

**10 WAYS TO BUILD QUALITY INTO Y**

# **KIT CAR**

**THE CAR BUILDER'S AUTHORITY**

**MUSCULAR**  
with MR2 Mechan

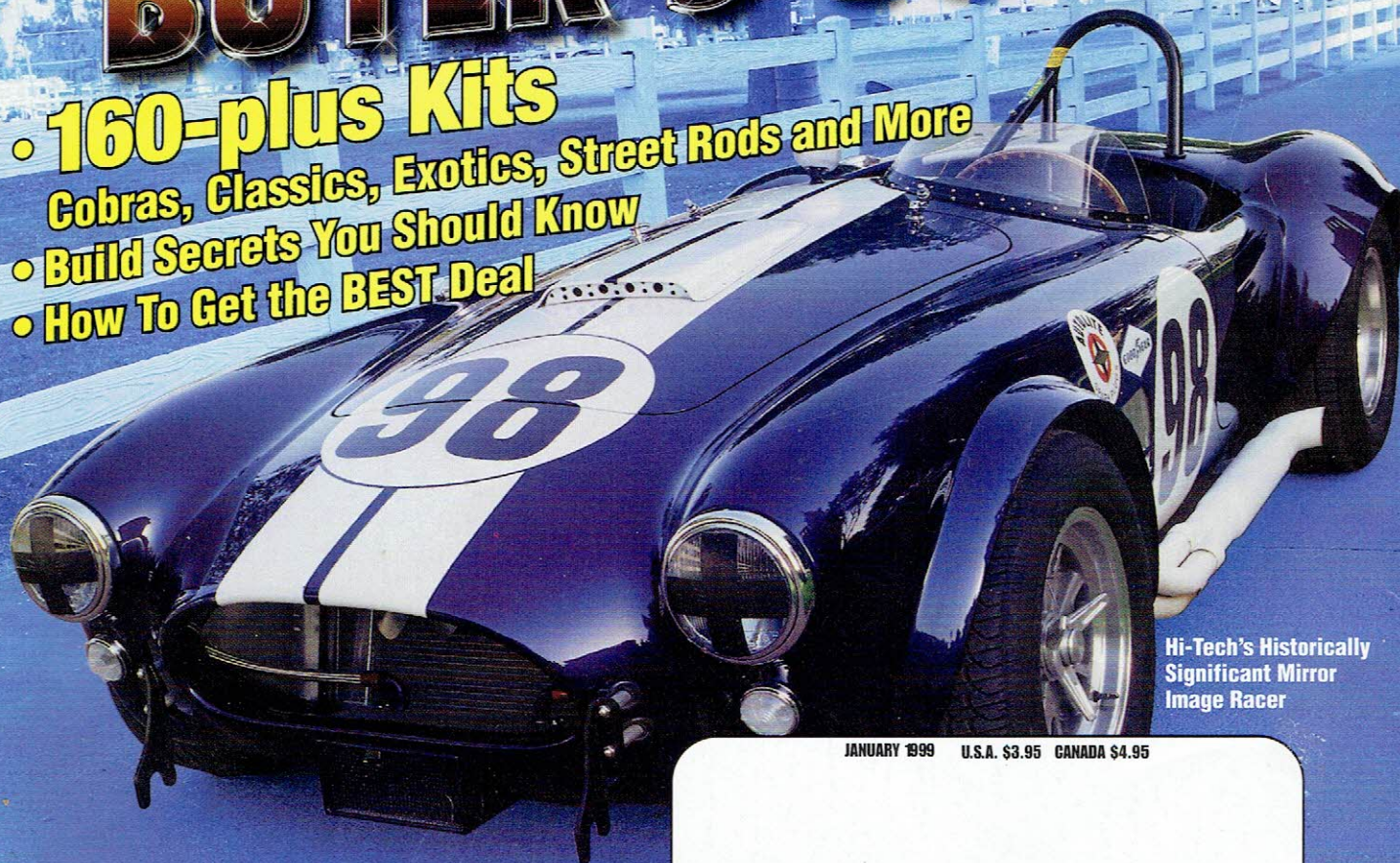


**New and Hot for 1999**

## **GIANT KIT BUYER'S GUIDE**

**• 160-plus Kits**

- Cobras, Classics, Exotics, Street Rods and More**
- Build Secrets You Should Know**
- How To Get the BEST Deal**



Hi-Tech's Historically  
Significant Mirror  
Image Racer

JANUARY 1999 U.S.A. \$3.95 CANADA \$4.95

- Cobras On Tour Across America**
- Buyer's Guide to Wheels and Tires**
- Prowling the Junkyard for Low-Cost Parts**
- How To Choose the Best Springs**

A PETERSEN PUBLICATION



## This is What the Term "Replica" is All About!



By Harold Pace  
PHOTOGRAPHY: HAROLD PACE

**T**here's no doubt that the most abused term in the kit car industry is "replica." While many kits emulate the looks of an original Cobra, Lambo, or Ferrari, few have gone to the trouble of replicating the original much more than skin deep.

Hi-Tech Motorsports in Tempe, Arizona has parlayed its skill of original Cobra restoration into the production of hyper-authentic replicas that redefine the term "cloning." While most kits use cheaper, more practical fiberglass, Hi Tech offers aluminum bodies, handformed using the original method—on English rollers.

Sure, the bodies look great, but how about the running gear? It's almost identical, with the following exceptions. The original 427 Cobras used 11 1/2 front- and 10 3/4 rear-diameter solid disc brakes with Girling calipers, but Hi-Tech has upgraded to 12.2-inch diameter rotors, with Wilwood calipers up front and PBR at the rear. The frame tubes are made of seamless DOM tubing, which is both thicker and stronger than the original. And the Jaguar-sourced Salisbury differential, used in the original, has been replaced with a specially fabricated unit with Ford 9-inch internals that will bolt onto the original mounts. This gives a stronger differential with a wider choice of ratios.

But the main factor that sets a Hi-

Tech car apart is the near-fastidious attention to detail. Nowhere does this show up better than in our feature car. In this instance, they have copied not a general style of car, but a particular car. This replica (in the truest sense of the word) is of CSX 3002—the prototype 427 Cobra.

### Birth of the Big Boy

What makes this particular Cobra so special is the history of the original. In 1964, Carroll Shelby was concerned that the Cobra required more power to keep up with cars such as the rumored 396 Corvette and the hot mid-engined Ferrari 275LM, which was supposed to be approved for racing in the GT class in 1965 (as it turned out, it wasn't). The obvious engine was the 427 side-oiler Ford that had developed for NASCAR racing. Their first attempt at making a 427 Cobra was not successful. Shelby simply shoehorned a 427 into a regular 289 Cobra, with disastrous results. It was run at Sebring in 1964 by Ken Miles and John Morton, who were relieved when it finally expired. It was so bad that ace of aces Ken Miles wrecked it—the car hit a tree and was nicknamed "Teddy Tree-bagger" as a result. John Morton described it best, "It feels and handles more like a '48 Buick than a race car." It truly was an evil device, and convinced Shelby that an all-new car was necessary to handle the horses.

The next experimental big-block Cobra was built by Miles to run at the Nassau races, where the rules were more lenient than at races that counted for the FIA Championship. The Nassau races took place at the end of the season, so everyone showed up to play and party. The rules were loose and prone to changing at the whim of organizer "Red" Crise. In the previous year, Chevy had brought a bevy of Bow Tie-powered sports racers and the lightweight Grand Sport Corvettes, and blew the Cobras into the weeds. Miles wanted revenge! He lightened a 289 Cobra to about 1,600 pounds, and fitted an ugly, rounded body. Stuffed with an all-aluminum 390cid experimental motor, it was quick but fragile, and did not finish.

So the stage was set for a serious redesign. Working closely with the Hurlock brothers (owners of AC), a team of designers led by Miles, Klaus Arning, and Alan Turner, reworked the classic Cobra formula. The frame was beefed up with bigger 4-inch-diameter main tubes. Suspension was by double wishbones, front and rear, with geometry initially supplied by Arning, who worked with Ford's computer. However, these figures were extensively revised by AC's Stuart Turner for production. In addition, coil springs replaced the transverse leaf springs of the earlier Cobras. Overall, the new car was wider and





substantially heavier than the small-block-powered cars.

The first two production 427 Cobras were chassis number CSX 3001 and CSX 3002. Although it had the second number, CSX 3002 was the first car completed and had many unique features. Most visibly, the body was a one-off. The new forms for the wider 427 body were not completed in time, so a 289 FIA body was pressed into use. The fenders were widened by welding 1-inch strips of aluminum along the tops. The rear fenders were also 289 FIA, and the nose had the small grill opening of the 289 as well. A cutout was made under the nose for ducting to the oil cooler. The rollbar was braced forward to the passenger-side footwell, similar to the 289 FIA cars (later 427s had the rollbars braced to the back). CSX 3001 was completed after CSX 3002, and had the normal 427 bodywork with the larger grill opening. It was a street car, and was sent to Ford for evaluation (although it was later raced as well).

Another unusual fitting unique to CSX 3002 is a small filler cap on the right front fender, used to fill the oil tank for the dry sump system. Shelby had despaired of controlling oil in the 427 wet sump pans, and had fabricator Ron Butler build a dry sump pan and tank. This system would be optional on later 427s.

### Takin' It to the Tracks

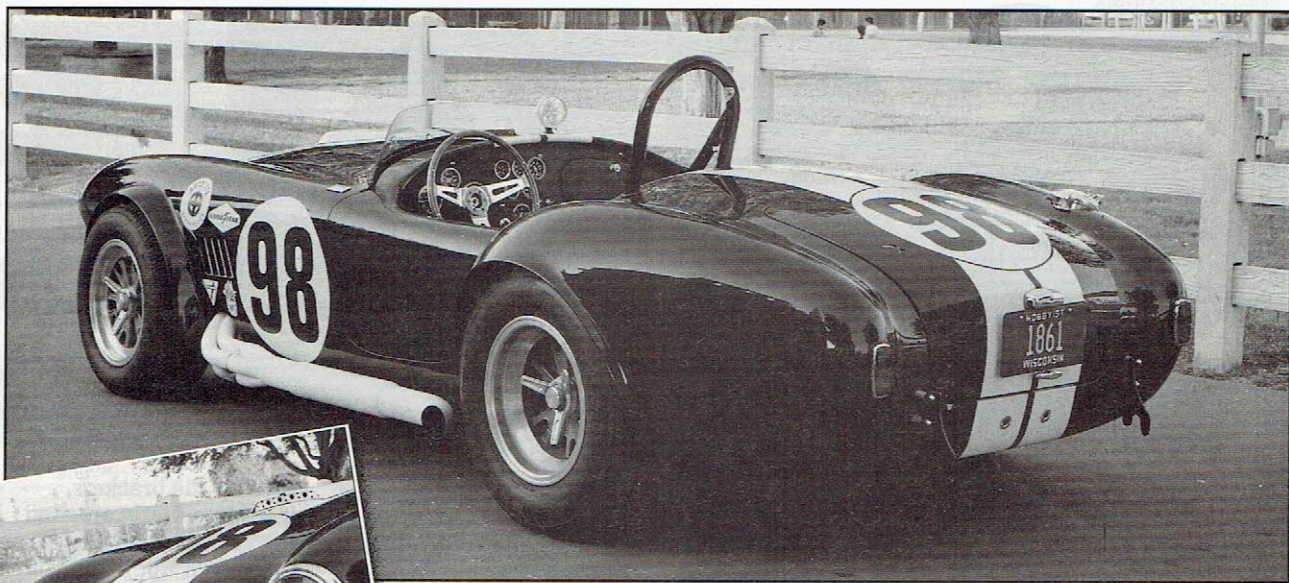
CSX 3002 was used as a testbed for the 427 series. It was shaken down by Ken Miles and Ron Butler (who built much of the car). Despite being damaged in a testing accident at Riverside, it became the only coil-spring 427 Cobra campaigned by the factory. Bob Bondurant drove the car in anger for the first time at Green Valley Raceway, near Fort Worth, Texas, in February 1965, and did not finish. More DNF's followed at Candlestick Park in April, with Phil Hill at the Riverside USRRC race, and Miles at the helm. The last factory appearance for this car was in the Australian Tourist Trophy, in which Miles put the beast in Third Place before its suspension broke. This ended the career of the only factory 427 Cobra race car. By this time, Shelby was deeply involved in the Ford GT program, and part of their agreement with Ford prohibited the campaigning of factory 427's. Ford wanted to ensure that their beloved GT40 would not be outrun by the new Cobra. Privateers carried the Shelby banner into SCCA competition, where they won the National AP championships in 1965 (Hal Keck), 1966 (Ed Lowther), 1967 (Dick Smith), 1968 (Peter Consiglio), and 1973 (Sam Feinstein).

### Duplicating a Legend

The challenge of cloning the most unique Cobra was right up Hi-Tech's alley. Steve Forrer contacted the company—he wanted a super-accurate reproduction, and was willing to pay for it. As Hi-Tech's Mike Kenney explains, "We are only as good as our customers allow us to be." Forrer was an ideal customer for an involved job, and thus the project took shape. After Kenney and his crew pored over hundreds of photos, they were presented with a once-in-a-lifetime opportunity. The owner of the real CSX 3002 brought the car to their shop for some restoration, and allowed them to carefully measure and photograph every detail. They duplicated items such as the 289 street car dash, the dry-sump tank, and the oil temperature gauge that came with it (even though they retained a wet sump lubrication system that is more practical for street use).

The chassis was the usual Hi-Tech unit, with thicker seamless tubes and Pro Shocks coilovers. A 3/4-inch sway bar is used up front, with none on the back (getting oversteer with a full-house 427 is no problem). The steering rack is just as original (modified MGB), with an exact repro column and 16-inch Moto-Lita wheel. The brakes are controlled by a dual master cylinder setup with a bias bar, for adjusting front-to-rear ratios.





The brake reservoir system mountings were unique to this car—another feature that would have been missed, had they not had access to the original.

The Hi-Tech Ford 9-inch-based differential will even bolt into an original Cobra, similar to most of the company's components. This stronger unit does away with the differential cooler and pump fitted to CSX 3002 to keep the Salisbury differential from overheating. Fuel is stored in a 42-gallon fuel cell that is the same size, but safer, than the original gas tank.

The body, naturally, is aluminum. Although Hi-Tech offers 'glass bodies on its kits, no composite exists on this replica, except for the footboxes (as in the original). Currently, the hoods and trunks are pressed into shape, and the rest of the body is hand-formed with English rollers and mallets. Hi-Tech is exploring the possibility of having all panels formed in presses in the near future. This will result in greater standardization than is possible with hand-formed parts, but at the expense of the traditional handiwork. All machining is done on CNC tools for precise fit and interchangeability. The beautiful blue paint is PPG two-stage basecoat/clearcoat, custom mixed to match the original color. The white stripe and number balls were painted on.

The interior of this car also has

been duplicated, down to the last detail. The factory racing seat, covered in black leather, is there. The forward stay rollbar mounts into the passenger footwell. The dash is a good example of what sets a Hi-Tech Cobra apart from the rest. On the original, the instruments were an assemblage of Stewart-Warner and Smiths, with a Sun tach. Ditto for the replica. It would have been easy to use a matched set of gauges, but it wouldn't have been authentic. The switches also are the correct type and in original locations. For a final touch, the gauges are correctly clocked. This is a racing trick in which all the instruments are rotated until the normal reading is in the straight-up location. The driver, who probably has his hands full, can merely glance at the instruments to see if all the needles are pointing straight up, instead of having to check the readings. Hi-Tech made sure its replica matched the original here, as well.

To power this time machine, Hi-Tech chose a 427 side-oiler built by Don Woodard at Sunny Slope Ford. A single 750cfm Holley four-holer feeds into aluminum Edelbrock heads. A Crower hydraulic cam is used, along with a forged crank that spins LeMans rods and a bore job to 454 ci. Kenney estimates about 500 horses, which is what CSX 3002 boasted in 1965. A Ford Top Loader four-speed works with a McLeod clutch. Cooling is provided by a Ron Davis aluminum radiator and a Setrab oil cooler. Wheels are Halibrands (7 1/2 inches front, 9 1/2 inches rear) mounting 15-inch BFGoodrich rubber.

### Is It Real, or Is It Hi-Tech?

For a real-world test of their cloning abilities, Hi-Tech took this car to the Monterey Historic races in 1997,

in which Shelby was the featured marque. Hi-Tech had its car on display in a spectator area, while the original CSX 3002 was part of the Shelby museum display. Throughout the day, Cobraphiles went back and forth from one car to the other, checking to see how close the replica came. One "expert" initially pronounced the 289 dash wrong, until he saw the original, and discovered it was the correct one for that car! Several spectators noticed the clocked gauges, and noted that they were correctly angled. It was a satisfying experience.

Kenney says this car shows what they are most interested in doing. Hi-Tech has now duplicated several original cars they have had in their shops for restoration work. The tab for such attention to detail is not cheap. Kenney estimates a car such as this one runs about \$100,000. This is about what an original 289 Cobra now costs, but is a fraction of what CSX 3002 is worth. For those who prefer to do their own assembly, Hi-Tech offers kits in fiberglass that start at about \$30,000, or in aluminum from about \$50,000. Their lineup includes the 427 street car, 427 S/C, 289 FIA, 289 USRRC, and CSX 3002. Currently, the company is working on an aluminum-bodied 289 Cobra street car to complete its collection of Cobra roadster replicas. At these prices, they aren't for everyone—but if authenticity is your bag, Hi-Tech can deliver the goods. **KC**

### SOURCE

#### Hi-Tech Motorsports

Dept. KC

2204 W. Southern Ave.

Tempe, AZ 85282

602/431-9400

[www.htmotorsports.com/Flyer](http://www.htmotorsports.com/Flyer)