These include the 289 4V, 302 4V, 351W 4V, and the 351C 2V heads. The others incorporate port and valve sizes either too small or large to obtain a powerband with a strong mid-range.

Further research on the subject will reveal that the stock 289 and 302 4V heads are still quite restrictive and require considerable porting for any serious performance attempts. Better are the 351W 4V heads used on '69-70 Windsor-based Fords; yet these castings still do not represent the best approach since the exhaust ports and valves are nearly the same size as those of the 289/302 heads. And with the limited two-year production of the small combustion chamber, finding 351W 4V heads in good condition is no easy task.

The last alternative, and one we decided to investigate, is the adaptation of a set of 351 Cleveland 2V heads to the Windsor small-block. While originally designed for use with a 2-barrel carburetor, the 2V heads are just about perfect in port and valve size to promote both good throttle response and stout per-

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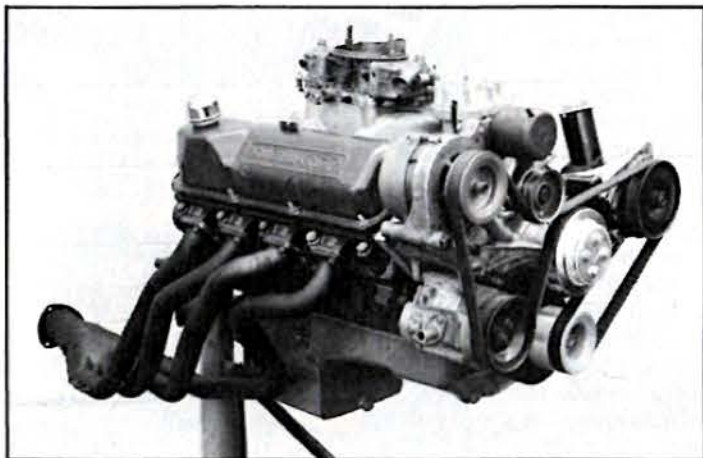
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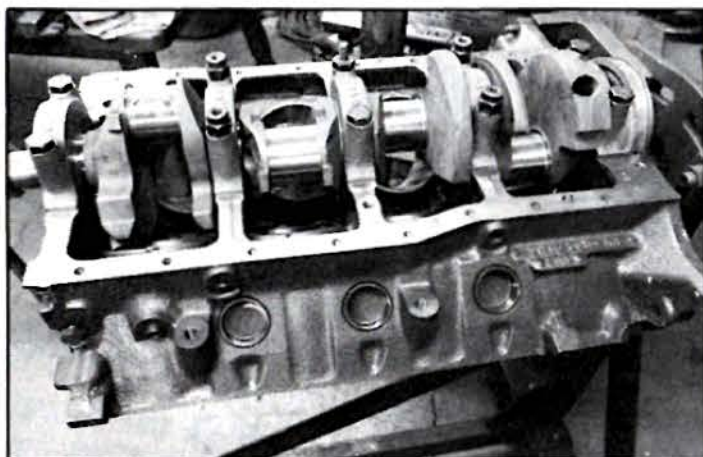
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formance when mated to a 289 or 302 short-block.

Additional benefits realized when switching to the Cleveland heads include excellent availability of used castings (the heads were installed on '70 and up, 2-barrel-equipped 351C, 351M, and 400M engines) and the fact that the valves were engineered in a canted position (similar to the Chevy big-block head) as compared to the vertical Windsor design. This in effect repositions the valves to promote better flow through a smoother valve seat-to-port contour. Commonly installed valve sizes in the Cleveland head range from 1.84 to 2.04 inches on the intake side and



Making the swap possible is a relatively new intake manifold sold by B&A Ford Performance. To test the theoretically optimum combination, we contacted Advanced Engineering West (AEW); they in turn built this complete engine with parts that would be compatible with the higher flowing heads.



Based on a 289 block, the engine was bored .030-over and line honed by Ray Engineering, located within the Downey Service Center. Though a Chevy man at heart, Ray Zeller agreed to machine the FoMoCo components as long as we didn't paint them blue beforehand. The crankshaft used was a standard nodular iron unit turned 10/10 undersize.



Since the Cleveland 2V heads incorporate a much larger combustion chamber than the Windsor heads, AEW installed TRW 9.5:1 compression, forged aluminum pistons to compensate. The stock flat-top pistons will yield 8.2 to 8.5:1 compression. The bearings and rings used were also TRW's, while the rod bolts are B&B Performance Sales items.

1.54 to 1.65 inches for the exhaust.

Ford's SVO division is currently selling an aluminum version of this head as well, for those who want to go that route.

Making the Cleveland head swap possible is a unique intake manifold manufactured by B&A Ford Performance that handles fuel distribution for 351C 2V heads bolted to a 289 or 302 Windsor block. Since the standard 289W or 351C intake manifold can't be used due to the dimensional discrepancies of the two blocks, this new intake manifold, named the Street Boss, was developed to give the Ford enthusiast what he wants in terms of optimum performance without sacrificing reliability.

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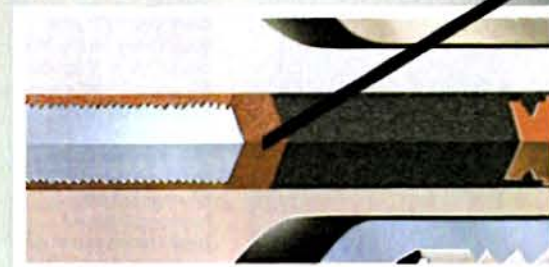
No other major American manufacturer uses copper here. (We do, because it's an excellent conductor of electricity.)

So, next time you change your plugs, why not choose the ones that offer you *all* the benefits of copper.

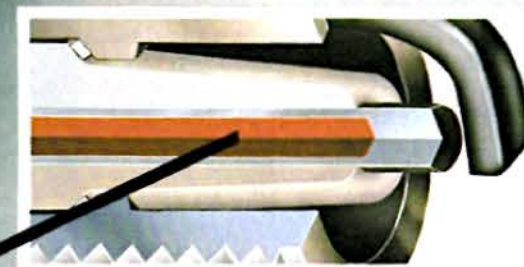
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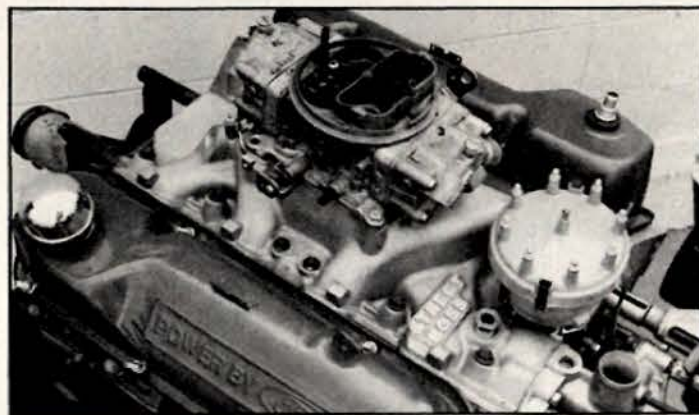
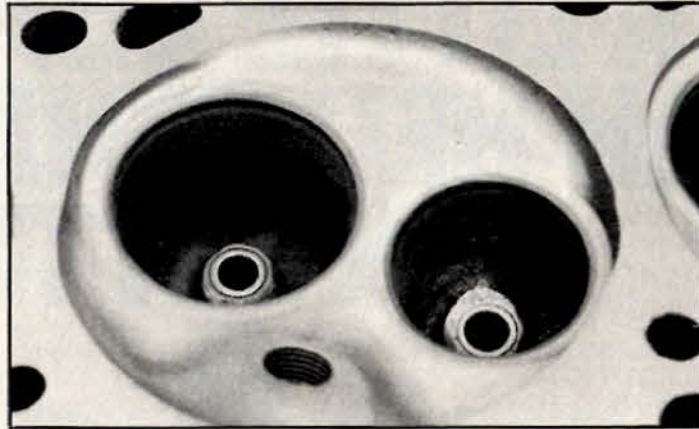
Copper in the seal helps your car run the way it was designed to.

## IF AUTOLITE'S ON IT, THERE'S COPPER IN IT.



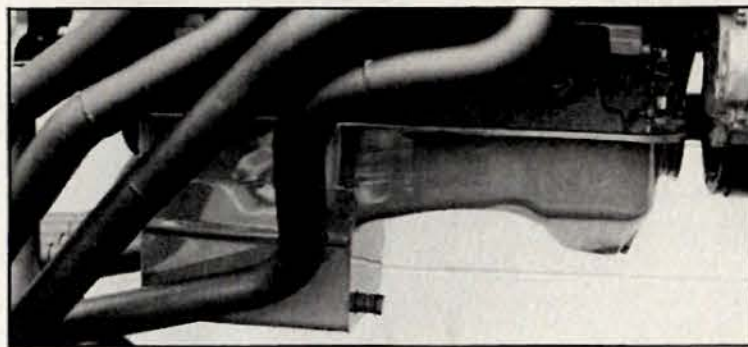
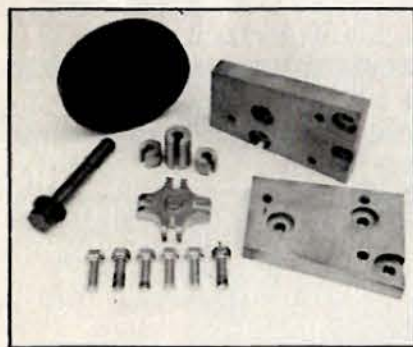


Manufactured by Cam Dynamics, the mechanical lifter cam installed measured out to 246/256 (intake/exhaust) degrees of duration at .050-inch lift with a total lift of .576/.583 inches. Although not necessary, Crane 1.6:1 ratio roller rockers were also employed, mounted on B&B Performance Sales rocker arm studs. The only special valvetrain components required for the Cleveland head swap is a set of 3/8-inch, Boss 302 pushrods.



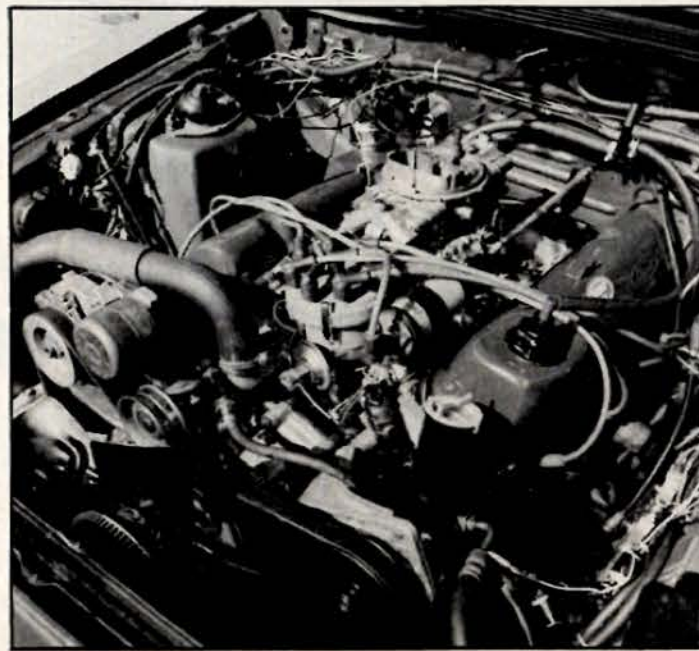
In addition to blocking off two water passages, as described in the B&A Ford Performance catalog, the heads were given a quick street porting. This involved removing the valve pocket ridge and deburring the port walls.

The key to a successful Cleveland head swap is the Street Boss intake manifold, since neither the 351C nor 289W manifolds can be used due to dimensional discrepancies in the two blocks. The new manifold is of a 180-degree, split-plane design. Carburetion is provided by one of Holley's 830 cfm annular discharge double-pumpers.



After learning of its availability, we decided to test the manifold/head combination in order to determine the real potential of this theoretically optimum merger. The test car chosen was our project '82 Mustang, last shown roughly a year ago in a Ford performance series. Advanced Engineering West was contacted to perform the swap and associated mechanical rigors—which entailed building a bulletproof, .030-over 289 and bolting it to the 5-speed manual transmission and 9-inch differential installed last year.

After the buildup was completed we proceeded to back up the applied theory with some actual test results. Performed on the Bracket strip at Riverside International Raceway, the ponycar sped through the traps in 13.30 seconds at 105.5 mph. This time was the result of merely three passes! As far as drivability is concerned, the combination exhibited excellent throttle response and



To retain the factory serpentine belt system installed on our '82 Mustang (far left), we opted for one of AEW's Cleveland head serpentine adapter kits as well. Headers for Cleveland head-equipped Ford blocks (left) installed in '79-84 Mustangs are now being manufactured by Hedman, which feature a flat collector for increased ground clearance. Also available as an option for '79-84 Mustang installations is a 7-quart oil pan that comes complete with an extended pickup. We chose it as well as an AEW blueprinted high-volume/high-pressure oil pump along with one of Ford Power Parts' heavy-duty oil pump drive rods to replace the weak factory piece.

## Gain 100 to 200 Horsepower with a High Energy MAGNUM CAM SYSTEM!

Competition Cams' High Energy MAGNUM Cam Systems are a step Up in horsepower over standard High Energy Cams.

MAGNUM Cam Systems are designed for true High Performance enthusiasts. MAGNUM cams may not provide the mileage gains and complete "streetability" of High Energy Cams, but they will outperform all other Hydraulic "Street" type cams on the market.

Below are independently performed dyno tests on a completely stock 350 Chevy engine with the various High Energy and MAGNUM cams tested. Higher performance gains can be expected when installing a complete cam system, as we will demonstrate later in this ad.

Regardless of what you may read in some camshaft company's comparison advertising, when the chips are down and an engine builder's reputation is at stake, Top professionals choose Competition Cams because they have proven beyond a shadow of a doubt to be the most powerful camshafts you can buy, PERIOD!

HIGH ENERGY CAMSHAFT DYNO TESTS 350 CHEVY ENGINE.

CAM	STOCK	H.E. 252	H.E. 260	H.E. 268	H.E. 280	H.E. 292	H.E. 305
MANIFOLD: CHEVY H.P. ALUMINUM							
CARBURETOR: STOCK QUADRAJET							
RPM	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.	H.P.
2500	155	162	169	157	155	150	149
3000	189	199	202	196	197	189	187
3500	220	232	236	232	236	199	229
4000	242	269	276	276	281	282	281
4500	253	284	289	288	297	312	315
5000	246	286	291	310	325	337	350
5500	230	264	286	296	334	342	351

Nationally known Engine Builders stake their reputations on Competition Cams!



Take John Lingenfelter for example. In the April 1984 Car Craft Magazine feature on Lingenfelter Racing's Mail Order Engines, John states: "Cam selection is easily the most critical decision to be made on a street engine."

John selects Competition Cams for his own race cars and for his customer's engines.

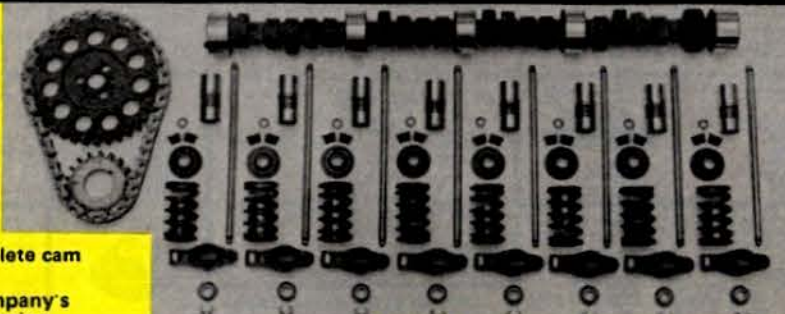
WHY? Because John Dyno tested our cams against his previous brand of cams and found Competition Cams to be more powerful on the dyno and more power on the Dyno means more power in your car. John's business and reputation are based on the performance of his engines in customers' cars. John wants every edge he can get over his competition because he wants to prove he builds a more powerful engine than his competitors. Here are some readings from John's dyno tests. Lingenfelter Racing, (219-724-2552) 350 Chevy Mail Order Engine, (\$1595). 8.5 to 1 compression, 8156 Holley carb, Edelbrock Performer manifold. John sold one of these to a fellow with a stock 82 Corvette and it ran 110 MPH in the quarter with a 3.08 gear, stock exhaust, etc.!

- @5,500 RPMs H.E. 280 Magnum cam, 385 HP = 155HP over stock!
- @5,500 RPMs H.E. 305 Magnum cam, 409 HP = 179 HP over stock!
- 383" engine (350 blk. 400 crank) same induction & compression.
- @5,500 RPMs H.E. 280 Magnum cam 404 HP = 174 HP over stock!
- @5,500 RPMs H.E. 305 Magnum cam, 434 HP = 204 HP over stock!

Racing Head Service, Memphis, TN. is the nation's largest supplier of Mail Order High Performance engines. Here are their dyno test figures on a 400" High Energy Engine with 10 to 1 compression, Victor Jr. manifold, 750 Holley carb.

- @5,500 RPMs H.E. 280 Magnum cam, 391 HP = 161 HP over stock!
- @5,500 RPMs H.E. 292 Magnum cam, 417 HP = 187 HP over stock!
- @5,500 RPMs H.E. 305 Magnum cam, 425 HP = 195 HP over stock!

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Take Waddell Wilson for example. Waddell is the Nation's most well known NASCAR Grand National engine builder. Waddell's engines have been the most powerful being on the Daytona 500 Pole SIX YEARS in a Row including this years Winner, Cale Yarborough!

Why does Waddell choose Competition Cams when we are Not even a NASCAR Sponsor?

Because each winter, Waddell does Dyno tests to see which brand of cam produces the most horsepower on his dyno with good valve train stability. Waddell knows the cam that produces the most power on the Dyno will create the Most Power in the Race Car. Six years in a Row, Competition Cams have won Waddell's dyno shootout. Six years in a row, a Competition Cams engine has sat on the Daytona 500 Pole. Again in 84, the only cars over 200 MPH had Competition Cams.

In a league where cost is absolutely no object, and the only important factors are to be the Fastest reliably, in a class where only the best possible will do, Waddell Wilson stakes his reputation as the World's Fastest NASCAR engine builder by relying on Competition Cams. Shouldn't you rely on us too?

Why you need the whole Cam System.

Because each and every piece is unique and tailored exactly for a specific application to increase performance & reliability.

**LIFTERS:** Not all lifters are created equal. Look closely and you will see High Energy Lifters have a larger oil hole than others and closer tolerances to insure adequate oil to the high pressure chamber to prevent lifter collapse and noise.

**TIMING CHAIN SETS:** High Energy MAGNUM Timing Chain sets time your cam properly AND feature a machined 1144 Bar Stock STEEL crankshaft gear for maximum reliability!

**PUSH RODS:** High Energy Push Rods feature a one piece construction to increase reliability & strength.

**VALVE SPRINGS:** High Energy MAGNUM valve springs are specifically designed for each particular application insuring maximum performance and reliability for thousands of street miles.

**C.C. SUPER LOCKS & RETAINERS:** These PATENTED locks and retainers are the strongest made. Used by more racers than all other brands of locks and retainers combined! Steel construction.

**NEW MAGNUM ROCKER ARMS:** Introducing a revolutionary Street High Performance rocker arm featuring a Roller Tip for reduced valve stem wear with high lift cams, and a 1.52 to 1, or a 1.6 to one rocker arm RATIO for maximum performance. Do you realize Chevy rocker arms are not the stated 1.5 ratio, but actually 1.42 to 1.45 which means about .030 less valve lift. That's a lot less power!

The Low, Low Price on these rockers will amaze you and the performance gain they provide over stock rockers is truly astounding! Dyno tests on a 406" Chevy with a High Energy 268H cam.

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Max H.P. 385 @4750	Max H.P. 403 @5000
H.P. @5750 = 340 H.P.	H.P. @5750 = 372 H.P.

If you want Real Power & Performance for your car, do what Bob Glidden, Frank Iaconio, Billy Meyer, Cale Yarborough, & Big Foot do, stake your reputation on a Competition Cams' Camshaft System!

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more torque than either a pair of Mickey Thompson Sportsman street tires or Mickey Thompson 9-inch slicks could handle at the line.  
These results shouldn't be considered the performance limits by any means, however. Since time limitations prevented us from optimizing the jetting and rearend gearing before this issue went to press, we feel confident that the e.t. could be significantly reduced with some simple tuning. By the time you finish reading this, Advanced Engineering West will have also tried a host of different componentry to determine the most compatible parts combination with this set of heads. A few changes planned include trying a smaller carburetor and switching to a camshaft with slightly more duration based on a 108-degree centerline. We'll keep you posted!



After trying a set of Mickey Thompson Sportsman L60-15 street tires mounted on Center Line 15x8 1/2 wheels, we quickly opted for a pair of Mickey Thompson 9-inch slicks, which still couldn't provide enough traction with the high torque output of the new engine.

At Riverside International Raceway's Bracket strip, the untried engine combination turned a respectable 13.30 at 105.5 mph. Not bad for a powerplant that had yet to be fine-tuned!



**SOURCES**  
Advanced Engineering West  
12418 1/2 Benedict Avenue  
Downey, CA 90242  
213/803-3677

**B&A Ford Performance**  
Box 6553  
Fort Smith, AR 72906  
918/626-3997

**B&B Performance Sales**  
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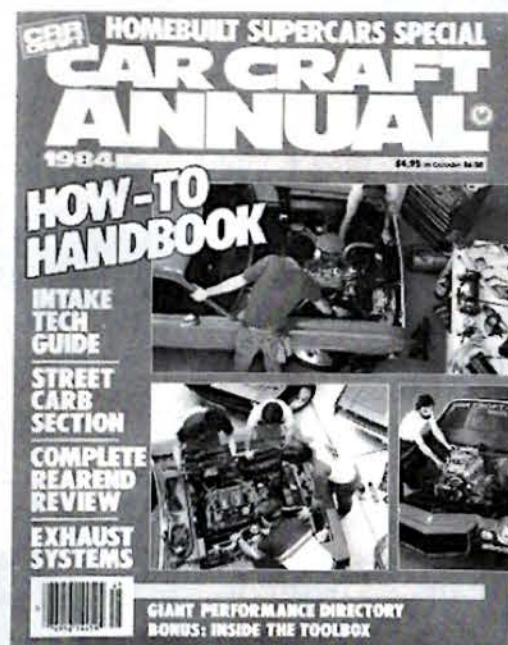
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## Candy 'Cuda

**H**ow many candy-coated cars have you seen that couldn't hold their own on the street (much less on the dragstrip)? Perhaps their supercoated exterior was hiding a multitude of underhood sins.

Victor Hughs' 1970 'Cuda is an exception, and is exceptional indeed. This brandywine painted Mopar was united with a high-output drivetrain to making a good thing better.

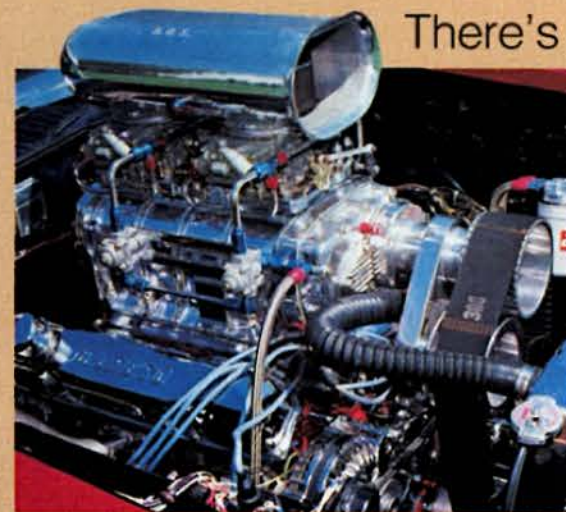
Motivated by the awesome powers of an 850 Holley inducted, 6-71 supercharged, Isky cammed, Stinger fired, and

Hooker exhausted 440RB Chrysler mill, the homebuilt 'Cuda is nothing short of potent throughout its entire powerband.

Improving the strong torque of the 440 engine is a pair of heavy-duty, final-drive elements consisting of a 727 Torqueflite auto trans and 8¾-inch differential. Transferring the power to the pavement is a set of M&H Street Masters mounted on Center Line alloy wheels.

Clearly this Plymouth is more than just a candy-coated cruiser. In fact, this is one treat that is strictly for adults. ☞

There's More to this Plymouth than Meets the Eye





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itself. For more information and the location of your nearest dealer, call 1-800/227-7016. In Michigan, call 313/227-1400 and ask for Customer Information or write to Cars & Concepts, Inc., 12500 E. Grand River Ave., Brighton, MI 48116.



1) Skylite T-Roof (1973-81 models). 2) Wood Instrument Panels (Camaro and Firebird). 3) Skylite Pop-up Sunroof. 4) Skylite T-Roof (1982-86 models). 5) Hurst Shifters. 6) Sport Hatch. 7) Cruise Control (for automatic and manual transmissions).



## MUSTANG GT350'S

continued from page 77



sion was left just the way Shelby intended. Chris freshened up the Hi-Po 289 with rings and a valve job, and installed a new cable linkage McLeod clutch after trading the automatic for a Top Loader 4-speed. To help with the launch, a Detroit Locker 31-spline 4.11-geared differential and 31-spline rear axles were put in place. With 40,000 original miles on the clock, it looks and runs like it did over a decade ago.

Once at the track we were surprised by its strong performance. The car was never really set up for drag racing; it could have been rejettied, the suspension fine-tuned, etc., but the 2940-pound car ran a blistering 14.24/104.28 (corrected). It would have run stronger if we could have eliminated the extreme wheel hop that crippled every pass. Although Chris tried removing the traction bars and stiffening the Koni shocks, it was to no avail. Still, low 14's out of the box is darned respectable for any car.

As for the '84 GT 350, it too had problems getting down the track. Excessive wheelspin was the culprit. Even sneaking off the line and nailing the throttle robbed precious time. Still, with the catalytic converter and mufflers in place, extra convertible weight (total curb weight around 3250 pounds), and the 150 or so federal regulations satisfied, the car pulled really well—15.83/87.59 (corrected). We can only imagine what the car would have been like with the 212-hp '85 roller valvetrain powerplant in place. It might have been a race! Still, if you're contemplating buying one of the 5000 '84 GT 350's that will be made this year, you won't be disappointed by the car's performance.

So back to the question at hand. Have we lost something over the years? Has the generation gap left the glass half empty? Hardly. It would be interesting to see how the Hi-Po 289 would respond with all of the handicaps the 5-liter '84 must carry. We can only guess, but it is our feeling that it would be similar to the new Mustang's performance, if not worse. And when you throw in the superior fuel economy, ride quality, and handling that the new '84 GT 350 exhibits, we'd have to call this a dead heat. They're both charismatic, fun to drive, all-American performance cars. ☐



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## MOROSO OCTANE BOOSTER™

No engine can live with detonation. High compression racing engines are quickly destroyed by this unseen agent of destruction. Performance street machines suffer slower, but just as fatal results from knocking and pinging (detonation).

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## BIG-BLOCK MOPAR

continued from page 46

without serious loss of power. The cam was installed on a 108-degree intake centerline and required the use of a five-degree advance offset button.

A set of DC hydraulic rocker arms on TRW rocker arm shafts (using Crane steel retainers and locks) actuate the oversize valves. Bagshaw found that the best valve spring for the engine was in fact recommended as a replacement part in smaller "A" blocks (PN 3412068). The spring originally called for required the machining of the inner spring set and shortening the dampener between the inner and outer coil spring so that it wouldn't coil bind! The installed height of the substituted unit is 1.725 inches, yielding 360 pounds open pressure at .500 -inch -lift. The real benefit, was in skipping the machine work.

Clean, easy, and effective. The perfect combination.

If anything, Bagshaw used the 440 as a testbed for verifying much of the information found in the Direct Connection Performance Book—and discovered, with the lone exception of the valve springs, that it was right on the money. Bill completed the powerplant with the addition of a DC mechanical tach drive ignition conversion kit (PN P4286512), DC 8mm plug wires, a Pro Parts electric water pump drive kit, and Milodon oil system. A box-stock Holley Street Dominator intake manifold and Holley 750 cfm double-pumper capped it all off.

The only question was, would it run... and how hard? Would you believe

511 horsepower at 5500 rpm?! The only changes made to the engine once hooked to the dyno was to block off the heat riser in the intake manifold; that alone was worth 26 horsepower. Even more important from the street angle, however, are the torque readings. Optimum torque (and with it, maximum fuel efficiency) came in at just a thousand rpm lower; 522 lbs./ft. at 4600 rpm. There's enough stump-pulling power in this mill to fell a redwood!



Bagshaw's homework in crafting the optimum street Wedge has been assembled in one package, offered by Pro Parts. For \$1195, the Pro Parts "Super Street" kit includes everything necessary to build a 500-horse street 440 (you provide the block, heads, crank, rods, and induction and ignition systems).

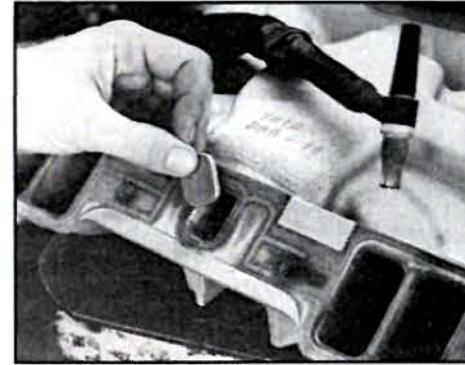


Pro Parts' Kim Welch and Bill Bagshaw ready the Wedge warrior for the moment of truth. Using a box-stock carburetor, the 440 produced 511 horsepower at 5500 rpm, and torque readings of 522 lbs./ft. at 4600 revolutions per minute!

### DYNO RESULTS

ENGINE RPM	HORSEPOWER	TORQUE
3000	255	448
3500	323	483
4000	391	509
4500	453	522
5000	487	514
5500	511	481
6000	496	434

What's more, it's relatively docile. And, it can be repeated *ad infinitum*. The parts are all either stock (and on a 440, that translates into heavy duty), Direct Connection, Crane, or TRW; all proven performers in one cohesive package. And that's the key. The entire package, by the way, is available directly from Bagshaw's Pro Parts outlet. Remember Bagshaw's goals? You should; he met or exceeded every one of them. Reliability. Economy. And Power. ☺



During the dyno run, Bagshaw blocked off the heat riser in the intake manifold with this machined aluminum plate; DC offers a package (PN P4120476) that accomplishes the same thing by incorporating a stainless steel manifold block-off at the gasket. The dyno revealed this one change to be 26 horsepower!

### CYLINDER HEAD SWAP SHOP

While there are some major variations between Mopar low-block (361-383-400) and high-block (413-426-440) big-inch Wedge motors, none of the differences concern cylinder head interchangeability—and Chrysler produced well over a dozen separate head designs during the combined 20-year reign of the engine series. We've assembled a listing of the more plentiful castings, some of which are still available from Direct Connection (as are the Stage IV and V heads). With some four million "B" and "RB" engines manufactured, however, a few salvage operations at the local boneyard should be adequate for finding the right heads for your particular Mopar.

Casting Number	Application	Features
2406516	'64-67, 361-383	1.60-inch exh. valves
2780915	'67 440, hi-perf.	1.74-inch exh. valves
2843906	'68-70, 383-400	'67 head w/lrg. comb. cham. Emission head
3462345	'71-72, 383-400-440	
3462345	'73, 400-440	
3751213	'73, 400-440	Motor home head
3769902	'74, 400-440	
3769975	'75, 400-440	
4006452	'76-78, 400-440	

### SOURCES

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C1H-270-S	270	270	216	216	454	110
C1H-284-S	284	294	214	224	430	112
C1H-288-U	288	288	230	230	480	108
C1H-290-S	290	290	218	218	450	114
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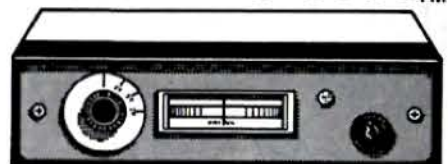
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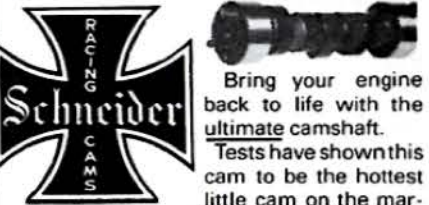


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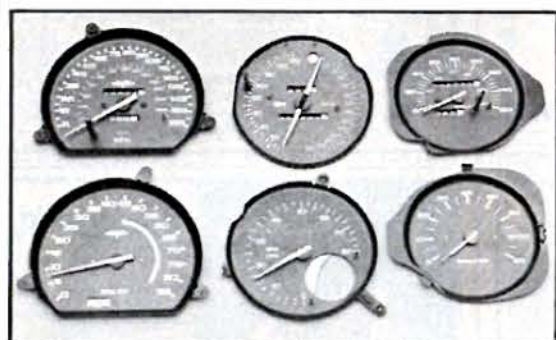
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Corvette Clinic has a new line of speedometer and tachometers for Z/28's, Trans Am's, and Mustangs. They are bolt-in units and have that factory-appearance look. For more information, write Corvette Clinic, Dept. CC, 2870 Skokie Valley Highway, Highland Park, IL 60035.



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**PUT A LID ON IT**  
A new 10-bolt GM aluminum rearend cover is available from Flatlander's which is designed to add that Pro Street look to most GM automobiles. It comes painted, custom polished, or in a natural finish. For more information, write Flatlander's, Dept. CC, 865 Romney Lane, Virginia Beach, VA 23455.

# ETC.



## GRAND PRIZE CC NATS '85 FIRST LOOK!

In a radical departure from traditional Pro Street or road race images, CAR CRAFT's 1985 Street Machine Nationals grand prize giveaway car will embrace the popular restored musclecar movement with this awesome 1907 Thomas Flyer. This is a replica of the very same car that won the famous 1908 New York-to-Paris auto race. You can't get much deeper into the roots of high performance without up-ending the whole darn tree! Preliminary plans call for Mssrs. Hanson and Hampson to drive the finished four-seater to Springfield next June. With a whopping 70 horsepower generated by the 571.3-inch, four-cylinder mega-mill, they better leave early . . . and hope for fair weather.

## GO ORGANIC



You've probably noted the extensive media coverage of late concerning the employment of high-tech carbon fiber and aerospace plastics in such bizarre situations as racing helmets, leaf springs, and even pistons and engine blocks. In the ceaseless search for the ultimate in vehicular performance, CAR CRAFT's Vegetation Editor, Pete Moss, has unearthed an extraordinary organic ex-crescence while searching for ragweed in his unique Z/28 cactus planter: Substratum Camarosorous. An amazingly durable plant with extremely high tensile strength, the rare Southern California shrubbery is normally restricted to well-watered F-body salvage yards. Moss has since left the staff to pursue a career in metallurgy, and is wrapping up post-production on his new book, "Growing Your Own Titanium for Fun and Profit."

# F A S T T A L K

*"Let's go out and catch some smog."*  
Feature Editor Todd Howard commenting on the plan to cruise home in Tech Editor Hanson's ragtop '66 Chevelle SS 396.

*"Don't shift until the oil light comes on."*  
A noted automotive journalist on the intricacies of rowing through a manual gearbox.

*"If it's in stock we probably have it."*  
Racer Wilton Zaiser explaining what's in inventory. Most of the time.

*"That's just like you guys. You only change a rule after everyone's broken the old one."*  
Dale Emery, crewchief for the Blue Max Funny Car operation, when told his new rear spoiler was illegal.

*"I demand a rematch."*  
Editor Smith after being virtually blown out of the water at the Third Annual CAR CRAFT Regatta at the SMN WEST.

*"It was just like it got punched in the stomach."*  
Copy Editor Bill Kohn on the rod-through-the-oil-pan death of the infamous Toyotasaurus Rex.

# C A L E N D A R

## AUGUST

**INDIANAPOLIS, IN: NHRA U.S. Nationals, August 29-September 3, Indianapolis Raceway Park.** Contact NHRA, 10639 Riverside Drive, North Hollywood, CA 91602, 213/985-NHRA.

**8-9, Six Flags Atlanta.** Contact International Camaro Club, P.O. Box 81342, Chamblee, GA 30366, 404/448-1655.

Avenue, Edgewater, MD 21037, 301/798-0676.

## SEPTEMBER

**BRISTOL, TN: IHRA Fall Nationals, September 7-9, Bristol International Dragway.** Contact International Hot Rod Association, P.O. Box 3029, Bristol, TN 37625, 615/764-1164.

**SYRACUSE, NY: CAR CRAFT Street Machine Nationals EAST, September 14-16, New York State Fairgrounds.** Contact Special Events Department, Petersen Publishing Company, 6725 Sunset Boulevard, Los Angeles, CA 90028, 213/657-5100, ext. 485.

## OCTOBER

**POMONA, CA: NHRA Winston World Finals, October 19-21, Los Angeles County Fairgrounds.** Contact National Hot Rod Association, 10639 Riverside Drive, North Hollywood, CA 91602, 213/985-NHRA.

**DES MOINES, IA: Last Fling of the Summer Car Show, September 15-16, Gray's Lake.** Contact Mark Ellsworth, 1227 Cummins Parkway, Des Moines, IA 50311, 515/279-4551.

**GREENVILLE, SC: Collector Car Show, October 21, American Legion Fairgrounds.** Contact G. Barnett, 32 Buffside Drive, Greenville, SC 29611, 803/246-1862.

**AUSTIN, TX: Austin Area Street Machines 6th Annual Swap Meet, September 8-9, Posse Rodeo Arena Grounds.** Contact AASMA, 8844 Highway 290 West, Austin, TX 78736, 512/276-3832.

**MAYO BEACH, MD: 3rd Annual Mopars on the Beach: Summer Sand Off, September 30, Mayo Beach.** Contact Nick Miller, 3614 7th

## NOVEMBER

**BRISTOL, TN: IHRA Winston Bracket World Finals, November 2-4, Bristol International Dragway.** Contact International Hot Rod Association, P.O. Box 3029, Bristol, TN 37625, 615/764-1164.



## SON OF HOT FUN IN THE SUMMERTIME

There are some things that just naturally go together. Bogart and Bacall, Camaros and street machining, and of course, the Street Machine Nationals WEST and the Great CC Boat Race and Fish Baiting Contest. This year's extravaganza also witnessed the event's first woman contestant, CC Managing Editor Tracey "Batten Down the Hatches" Hurst. In the best tradition of Shirley Muldowney and Janet Guthrie, Ms. Hurst (no relation, unfortunately) braved the turbulent waters created by her competition to attempt to claim the title of "Top Boat" at the CAR CRAFT SMN WEST's annual aquatic adventure.

This year's fiasco . . . er, contest, was no different from previous years' competition—with the final results marred by recriminations, demands for a rematch, and other insidious accusations on the part of the competitors. Editor Smith claimed he was handed a boat with lead shot in the stern due to the fact that new CC staffer Todd "New Guy" Howard blew past him on the first turn of the second lap. This was after Tech

Editor Hanson's blatant, and successful, attempt at cheating by blowing past everyone before the start of the race. Bringing up the rear of the pack was Ms. Hurst in her boat, dubbed the "Hurst Golden Shooter," and finally, Art Director Mike Austin, who only discovered on the final lap that his boat's throttle was located on the steering wheel instead of the floor. Despite plans for a national event tour, we will probably have to wait until next year for a rematch.



## E L A P S E D T I M E S

### TEAM MINOR IN CAJUN FUEL FINALE



PHOTO BY LESLIE LARLEY/SHIRK

From Joe Amato's awesome 263.92 blast during qualifying to the all-Team Minor Top Fuel finale, there were plenty of surprises on tap for the 9th annual Cajun Nationals in Baton Rouge, Louisiana—and plenty of spectators to bear witness to the event. For the second year in a row, the fifth stop on the NHRA/Winston World Series tour attracted a turnaway crowd: some 47,000 onlookers attended the three-day event.

Neither Beck nor Minor reached the finals easily; Beck's agenda included Amato (who broke a rearend), while Minor was forced into a face-off with, among others, Number One qualifier Gary Ormsby. Beck prevailed in the end, 5.690/252.13 to 5.915/246.57.

Billy Meyer, throttling his Chief Auto Parts '84 Trans Am, won his second straight Funny Car title, slipping by Jim Head in the trophy dash. In Pro Stock it was Lee Shepherd all the way; the Louisiana track has been good for Lee's career, and '84 marked his third consecutive win there, the sixth in nine years. Number One qualifier Warren Johnson lost in the first round.

In other action, Dennis Korcelle won Top Alcohol Dragster and Dave Sebring netted its flopper counterpart. Gary Wendzel won Comp, Eli Lopez triumphed in Super Gas, and Larry Morgan and Harvey Emmons III won Super Stock and Stock, respectively.

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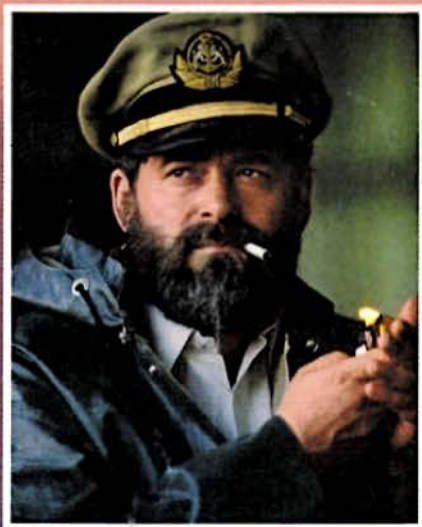


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